NISGA'A ARCHITECTURE AND LANDSCAPES: ECOLOGICAL WISDOM AND COMMUNITY-LED DESIGN

by

NANCY PATRICIA MACKIN
B.A (University of Western Ontario)
B.Arch. (University of British Columbia)
M.A.S.A. (University of British Columbia)

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ABSTRACT

How are long-resident peoples' wisdom and knowledge communicated through landscape and architectural space? This thesis reconstructs spatial histories of the Nisga'a Nation to uncover how architecture and landscapes retain and adapt cultural, technological, and ecological wisdom of past generations.

The Nisga'a people, who have lived for at least thirteen thousand years in the Nass River Valley of British Columbia, attest to a spirituality and cohesiveness deriving from their knowledge of and sense of belonging to the land. The knowledge is recorded here through empirical research that records elders' memories of Nass Valley structures and places. Interviews, supplemented with records of ceremonials, photographs, and extant structures, are translated into architectural drawings, models, and Geographic Information System maps. During a feast which is also a community-led research and design charrette (workshop), Nisga'a elders critique the reconstructions, verifying correlations between spatial memories and the reconstructed representations of architectural/landscape space. The charrettes form a case study in community-led research and design.

A reverse chronology, informed by oral histories and written documentation, traces landscape changes back to the beginning of Nisga'a time. Then, as the history moves forward, the people's architectural legacy is shown to encode ecological and cultural wisdom within materials, carved and painted surfaces, and evocation of place. Landscape change, mapped relative to architectural innovation, demonstrates the Nisga'a people's skill at adapting new technologies and designs to suit their visions and needs.

Through an architectural repertoire based upon respect for the land, Nisga'a elders' wisdom is shown to have profound implications for on-going global negotiations with cultural and ecological change. Accumulated ecological wisdom of the long-resident people offers practical solutions and respectful philosophies for landscape use that contribute to resource abundance and cultural cohesion. The dynamic Nisga'a architectural repertoire exemplifies how age-old ecological knowledge fuses with emerging architectural and landscape technologies, facilitating adaptation to dynamic situations.

Importantly, the traditional feast offers systems of communication that catalyze recollection of ecological wisdom. In this research, the feast becomes a model for community-led spatial decision-making: a process that brings elder-communicated knowledge together with innovation, thereby achieving long-term cultural and ecological sustainability.
# TABLE OF CONTENTS

Abstract ...................................................................................................................... ii

Table of Contents ...................................................................................................... iii

List of Tables ............................................................................................................. vi

List of Figures ............................................................................................................. vi

Acknowledgements .................................................................................................... xi

Glossary ....................................................................................................................... xii

<table>
<thead>
<tr>
<th>CHAPTER I</th>
<th>Introduction and Methodologies</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Introduction:</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1.2 Recording spatial memories</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>1.3 Measuring and construction documentation of structures</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>1.4 Visual and textual records</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>1.5 Translation into drawings, models, and GIS</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>1.6 The Charrette: verifying spatial memories</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER II</th>
<th>The context: recalling history and architecture in Laxgalts'ap</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Introduction</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>2.2 Displaced cultural/ ecological systems</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>2.3 Displacement of children's voices</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>2.4 Displacement of history-telling artistry</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>2.5 Architecture as lived history</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>2.6 Architecture as a dialogue: across time, among peoples, with the landscape</td>
<td></td>
<td>27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER III</th>
<th>A Reverse Chronology of Nisga'a Cultural Landscapes</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 May 2003: Nisga'a Highway opens</td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>3.2 1968 to present: Decolonizing the Landscape</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>3.3 1870-1968: A collision of cultures and landscape change</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>3.4 Asian Contacts with the Nisga'a</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>3.5 The volcano</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>3.6 Cultural Exchanges with other Native Peoples</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>3.7 Earliest Clan histories recorded in the landscape</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>3.8 Completing the circle from time immemorial to the present</td>
<td></td>
<td>51</td>
</tr>
</tbody>
</table>

| CHAPTER IV | Materials for architecture and the landscape | 52 |

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
4.1 Introduction
4.2 Rocks, metals, and minerals
4.3 Zoomorphic Materials
4.4 Small plants and parts of trees
4.5 Trees
4.6 Finishing wood structures: materials for paint

CHAPTER V  Buildings: oral histories, uses, drawings, and models

5.1 Introduction: Bringing together the measurable and the immeasurable
5.2 The first Nisga’a buildings
5.3 The Longhouse
   • The longhouse keeps the stories alive
   • The Nisga’a longhouse: dimensions and construction
   • Roof structure
   • The house as part of the universe
   • The Longhouse as House of Learning
   • Named houses
   • "HVAC": Heating, Ventilating, and Air conditioning
   • Longhouse innovations and cultural resilience
   • Pacific Rim similarities
5.4 Other buildings for shelter or defense
   • Spring houses and large smokehouses
   • Fortresses (walkiik and da’oots’ip), bridges, and other structures for defense and trade
   • Hudson’s Bay forts
   • Daak’
   • Hunting cabins/lean-tos
   • Underground dwellings
   • Houses for coming of age or marriage
5.4 Resource structures
   • Wilp-sihoon (Smokehouses)
   • Food storage buildings
   • Food preparation buildings
   • Ganee’e (oolichan drying structure)
   • Fishwheels
   • Fishing and cooking sheds
5.5 Teaching places
5.6 Public Works buildings
5.7 Structures for worship: blended spirituality
5.8 Buildings of the Cultural Revival
5.9 Gardens
CHAPTER VI  Buildings in the Landscape: Maps and site plans  
6.1 Introduction: Mapping the changing landscape  
6.2 Named places: Maps and histories  
  • Map group one: Early Nass Valley  
  • Map group two: post-contact maps  
  • Map group three: Remapping the Common Bowl  
  • Renaming the landscape: circling back to time before memory  
6.3 The Village as longhouse: architectural history of four villages  
  • Gingolx (Place of Skulls)  
  • Git'ıks, Ank'idaa, Fishery Bay, and Laxgalts'ap (Village on Village)  
  • Gitwinksihlkw (People of the Place of the Lizards) and Hlaxwhl y'ans (Under Leaf)  
  • Gitlaxt'aamiks and Old and New Aiyansh (A'y'a'ns, leaves coming out)  

CHAPTER VII  Learning from Nisga'a Spatial Histories  
7.1 Architecture and landscape: inseparable disciplines  
  • Bridging architecture and Landscape: Traditional Ecological Knowledge and Wisdom  
  • Architecture participates in practices and strategies for sustainable living  
  • Architecture contributes to resource monitoring and conservation  
  • Buildings as communicators and as facilitators of knowledge exchange  
  • Nisga'a architecture evokes philosophy and worldview  
  • Ethnoecology, process, and the present-day Nass Valley  
  • Architecture as a catalyst in the integration of Traditional Ecological Knowledge and Western Science  
  • Direct Applications of TEKW to present-day design processes  
    o Respectful use of materials  
    o Walking and reading the site  
7.2 Community-led Design: the Charrette process  
7.3 Architecture as narrative  
7.4 Applying Elder-led wisdom to the Laxgalts'ap and other architectural/landscape projects  
7.5 Spatial histories: catalysts for communication and memory  

Bibliography
LIST OF TABLES

Table 1 List of Historians participating in research

LIST OF FIGURES

Fig. 1a Map showing location of Nisga'a resource lands as identified in the Nisga'a Treaty of May 1000.

Fig. 1b "View from the Rocks Behind Naas [sic] River showing woman with a parasol". Painting by Barbara Crease 1880.

Fig. 2 Poles and houses in Gitlax't'aamiks before the flood of 1917

Fig. 3 Laxgalts'ap Daycare Center with child-sized pole and canoe

Fig. 4 Pts'aan (pole) from Git'iks (near Laxgalts'ap) being launched into the Nass River on its way to the Royal Ontario Museum.

Fig. 5 Poles cut into sections and used as supports for houses

Fig. 6 1887 photograph of oolichan drying racks (called ganee'e in Nisga'a)

Fig. 7 1990 Photograph of ganee'e, a structure that has been in use since time immemorial in the Nass Valley.

Fig. 8 A comparison between the 1887 photograph of ganee'e and 1996 construction photograph of Laxgalts'ap Village Government Offices

Fig. 9 Evolution of the Laxgalts'ap Village Government Offices site plan, showing orientation of the entrance towards the pts'aan (pole with all four village crests).

Fig. 10 Smokehouse added behind multi-family housing, about six years after the main project was completed and occupied

Fig. 11 2002 photograph of the single-lane road at Lava Lake, en route from the Nass Valley to Terrace

Fig. 12 The May 2003 road opening ceremony at Laxgalts'ap included blessings by His Excellency Bishop John Hannen and by His Excellency Bishop Sim'oogit Haymaas, Charlie Swanson.

Fig. 13 Seagulls and hawks on a log in the Nass River, spotted en route to Gingolx for the road opening feast.

Fig. 14 Russian-style smokehouse vent

Fig. 15 Russian influences in Gitlax't'aamiks: Domes and cupolas inspired by Nisga'a travels to Russian settlements in what is now Alaska

Fig. 16 The volcano, a catastrophic event, was recalled, sometimes with the intention of teaching crucial environmental values including the value of respect for all living things

Fig. 17 Oolichan processing was vital to food storage.

Fig. 18a Douglas fir is now found in the Nass Valley

Fig. 18b Wild crabapple wood was important for making pegs and other construction uses that required a very hard and dense wood.

Fig. 19a Cedar withes were used to tie poles together, often for the purpose of holding a third component in place.
Fig. 19b The lids of bentwood boxes were held down with twisted cedar bark rope.  
Fig. 19c Nisga'a Housefronts and bentwood boxes were painted with artwork featuring black and brown-red pigments and formlines.  
Fig. 20 The first four houses connect architecture with the cosmos.  
Fig. 21 "House at Nass B.C.": Pym Nevins painting c. 1850 from Lax anlo'o, a village that was upstream and across the Nass River from Laxgalts'ap.  
Fig. 22a The model discussed at the charrettes shows the smooth building front, free of projections, favored by Nisga'a architect/artisans.  
Fig. 22b The model with the roof removed, showing the structure below.  
Fig. 22c 1881 photograph by Edward Dossiter of a deconstructed house in Kitsetlas showing a front wall portal and side wall frame similar to the Gitlakdamix house shown in fig. 22c.  
Fig. 22d, e, and f 1929 Photograph of Gitlahtaamiks house frame with roof structure superimposed by N. Mackin.  
Fig. 22g Fig. 22f. Pole construction with a central roof ridge and steep roof pitch, shown in cookhouse construction at Fishery Bay.  
Fig. 22h Steeper-pitched roof forms interpreting charrette comments by Horace Stevens.  
Fig. 22i The upper platform described in Dr. McKay's interview was divided into spaces using cedar screens and the carved storage boxes of Northwest Coast tradition.  
Fig. 22j Drawing of excavated areas under the chief's platform (used for food storage), a food storage building beyond the walls of the longhouse, and excavated side tunnels where women and children would hide during times of danger.  
Fig. 22k Levering massive longhouse poles into place, following description by Dr. Bert McKay.  
Fig. 23 This carving of a wolf spirit, drawn in about 1925 by Emily Carr, seems to bring the living spirit of the crest into the dwelling.  
Fig. 24 The moveable vent known as ala.  
Fig. 25 Pegged and slotted connections used in building large structures.  
Fig. 26 Wall and roof planks were tied in place using poles placed across the planks and secured with a double-wrapped tied connection.  
Fig. 27 Drawing reconstructing the hunting lean-to, using memories from interviews. The tied roof structure, secured with poles and with each joint double-wrapped, is characteristic of structures built before nails were common.  
Fig. 28a Tied foundations of an underground structure, worked out from elders' descriptions combined with photographs by Emmons (1911) of Tahltan underground structures.
| Fig. 28b | Underground house construction, showing planks over the tied foundations system | 114 |
| Fig. 29 | Cylindrical hollows in the lava rock, like this one made by spruce or cedar poles trapped and burned in the molten rock, were sometimes used as shelters. | 114 |
| Fig. 30 | Details of a smokehouse showing tied connections | 118 |
| Fig. 31a | Food storage building | 119 |
| Fig. 31b | Food storage building showing the manner of stacking logs then chinking between them with moss and clay to make a wind-and animal-proof structure. | 120 |
| Fig. 32 | A drawing from about 1850 showing a structure with no walls, and a steep roof. Photograph courtesy B.C. Archives. | 121 |
| Fig. 33 | Panorama of Red Bluff showing ganee'e, cooking sheds, and smokehouses | 122 |
| Fig. 34 | Two photographs of Horace Steven's ganee'e | 123 |
| Fig. 35 | Fishwheel near Gitwinksihlkw | 126 |
| Fig. 36 | Exposed structure in a cooking shed at Fishery Bay. | 128 |
| Fig. 37 | Community Center in New Aiyansh displays all four crests, representing the Common Bowl from which all Nisga'a are nourished. | 132 |
| Fig. 38 | The stage at the New Aiyansh Hall is constructed somewhat like the chief's platform in a longhouse: opposite the entrance, beneath the peak of the rear gable, with a painted screen defining the space. | 132 |
| Fig. 39 | Nisga'a Highway Signage denoting Fishery Bay, now restored to its original Nisga'a name. | 136 |
| Fig. 40 | Map showing the Haida Gwaii Refugium: a landscape that existed c. 13000 years B.P., before the Great Ice Age | 140 |
| Fig. 41 | The four sacred mountains to which the Nisga'a people escaped during the great flood that engulfed the land at the close of the Great Ice Age. | 142 |
| Fig. 42 | Some places from the Ayuukhl Nisga'a. Every place has a name, and stories that accompany the name, the landscape, and the people of the place. Named places serve as a mental map spread across the cognitive landscape. | 144 |
| Fig. 43 | Places in the story told by Emma Nyce, along with a photomontage of wall-less buildings from Fishery Bay and a Georgie River landscape. | 148 |
| Fig. 44 | Before the volcano of about three hundred years ago, the Nass River ran a different course south of the present-day river. Important villages on the original alignment were engulfed by the molten lava. | 150 |
| Fig. 45 | Map showing houses in Gitwinksihlkw c. 1850, an ancient village site that was resettled after the volcano. | 152 |
| Fig. 46 | A map of the Tahltan migration from Portland Canal to hunting grounds at Meziadin | 153 |
Fig. 47. "The place where Sgawo sat" was at a high elevation, where her grandmother's calls could be heard by the Creator.

Fig. 48 Digitized Map of Grease Trails, showing connections to and from Fishery Bay at the heart of the oolichan fishery.

Fig. 49 Drawings of large smokehouse that people might live in.

Fig. 50a O'Reilly map (1892) of reserves at or near Gitwinksihlkw and Aiyansh. DIAND Archives Vancouver

Fig. 50b O'Reilly (1892) map of reserves at or near Angidaa. DIAND Archives Vancouver.

Fig. 50c O'Reilly (1892) reserve map that includes Laxgalts'ap and Stoney Point. DIAND Archives Vancouver.

Fig. 50d O'Reilly Map (1892) that includes Gingolx and "Red Cliff". DIAND Archives Vancouver

Fig. 50e O'Reilly (1892) map that includes Laxgalts'ap.

Fig. 51 "Map prepared by Jacob Russ... showing the location of his Ancestral Hunting Grounds, also claimed by Abbi of Gitwingik" 1902

Fig. 52 Maps from Ministry of Sustainable Resource Management website, showing Nisga'a place names that were agreed, under the Nisga'a Treaty, to be restored to the map of British Columbia

Fig. 53a Poles from the 1931 Hudson's Bay Fort preserved in the water at the old cemetery near Gingolx.

Fig. 53b This painting of Kincolith from 1868 shows a row of houses designed in European style, but sited in a manner not unlike longhouses.

Fig. 53c Village near Laxgalts'ap "Lochanlo'o" painted by Pym Nevins in the mid-eighteen hundreds is one of the earliest visual records available of Nass Valley villages.

Fig. 54 Work party at Kincolith, photo 189?.

Fig. 55 Churches, like this one in Laxgalts'ap, were built largely by community work parties and funds known as "Public Works".

Fig. 56 Greenville on the Nass River, 191? 183

Fig. 57a Gitwinksihlkw house and poles before the fire of 1885

Fig. 57b Steel pole bases at Gitwinksihlkw are raised above the snow line, ensuring that the carved stories will last a long time.

Fig. 57 1903 photograph of Sim'oogit Mineeskw house, Gitlaxt'aamiks.

Fig. 58 The large houses were built by Nisga'a people, sometimes with minimal or no floor plans, indicating the peoples' skill, resourcefulness, and exceptional architectural understanding and craftsmanship. Photograph from 189?

Fig. 59 Diagram of communication strategies of traditional ecological wisdom as they relate to architecture

Fig. 60 Rafters in Lawrence Adam's smokehouse are at different levels, allowing fish to be processed in stages.
| Fig. 61 | Lawrence Adams and his grandfather built this smokehouse in the traditional manner, using large planks on the outside of four corner posts. |
| Fig. 62 | Horace Stevens demonstrating a roof slope of about twelve-in-twelve that is used in traditional Nass Valley buildings, a steeper pitch than that used in traditional buildings elsewhere on the Pacific Northwest Coast |
| Fig. 63 | 1928 photograph of a steep-roofed building and three poles taken by C.F. and W.A. Newcombe at Gitlakdamix. Canadian Museum of Civilization catalogue number 70689c |
| Fig. 64 | Photographs showing the actual Laxgalts'ap Daycare Center design process and modifications using charrettes as part of community-led design |
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GLOSSARY

Adaawak Story, legend, history
Ayukws Pictorial representation of an adaawak (School District 92 1996)
Ayuuŋ Law
Ayuukhl Nisga’a Nisga’a Laws
Daawiis Stone axe
Dawihl Years ago, a long time ago
Diwaax To come in by paddle
Ganada Raven tribe (subcrest Frog)
Gane’e Three-poled rack for drying oolichans
Giiksihl wilp History from long ago
Giikw Hemlock, *Tsuga heterophylla*
Gisk’aast Killerwhale tribe (subcrest Owl)
Haas Fireweed, *Eupilobium augustifolium*
Hasgaltkw Antlers (Morven 1996)
Haykw spirit
Huwilp Plural of wilp
Jiiii grandmother
K’ookst White Maple or Douglas Maple, *Acer glabrum*
Laxgibuu Wolf tribe (subcrest Bear)
Laxsgiik Eagle tribe (subcrest Beaver)
Mak’a’am-lo’op Stone-moving feast
Milks Wild Crabapple, *Malus fusca*
Naxnok Power of spirits, gifts, or extraordinary strength (Guédon 1984)
Nooř Storage basket
Pdo’o door
Pts’aan Totem or crest pole
Sdatx Stinging nettle, *Urtica dioica*
Seeks Spruce, *Picea sitchensis*
Sgwinee Yellow-cedar, *Chamaecyparis nookatensis*
Sigidim haanak Plural of sigidimnak
Sigidimnak’ Matriarch, the highest ranking woman in a wilp
Sihlguuhlkw’s To adopt (somebody)
Sihoon To catch and process fish
Simgan Western Red-cedar, *Thuja plicata*
Simigat Plural of Sim’oogit
Sim’oogit Chief
Sginist Jackpine, Lodgepole pine, *Pinus ctntorta ssp. Latifolia*
Waagaa rings for oolichan poles
Wahaas Fireweed pith
Wan Deer (Morven 1996)
Wilp Chieftain house
Wilpsihoon Smokehouse
Wo’omhlkw Cradle
Xbiinaaxw Spine
Xdaa  Mattress, featherbed
Xlaahl  Willow
Xslogalo'opkw  To be dark brown in colour
Xsmaakskw  To be light in colour
Xsmaaytkw  To be purple in colour
Xst'uuts'kw  To be dark in colour
Ye'e  grandfather
Yuukw  settlement feast
Yuusa'alt  A container for picking berries

Sources:
Haniimagoonisgum Algaxhl Nisga'a (WN 2001)
Sim'algal, A Nisgha Alphabet in Pictures (School District 92 1979)
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Special assistance from Allison Nyce and Verna Williams
Botanical names from Plant Technology of First Peoples in British Columbia (Nancy Turner 1998)
CHAPTER I Introduction and Methodologies

1.1 Introduction

This research reconstructs, in drawings, models, maps, and narrative, the spaces that are important to Nisga'a people, and the knowledge that is retained and adapted within those spaces. It explores buildings as part of the land, as representations of social structure, and as cultural achievements, while reconstructing specific building traditions and values within the rich architectural heritage of the Nisga'a Nation.

The research began during the author's working experiences in the Nass Valley, a mountainous coastal watershed adjacent to the Alaska panhandle and the Nisga'a Nation's traditional homelands (fig. 1a). The Nisga'a people, one of three Tsimshian-speaking First Nations living in Northwestern British Columbia, have lived in the rain-forested valley since time immemorial, time before memory, archeologically established to be at least twelve thousand years before present (B.P.) (Carlson 1976; Marsden, Anderson, and Nyce 2002). Time immemorial, a concept recognized in Canadian law as an attribute of Aboriginal title, can be traced, on the Northwestern Pacific Coast, at least as far back as the retreat of the great ice sheet (Tennant 1995: 2003). Nisga'a people are known both for their ancient culture and for their modern achievements. For thousands of years Nisga'a Lands were at the center of the Genim Sgeenix (Grease Trails) that interconnected much of the Pacific Northwest; recently, the landmark Nisga'a Treaty of May 2000 became the first treaty ratified in British Columbia since 1899. The treaty made history with its Aboriginal self-government and resource management provisions (Indian and Northern Affairs Canada 2004, Nisga'a Lisims Government 2004).

For this ancient/modern culture, I was commissioned, as principal of Nancy Mackin Architecture, to design several projects for Laxgalts'ap, one of the four modern Nisga'a villages. Each of the four has its own Village Government—but all four consciously decided in the 1890's to act as one and to be part of the Common Bowl—'saytk'ilhl wo'osihl Nisga'a—the landscapes from which all Nisga'a are nourished.

My first Nass Valley commission was the Laxgalts'ap Village Government Office Building, which at first was planned to be a collection of portable structures but for which limited additional funding had been found for a more permanent structure. During design meetings for their new building, Laxgalts'ap Council instructed me in historic events and their direct implications on spatial layouts. Nisga'a buildings and their sites intertwine with oral and written history, explained then Laxgalts'ap Chief Councilor Alvin McKay: the distant and recent past are recalled in narratives, which are in turn represented in built form and landscape change. The narrative continues through the present, through community-led design, and into the future, as new structures and associated landscapes participate in history that had not yet been told. Nisga'a leader Alvin McKay demonstrated, during the architectural design process, how recent events added additional meanings to pre- and post-missionary architectural conventions, such as placement of entrances and the location of meeting spaces. He spoke of spatial concepts, drawn from pre-written and modern history, which surprised younger Nisga'a councilors and the design team.

About two years later, more oral history was offered, this time at the naming feast of Wilp Saytk'ilimgoothl Laxgalts'ap—the Place that Lives as One, the Laxgalts'ap Government
Offices. At this multi-generational feast, celebratory songs, speeches, and dances acknowledged the new building's role within the Nisga'a Nation's then-anticipated, re-recognized participation in modern Canada.

How would new and past technologies, ecological knowledge, and cultural narratives be stored in architectural works such as the one just completed, and in the landscapes that had been restored to the Nisga’a people? The search began with supplementing architectural experiences acquired via three projects in Laxgalts'ap with research experiences, documenting Nisga’a buildings and landscapes as found in written, pictorial, and oral histories. As the search progressed, uses, meanings, and technologies of landscape and architectural space were found to collate ideas that have developed since Native people have lived on the Pacific Northwest Coast—since time immemorial.

"Most Northwest Coast histories do not go back far enough [in time]", lamented legal historian Paul Tennant (2003). This research attempts to answer the challenge of reaching
back as far as time immemorial. Such an extended history requires processes that facilitate the gathering of materials dating back countless generations. This is made difficult by the fact that many traditional types of Nisga'a structures are no longer in evidence in the Nass Valley. To answer these challenges, empirical data-gathering entailed listening to peoples' memories of buildings, along with measuring, drawing, and otherwise becoming actively involved in collecting and translating architectural and landscape knowledge.

Chapter one outlines methodologies used, and particularly the emphasis here on elders' oral histories along with a wide cross-section of academic disciplines and many non-written archival sources. It explains methodologies that are guided by research protocols established by the Wilp Wilxo'oskwhl Nisga'a (WWN or Nisga'a House of Wisdom). The chapter also summarizes values underlying research processes, particularly those influenced by Linda Tuhiwai Smith's *Decolonizing Methodologies* (1999).

Chapter two returns to the author's recent work as architect in the Nass Valley village of Laxgalts'ap, since these experiences provided observations that led to research questions, provided the author's first opportunities to collate knowledge found within traditional structures, and provided an introduction to Nisga'a history. A brief history of Laxgalts'ap compares certain sounds heard at different times in village history—a kind of comparative sound portrait. Parallels between architectural production and audible culture in the form of songs and stories bring forward themes about the integration of landscape, architecture, and oral history.

Chapter three is an introductory overview of Nisga'a architectural history within the landscape context of the Nass Valley and the larger context of the Northwest Pacific Coast. Like an archeological excavation, this history is told in reverse, beginning with events from May 2003 (the Nisga'a highway road opening ceremony) and working back towards time before memory. Following the non-linear pattern of memory itself wherein long-term memories become stronger over a lifetime, the reversal of chronology also evokes the integration of past and present that is inherent in the Nisga'a and many other aboriginal peoples' worldviews (Turner, Ignace, and Ignace 2000: 1279). The overview uncovers correlations between oral history and archeological or geological research, contributing evidence that oral histories are more than memories coloured and altered by experience. The Nisga'a elders' memories are shown to be clear representations of landscape and cultural change and of the relationships between those changes.

Switching direction and scale, Chapter four proceeds forward in time and focuses into finer detail, retelling a history of materials used in buildings from earliest times. The relationship between materials knowledge and architectural design solutions is investigated.

Deep understanding of materials and landscapes contributes to the design of a diversity of buildings types that are constructed by the Nisga'a people. This wisdom is reconstructed in Chapter five. Unlike many chronologies of Northwest Coast architecture, this history avoids the misconception that Northwest Coast culture was relatively static before European contact (Ostrowitz 1999). Instead, the architecture demonstrates that Northwest Coastal and other Aboriginal achievements were progressing simultaneously with those in Europe and Asia.

Maps of places in the Nass Valley, and the relationships of places to the buildings, materials, and stories gathered in earlier chapters, comprise Chapter six. The chapter concludes with a brief history of the villages that would become co-governments under the Nisga'a treaty, and
investigates the patterns of land-use pattern and ownership that changed over the history of those villages.

Chapter seven applies what has been learned to architectural and landscape production beyond the Nass Valley. The concluding discussion returns to the design projects described in Chapter two, imagining how improved knowledge gleaned through the years of Ph.D. research would have influenced the design commissions. The final chapter also documents the Charrettes: the feedback given by elders to the original research of this document. Guided by elders' feedback, the chapter discusses the role of spaces in peoples' adaptability to gradual and cataclysmic change, the ecological and cultural knowledge stored within structures and their places in the landscape, community-led spatial decision-making, and the use of space to prompt memory recollection and to reinforce cultural cohesion.

1.2 Recording spatial memories

The memories of elders from the Nass Valley communities provided the most meaningful guidance and knowledge for this architectural and landscape history. Active involvement of people in the Nisga'a communities has been vital. For this document, many Nisga'a elders and friends have shared their knowledge, personal history, and understanding about buildings and the landscape, in the interests of teaching others about respect for the land.

Acknowledging the wisdom of the elders, and following the protocols set out by Wilp Wilxo'oskwhl Nisga'a, this research has elected to gather and use knowledge through Participatory Research. Evans, McDonald, and Nyce (2000) define Participatory Research Methods as "those that involve communities in research projects from the moment a project is conceived, to choosing what data is collected, to the drafting of results, through to deciding how the completed research is used. Such methods are intended to move the power inherent in the production of knowledge into the hands of the community. A number of potential benefits result from this, not the least of which is an informed and empowered community" (ibid: 2).

Research concepts, for this particular project, emerged in concert with Wilp Wilxo'oskwhl Nisga'a. After an introductory meeting with CEO and Professor Deanna Nyce in the fall of 2002, I submitted a detailed research outline for consideration by the WWN Board of Directors. The outline demonstrated how purpose, methodology, results, use, publications, and confidentiality would comply with protocols established by the Nass Valley communities. These protocols specified that all materials and research results would be disclosed to the WWN before publication, and that the WWN retains the right to comment on and revise the results. Further, since ownership of all research information resides with the Nisga'a people, all interview transcripts will be returned to the communities five years after completion (the information must remain in the author's control for five years, according to University of British Columbia regulations). Based on the submitted proposal, the WWN Board of Governors accepted the research in December of 2002, and recommended that Deanna Nyce become one of my four-person research committee. Processes of research were also reviewed in detail, and accepted, by the University of British Columbia Ethical Review Board.
About eight months later, in July 2003, I received a Nisga'a name, *Hla hii gum' Hloks*, Morning Sun. At a stone moving feast I became a member of the Killer Whale tribe or *Gisk'aast pdeek*, in a process called *sihlguuhlkws*. The responsibilities of *sihlguuhlkws* include helping out with feasts held by the Killer Whales, and participating in Nisga'a customs, celebrations, and beliefs. *Sihlguuhlkws* also reinforces the author's responsibilities to listen to Nass Valley elders, and respect their wishes about what is researched and how it is published. By receiving a name, I too became a participant in the research, and the research itself emerged from behind the barriers of academia to become "scholarship built on local knowledge" (Anderson and Nyce 1999: 290). When the research was nearly complete, my name was strengthened during the charrettes/ feast in Gitwinksihlkw.

"Participatory methods are also based on the premise that the product and the process of research must benefit the community" As part of returning the production of knowledge back to communities, it important to let people tell their own histories, in their own way. To this end, "participatory interviews" (Deanna Nyce pers. comm.) were used here: a conversational approach that left interviewees free to tell what they believe is important about the built and natural environment. The oral histories of Nisga'a historians decided which spaces would be documented in this research. Giving each interviewee jurisdiction over the buildings and landscapes discussed became an "arbiter of value (Schama 1995): the goal became to emphasize structures or innovations prioritized by Nisga'a historians. This approach was beneficial: more rather than less knowledge was gleaned. The elders did not avoid any topics I suggested, but rather elaborated upon my questions in often surprising ways, taking the conversation in unanticipated directions. Architecture and landscape had different significance for each elder, and the stories offered to explain the significance of buildings, gardens, or places contributed unexpected depth to this research.

For each interview, I came at a time that was selected by the storyteller/ historian, arranged in advance by telephone. The WWN generously provided me with the use of a telephone and contact numbers for Nisga'a citizens. My thirteen year-old son, who accompanied me on the interviews, used a video camera to tape most of the elders' histories, as long as the interviewee felt comfortable with video. (One interviewee preferred that we record using audio-tape only). The visual and audible record helped me to transcribe hard-to-understand words by cross-referencing the sounds of words with facial expression. Also, gestures were often a part of the elder's history: an elder would demonstrate the diameter of a log with circled arms or the size of a space by pointing to an object of a recognizable size or distance away. Some videotapes will be of future educational use, notably the "Longhouse as House of Learning" history provided by now-deceased leader Dr. Bert McKay.

Each interview provided some instruction in protocol or methodology as well as in history. From Dr. Bert McKay, for example, I learned not to interrupt an elder telling a story, and to be patient with the pauses and silences while a storyteller/ historian collected his or her thoughts before continuing. (Fortunately that was one of my first interviews! "I was getting to that", he admonished gently after I interjected a question during a silence part way through his discussion). Emma Nyce showed me how to listen too: on my second visit to her house, she arranged some small stools around her where I could sit close by, rather than sitting across the room on a sofa as I had on my first visit.

The interviews did not take place all in one field session. Rather, they occurred over a twelve month period, from March 2003 to March 2004, with one intensive summer of research part
way through the fieldwork. The extended fieldwork schedule was a useful way to gradually learn about the culture and to think about what I had learned before proceeding further. Returning to the Nass Valley after a few months of transcription also gave opportunities to revisit people and ideas. The early interviews and numerous visits between 1995 and 2002 prepared me for the intensive summer of 2003. Pre-fieldwork visits were instructive because I had time to decide where my son and I could live for the summer (in a cabin near New Aiyansh) and to consider what we might need to bring with us in the way of academic, interview, and other fieldwork materials (notably the four-volume *Ayuukhl Nisga'a*, drawing tablets, still camera, and video and audio tapes). The later interviews from fall 2003 to spring 2004 filled in gaps in my knowledge and understanding.

Because my fieldwork was comprised of numerous "sessions", I was able to attend a range of traditional feasts including celebrations of weddings, a fiftieth anniversary, the Gingolxlaxgalts'ap road opening, Dr. McKay's funeral, and several stone moving and naming feasts. Several of the feast proceedings became enormously important to this Ph.D. work. Speeches were often about history and about landscapes. Attending a feast was a lesson in the spaces people occupied and in the social uses of space. The intertwining of food and wisdom became a practice for my son and I, rather than an abstract idea. From my feast experiences, I began to see how to structure the charrettes of this research. Fellow guests at the feast would give us helpful hints about social expectations and customs, thereby helping me to learn the manners expected of people working in the communities. The information was always offered without criticism: "My grandmother taught me to stay until the end of a feast" was a guideline rather than an instruction. Sometimes I was unexpectedly asked to help with a task, such as playing the organ at a wedding. I was then compensated for my time out of the Common Bowl, and so experienced the generosity of a feast-giving culture. "Learning by doing" (Deanna Nyce pers. comm.), the foundation of Nisga'a education, informed my research as much as learning by reading, writing, and interviewing.

The research undertaken in the Nass Valley follows closely the values outlined in Linda Tuhiwai Smith's *Decolonizing Methodologies* (1999). Particularly influential here is Smith's exhortation that research must give back to indigenous communities the knowledge that has been taken, submerged, or partially erased (Smith 1999). Returning knowledge is the antithesis of knowledge-taking research practices that had sometimes been used after 1885, when researchers and collectors became interested in British Columbian northern cultures. Removal of Native peoples' land, culture, and resources became common practice—a practice this research strives to reverse. An example of research practices not acceptable to this research was observed by anthropologist Franz Boas, who in 1930 attended a feast in Fort Rupert. "The host chief, Boas wrote, made a speech while the meat was distributed: 'This bowl, in the shape of a bear, is for you and you, and so on; for each group a bowl.' Boas had heard a similar speech forty-five years earlier. 'But the bowls are no longer there', he later wrote in his diary. 'They are in the museums in New York and Berlin'" ((NTC 1998: 5). The researchers who had come before Boas had been offered sustenance from the community, and left not only with full bellies but also with the table service. Taking more than being offered, acting with manners unacceptable to host peoples, and being secretive or subversive about what was taken, were frequent transgressions of University-based researchers.
Learning the manners of the feast of knowledge to which I had been invited meant giving much of the power concerning who would be interviewed, what knowledge was gathered, and how knowledge would be used, to my "hosts"—in particular the WWN and members of the Nisga'a Council of Elders. All continued to support and guide this research through to the final presentation at a feast in Gitwinksihlkw, when elder Horace Stevens thanked me for "the wonderful day I had chosen to become one of us" (Gitwinksihlkw Charrettes 2004). The success of participatory research and of working with the communities in equal partnership rather than as researcher and subjects (Anderson and Nyce 1999) was thereby acknowledged.

If research belongs to a First Nation, then the scholarship methods must be based on the principles and practices of the Nation (ibid). Pedagogical traditions of the Nass Valley, I learned, involve listening to diverse voices from within the Nisga'a community while emphasizing the testimony of elders whose cultural knowledge is particularly respected. To accommodate people from the complex Nisga'a social/landholding systems, people from all four crests—Gisk'aast (Killerwhale), Ganada (Raven), Laxsgiik (Eagle), and Laxgibuu (Wolf)—and all four villages—Gingolx, Laxgalts'ap, Gitwinksihlkw, and New Aiyansh—contributed to the interviews (table 1). In this selection process, the guide has been the four-volume Ayuukhl Nisga'a (cultural law of the Nisga'a) (WWN 2001), the recently published collective history of the Nisga'a. There are differences however. The Ayuukhl Nisga'a arranges orally delivered narratives into the four crest groups with the explanation "the tribal clan system provides the basic foundation for both the social organization and the system of property ownership of our people. In other words, the tribal clan system defines the two most fundamental kinds of relationships of the Nisga'a: the relationships between people, and the relationships between people and the land" (Ayuukhl Nisga'a II: v). Table one demonstrates how the four clans, and all four modern Nisga'a villages, contribute to the research. This Ph.D. document also emphasizes the four crests, but generally arranges narratives according to time frame or scale, since the present research is about history (time) and spaces (scale).

Pedagogical traditions of communities must also be articulated. In Nisga'a tradition, the highest teachers are chiefs and matriarchs, particularly those who have lived in the traditional territory for much of their lives (Ben Stewart pers. comm.). These men and women are among those entrusted with the communication of cultural information to future generations, and are recognized in the Nisga'a community as cultural leaders as well as teachers. In this research, I asked Deanna Nyce to help me define who in the communities was a guardian of knowledge, and specifically of knowledge about buildings, landscapes, and their histories. Deanna's recommended interviewees were supplemented with people I had met while working on architectural projects in the Nass Valley. Community leaders from the Village and Lisims (central Nisga'a) Governments suggested additional contacts, including some young people (non-elders) in the four Lisims communities who possess particular knowledge that has been shared with them by elders. Because about half of the Nisga'a people in British Columbia live in urban centers away from the Nass Valley, Nisga'a cultural leaders in the urban centers also contributed knowledge about their personal or family histories. The goal was to include stories from many backgrounds, to perceive the diversity within a culture as well as the practices and knowledge that are shared.
Table 1 HISTORIANS PARTICIPATING IN RESEARCH

The letters after each person's name indicate his or her crest: KW=Killer Whale, E=Eagle, F/R=Frog/ Raven, W=Wolf. Name spellings graciously provided by Allison Nyce, Manager of Ayuukhl Nisga'a.

<table>
<thead>
<tr>
<th>Gingolx</th>
<th>Laxgalts'ap</th>
<th>Gitwinksihlkw</th>
<th>New Aiyansh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nelson Clayton</td>
<td>Charlie Swanson F/R</td>
<td>Allison Nyce KW</td>
<td>Nita Morven F/R</td>
</tr>
<tr>
<td>W</td>
<td>Sim'oogit Hay'maas</td>
<td>Sigidimnak'</td>
<td>Sigidimnak' Ksim</td>
</tr>
<tr>
<td>Sim'oogit</td>
<td></td>
<td>Goypax wil</td>
<td>Sook'</td>
</tr>
<tr>
<td>Hlabikskw</td>
<td></td>
<td>ginadahl hloks</td>
<td></td>
</tr>
<tr>
<td>Katherine</td>
<td>Jacob McKay E</td>
<td>Harry Nyce E</td>
<td>Hubert Macmillan W</td>
</tr>
<tr>
<td>Clayton W</td>
<td>Sim'oogit Bayt Ñeekhl</td>
<td>Sim'oogit</td>
<td>Sim'oogit Ksdiyaawak</td>
</tr>
<tr>
<td>Sigidimnak'</td>
<td></td>
<td>Sagaw'een</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Emma Nyce E</td>
<td>Joe Gosnell E</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sigidimnak' Hlgu</td>
<td>Sim'oogit Hleek</td>
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<tr>
<td></td>
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<td>wilksihlgum</td>
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<td></td>
<td></td>
<td>Maaskgum Hlbin</td>
<td></td>
</tr>
<tr>
<td>Grace Nelson E</td>
<td>Horace Stevens F/R</td>
<td>Lawrence Adams K.W</td>
<td>Herbert Morven W</td>
</tr>
<tr>
<td>Sigidimnak'</td>
<td>Sim'oogit Ni'isjoohl</td>
<td>Sim'oogit Axdioon Akshl</td>
<td>Sim'oogit K'eeexkw</td>
</tr>
<tr>
<td>Axdii Kiiskw</td>
<td></td>
<td>Hlyoon</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charles Alexander F/R</td>
<td>Deanna Nyce K/W Sigidimnak'</td>
<td>Rod Robinson E</td>
</tr>
<tr>
<td></td>
<td>Sim'oogit Gadim</td>
<td>Gyaks Sgihl</td>
<td>Sim'oogit Minee'eskw</td>
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<tr>
<td></td>
<td>Galdoo'o</td>
<td>Anluuhl Kwhl</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Psda'y</td>
<td></td>
</tr>
<tr>
<td>Robert Stanley</td>
<td>Mildred Stevens W</td>
<td>Jacob Nyce W</td>
<td>Alver Tait E</td>
</tr>
<tr>
<td>KW Sim'oogit</td>
<td>Sigidimnak'</td>
<td>Sim'oogit Baxk'ap</td>
<td>Sim'oogit Gadee'lip</td>
</tr>
<tr>
<td></td>
<td>Amt'ugwax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>George Nelson</td>
<td>Alice Azak E</td>
<td></td>
<td>Ivan Mercer KW</td>
</tr>
<tr>
<td>E Sim'oogit</td>
<td>Sigidimnak'</td>
<td></td>
<td>Sim'oogit</td>
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<tr>
<td>Bahlykw</td>
<td>Mahlhaas</td>
<td></td>
<td>Wii Seeks</td>
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<tr>
<td>Xsgaak</td>
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</tr>
</tbody>
</table>

Since men and women each protect and communicate distinct aspects of cultural life (Smith 1999), it is crucial to include people of both genders. Spatial knowledge can be particularly
gender-distinctive (ibid). This research therefore tries to balance the number of men and women who contribute their knowledge.

Importantly, before using the interviews, written consent was obtained from the individual. Several Nisga'a elders were surprised to see the forms. Alice Azak commented that of the many interviewers who had come to talk with her I was the only one who had brought a consent form (interview 2003). Even after consent was obtained for this research, the knowledge has been used with care, respecting the providers’ wishes. In all cases, ownership of stories has been carefully designated.

Another attribute of both decolonizing and participatory research is that the results are intended to be useful (Smith 1999). To this end, “Nisga’a Architecture and Landscapes” is written so that all or portions of the research may be added to teaching materials used by School District 92 and the WWN. The document is also available as a resource for future design and construction, since history often provides insights into solutions for future needs. “Coming to know the past has become part of the critical pedagogy of decolonization. To hold alternative histories is to hold alternative knowledges. The pedagogical implication of this access to alternative knowledges is that they can form the basis of alternative ways of doing things” (Smith 1999: 34).

The search for architectural histories extended beyond conversations with elders, to include other forms of orally conveyed knowledge. Carvings, paintings, dances, and ceremonies were studied to find within them conceptions of space that both include and transcend what is usually classified as architectural space. Arrangements of villages, gardens, performances, artworks, food gathering areas, buildings, and spaces surrounding and within buildings all constitute this wider definition of space. This method recognizes that diverse modes of cultural production were used collectively to record clan or family stories and convey cosmological ideas (NTC 1998).

1.3 Measuring and construction documentation of structures

Architectural traditions that are still in evidence provide another body of historic evidence. With permission of building owners, I measured, drew, and photographed a variety of above-ground buildings and associated landscapes, particularly a cookhouse at Fishery Bay that was built much like a traditional longhouse, a smokehouse, and a ganee’e or oolichan drying rack (three-poled racks for preserving oolichan, the smelt-like fish that were a key to the rich Lisims economy). Also very useful was a video camera, which enabled me to record the way buildings were being used. Still camera photographs documented many buildings and landscapes. As with interviews, I documented buildings and landscapes that the elders indicated were of importance, as well as some that I discovered during my many stays in the Nass Valley area.

1.4 Visual and textual records

Before modeling or drawing buildings and landscapes, I supplemented oral history and measured drawings with research from other sources—paintings, photographs, artifacts, and descriptions found within archives or museums. Many of these histories are coloured by values that may be obscured; analytical processes therefore draw attention to preconceptions hidden within. For example, most photographs, landscape paintings, and written records used in this document were produced in the eighteenth, nineteenth, and twentieth centuries, a
period when "Western Science" prescribed specific modes of seeing and doing. The mostly non-Nisga'a observers and producers play an active role in the nature of information gathered.

Post-missionary photographs, landscape paintings, maps, and treatises, however, were not free of the artists', writers', or cartographers' values. Early nineteenth century depictions of the Nass Valley often feature non-Native, boats, buildings, and people. One reason may be the intended audience for commercial photographs and paintings. The mostly Victoria-based artists (notably Richard Maynard and Frederick Dally) had an audience in the people who wanted the "colonies" (as the Canadian West was known) to appear "progressive"—Westernized. In the following example (fig. 1b), early visual depictions of the Nass Valley may possibly have been structured so as to soften the frightening impression of wilderness: "The glories of the landscape might be appreciated by viewers in Europe, but those who know the hardships of life in the British Columbia Wilderness were more anxious to show the civilization that had been brought to it" (Jackson 1989: 21 and 23). The critics may also be wrong about the meaning in the photographs. It is possible that artist Barbara Lindley Crease painted "View from the Rocks" showing a woman on her way to the church in Fishery Bay, stopping to admire the orderly arrangement of oolichan racks and the matchless Nass Valley scenery. Perhaps the artist was painting a picture that accurately reflected the integration of cultural strengths that characterizes the people of the Nass and many other Northwest Coastal peoples.

Fig. 1b. "View from the Rocks Behind Naas [sic] River showing woman with a parasol". Painting by Barbara Lindley Crease, August 1880. Courtesy British Columbia Archives.
Along with integrating materials from Aboriginal and non-Aboriginal sources, this research brings together ideas and processes from diverse academic disciplines. Selected natural and agricultural sciences (ecology, physics, botany, ethno-botany, and landscape architecture), applied sciences (engineering and architecture), and humanities (geography and fine arts) each function within the overall project of decoding Nisga'a oral histories. For example, observing changes in the landscape is facilitated by GIS (Geographic Information Systems) technologies, while observing changes in architectural production employs elder-led critiques of architectural drawing and three-dimensional modeling. Combining disciplines, and resolving different languages of thought, is a key methodology of this work.

1.5 Translation into drawings, models and GIS

These three compilations of empirical research—interviews, measuring, and archival searches—were then translated from words and gestures into architectural drawings and models, and into GIS. The processes of translation are iterative and similar to strategies used in design: listening, changing ideas into drawings and models, adding research from other sources, and reviewing modeled results with those who first re-imagined the spaces.

Scale was generally established by comparison: for example, people would describe a space as larger or with greater volume than the one they were in at the time of the interview. Sometimes elders would use gestures to show the size of a building component, particularly the circumference of poles which was shown by a circle of the arms. Several men involved in construction or woodworking specified dimensions.

Detailing was more difficult, particularly finding out about how building components had been tied together. Only one interviewee, Jacob McKay, used sketches to explain his memories and the ideas his grandparents had explained to him.

To reconstruct the buildings and detail described by elders, a variety of representations were used. Perspective sketches that show the exterior of buildings within their context were sometimes the easiest way to demonstrate relationships between landscape and built form. More complex buildings were built up gradually from a structural framework, and then details and cladding added as though reconstructing the building on paper. The most complex structure, the longhouse, was gradually drawn in plan, section, elevation, site plan, structural diagram, and details. Since none of the drawings on its own expressed the complexity of the longhouse, a model was used to explain relationships among the orthogonal drawings (drawings set at right angles to one another, such as floor plan—an imaginary horizontal slice through a building looking down at the floor, or a section—an imaginary vertical slice through a building, usually parallel to a wall and perpendicular to the floor, and elevations—drawings of the faces of a building, projected on a plane perpendicular to the floor). Other buildings were also shown orthogonally, using plans, sections, and elevations, most often at a scale on one-quarter inch per foot.

Landscape histories were shown primarily as new, heads-up digitized map layers within a Geographic Information System. (Heads-up digitizing is adding features by measuring their position on a pre-existing map layer, such as one showing rivers or landscape contours). The new information came from photographs, archival maps, archival notes, and from stories that...
told of adjacencies or distances between places. Pre-existing layers were obtained from Nisga’a Lisims Government, under a data sharing agreement that permitted their use for this research only. Perspective drawings of buildings and photographs of places were "hot-linked" to places identified on the new GIS layers: that is, the representative sketch was shown adjacent to the place, so that working within a GIS program I could click on the place and the images would appear. In this way the link between representations of landscape and the buildings belonging to that landscape was reinforced.

1.6 The Charette: verifying spatial histories

After drawings and models had been completed, the final stage of empirical or field research involved asking the elders to review architectural and landscape representations, utilizing an interactive discussion of models and drawings—the charrette. I invited interviewees and other elders to a pre-dinner gathering. Then, in the Nisga’a feast tradition, I sent an open invitation to people of the four Nass Valley communities to attend dinner and charrettes. To both groups, I presented reconstructions of buildings and landscapes, and received feedback from the people in attendance. Through charrettes, the elders and author verified Nisga’a architecture, both as reflections about social structure and as buildable entities.

"Charrette" has been defined by Professor Patrick Condon as "a time-limited exchange of design ideas among people of diverse expertise to resolve common principles" (pers. comm.). A branch of the American Institute of Architecture adds that the term derives from "en charrette, a French term referring to the old École de Beaux Arts, where at the deadline of a design problem, a cart (or charrette) would roll down the studios to pick up the grand renderings of the students. Of course, there never was enough time to do render everything that needed to be drawn, and students would actually be drawing on the carts as they moved, en charrette, taking every last minute available to finish their work" (San Antonio AIA Public Studio Library 2004). In the case of this research, cultural histories acquired through oral, visual, and written records were reconstructed in models and sketches to reconstruct remembered knowledge, and then presented back to the communities during an appreciation dinner. An interactive dialogue about the form and use of spaces used models and drawings as catalysts. This is a process frequently used by the author for community design projects, as a way to make peoples’ images of space match what was finally designed, and to derive practical and sustainable development solutions that are supported by the community.
CHAPTER TWO: No longer silent: architectural experiences in Laxgalts’ap

2.1 Introduction

History is first recalled here only as a fragment of oral history, remembered by the author. Only recollections exist of Dr. Frank Calder’s keynote address, which was neither audio-recorded nor written down: a two-hour history of the Nisga’a people, delivered October 6, 1998 just before the four modern Nisga’a villages voted to ratify the treaty that would verify ownership of Nass Valley lands. On this occasion, the naming feast of Laxgalts’ap Village Government Offices, Dr. Calder related his grandfather’s memory from the late nineteenth century. Dr. Calder told about one sunny afternoon when Nisga’a people were gathered on the banks of Old Aiyansh. They saw eight people across the river, setting up tents and tripods. A Nisga’a contingent poled over in canoes to ask what was going on. The visitors replied, "We’re surveyors, looking to set a boundary line, and when we’re finished we’re going to come to you and tell you that the Queen is going to give you some of this land." The next morning several canoes returned to the surveyors’ camp. This time the Nisga’a people were armed with Hudson Bay muskets. "Get off our land," they told the surveyors. Some fifty years after the first surveyors left, the Nisga’a were allotted only seventy-six square kilometers of their homeland—and they did not own the land. In 1920 the Canadian Government decreed that British Columbian First Nations children must go to residential school, usually far away from home. The village fell silent (remembered speech 1998; also partially retold Calder 2003).

As Dr. Calder continued his speech, now in the Nisga’a language, the imagined silence of a village without children contrasted vividly with the music- and dance-filled celebrations all present had just witnessed: celebrations that brought together all generations, two religious traditions, and worldviews of a building as a named participant in village life. I imagined the silence of a village without children. The contrast between the not-too-distant past—a silent village—and the exceptional four-part a capella harmonies of the villagers’ singing that day, appeared to parallel the contrast between a view of buildings as boards/poly/drywall assemblages, and one of the new building which was being welcomed as a living, named entity within a dynamic political/cultural landscape.

Laxgalts’ap, which approximately translates to “village on village”, was reconstructed as an Anglican Church mission in 1864 (Inglis, Hudson, et al 1990) on the site of a Nisga’a community that has been traced back to about 5500 years B.P. (Cybulski 1992). Like other villages built by the Nisga’a along Lisims, or the Nass River, the original village structures were built according to an ancient code of knowledge and laws—the Ayuukhl Nisga’a (AN) (Nisga’a Tribal Council 1993). The Code, which existed to save lives and inhabitants and to maximize safety, was also a dictum of human behavior (Deanna Nyce pers. comm.). Within the Ayuuk are stories wherein the Creator directed houses to be constructed from poles, beams, and joists. The prescribed structural form followed the example of the first four lodges that represented the four crests of Nisga’a society (ibid). With their wooden skeletons, and cladding that could be removed in summer, structures based on the ancient oral code were seen as both living beings, and subsets of the world and its patterns (Nisga’a Tribal Council 1998). "The Nisga’a considered the world to be like a huge box—containing all the souls of the universe...The lineage or family group—a collectivity of souls—was contained in a house constructed like a box" (ibid: 32). The house/box also became a record of the family stories, the clan the family belonged to, and the animals or symbols of nature that...
taught the family how to survive (Eli Gosnell: introduction to AN II). A system of four clans—Gisk'aast (killerwhale), Ganada (Raven), Laxsgiik (eagle), and Laxgibuu (Wolf)—represented both the beginnings of each lineage and anchor Nisga'a society: "The tribal clan system provides the basic foundation for both the social organization and the system of property ownership of our people. In other words, the tribal clan system defines the two most fundamental relationships of the Nisga'a: the relationships between people, and the relationships between people and the land" (ibid). The system also is part of survival and of preservation and sharing of resources (Deanna Nyce pers. comm.). The painted fronts and decorated poles of houses depicted each clan's crest-related animal spirits, and their activities as they taught Nisga'a people what foods to eat, how to use plants, and guided people on their journeys. In doing so, the houses represented the relationship between people and the land.

Fig. 2. Poles and houses in Gitlaxt'aamiks before the flood of 1917. The poles in front of the house in the foreground depict the crests and family stories of the lineage (Wilp) living in the house. The fences in the background were used to keep the horses in (Alice Azak pers. comm.). Photograph from NTC 1998: 27; also at Canadian Museum of Civilization 70687, who record that the photo was loaned to Barbeau by C.F. and W.A. Newcombe.

Then, during the nineteenth and twentieth centuries, governments attempted to silence Northwest Coastal First Peoples' cultures in at least three ways. Song- and story-filled feasts and ceremonies were outlawed, children's voices were displaced from villages, and the retelling of stories was hampered as story-keeping artifacts were sent to museums.

2.2 Displaced cultural/ ecological systems: Silenced Feasts and the Indian Act of 1884 to 1952

In a particularly dark period in British Columbian history, traditional houses of Nass Valley villages were largely dismantled after households and lineages were devastated by epidemics
of smallpox (first documented in the Lower Nass Valley Dec. 4, 1836 and again in 1862-3) (Boyd 1990, Stephenson et al 1995: 15-17). Despite the continued resistance of Nisga'a landowners, British Columbian and Canadian Governments assumed ownership of the Nass Valley, without a treaty to recognize the transaction. In 1881 Lands Commissioner Peter O'Reilly visited the Nass Valley and decided that several tiny reservations would be carved out of the Nass Valley for the Nisga'a people. The Nisga'a refused to have any part of the reservation system, and what we now know as the British Columbian Land Question was born in that region (Calder 2003). Meanwhile the Canadian Government enacted the Indian Act of 1880. Under the Act and successive amendments, laws were passed that denied Nisga'a citizens a franchise (1880), deposed hereditary chiefs (1880), incarcerated Nisga'a and other First Peoples for playing music at feasts (1884), and made it illegal for First Peoples to hire a lawyer and petition for land claims (1927). Nisga'a and other Northwest Coast Native peoples' voices had been politically, culturally, and legally silenced—or so thought the federal and provincial governments and lawmakers.

Despite these "black spots on Canadian history" (Richardson 2003), the Nisga'a people were not silenced. They continued to assert their time-immemorial occupation of the Nass Valley (Berger 2003). Pursuing the issue of land title, Chief Mountain and his fellow Nisga'a delegates paddled in canoes in 1881, all the way from the Nass River to Victoria. (It is interesting that his family, the later Mountain Chiefs Harry Nyce and Joseph Gosnell, went on to see the ideas through to fruition well over a century later!) (Deanna Nyce pers. comm.). In 1881 Chief Mountain and his colleagues were turned away on the steps of parliament (Tennant 1995). A chance to be heard finally came at the five-day hearings of October 1887. Chief Charles Russ spoke of the Nisga'a peoples' willingness to share land and resources, and to accept the authority of the British, Canadian, and B.C. governments: however, he asked that the Commissioners be consistent with the laws of those same governments. "If you ask the Hydahs, Alaskas, Stickeens, Bella Bellas, and Fort Ruperts, they will tell you that all this country is the Naas people's land, and we don't know when any change was made, or when it was taken from us. But now it is called 'reserve' we want the word 'treaty' with it" (Russ 1887 in Tennant 1995: 60). Russ also spoke of the Nisga'a way of life that made survival impossible on the tiny reserves: "We don't live all in one place, but have to scatter all over the country to make a living. We want food, salmon, berries, animals for food and furs, timber for houses, canoes and boxes, bark for mats" (ibid). The Nisga'a people knew that their architectural and landscape traditions were threatened by the reservation system, and in particular by the incredibly small size of reservations in British Columbia, compared to those found elsewhere in North America (Harris 2002).

At the end of the hearings, eleven Nisga'a chiefs supplied a written statement that reiterated their spiritual connection to the land, their equality under God and the law, and their commitment to Aboriginal title as verified within the oral history. "The land was given to our forefathers by the great God above, who made both white man and the Indian, and our forefathers handed it down and we have not given it to anyone. It is still ours, and will be ours until we sign a strong paper to give part of it to the Queen" (British Columbia 1888).

Nisga'a delegations continued to be put forward, but the governments seemed not to hear the words. Even London lawyers Fox and Pearce's carefully worded Nisga'a petition of 1913, seeking intervention of the British Crown against the Canadian Government's appropriation of land without a treaty, was met with silence.
Meanwhile, feasts continued in the Nass Valley, during which funds were raised for legal and travel expenses. The people built community structures by donating their time and money—known as public works—so that the feasts would have a venue, now that the great houses structures in Nass Valley had been dismantled. Indeed, despite threat of incarceration under Canadian law, the gift-giving feasts had to continue, since they formed a record of land transactions and were vital assertions of land title (Bert McKay in "as Long as the Rivers Flow" 1992). "The gift-giving feast that anchored tribal society... [formed,] in essence, the seat of government for the Nisga'a and other west coast tribes" (Calder in NTC 1993: 10).

Among many deprivations enforced by the Indian Act, music at feasts was banned. Songs and dances that formed an intrinsic part of the ancestral prerogative to transfer land ownership (Kolstee 1982) were deemed strictly illegal. Indian Agents, appointed by the Canadian Government, prosecuted feast performers. Two months in jail was the minimum punishment (Sewid-Smith 1979, Raunet 1996). The Nisga'a, and other Northwest Coast Nations, were forced to be secretive about their uses of traditional music to confer property and title, and about their use of feasts as times to raise funds for land-claims. The "silent feast" was not so much silent as furtively musical: people would set sound traps, such as tin cans with string attached, that would vibrate in warning when someone approached (Gallagher, pers. comm.).

Many songs were forgotten. The threat of six months in jail may have kept the songs from being passed on through generations but change in lifestyle was a major contributor:

*The only thing I am so sad about is the songs they teach us. I was so busy looking after my children in [Prince] Rupert...songs are one thing I forgot. And they are not recorded. They have songs in Aiyansh too. Rod Robinson used to say that he can't remember the songs. All the work I was doing while my children were growing up, I forgot about the songs. But the carvings on the poles keep the stories alive. Whenever the pole is going up anywhere, you have to be there to listen to the story that is told at the pole-raising* (Emma Nyce 2003).

The loss of knowledge in songs was somewhat mitigated by the cultural wisdom still retained within carved architectural details. Structures of wood were a less ephemeral form of cultural production than music, and became a key to "keep[ing] the stories alive" (ibid).

### 2.3 Displacement of children's voices

*The best change for today is education. Our young generation has the best schools to attend. They are no longer sent away at an early age—not until they enter college or university.*

Grace Azak, in Neel 1992: 36

The second silence was heard across British Columbia, where, in 1920, the Canadian Government legislated compulsory attendance of First Nations children in residential schools (Nisga'a Tribal Council 2001). The silence of the villages after the children's departure is etched in oral histories, such as in Dr. Calder's afore-referenced keynote address (1998). Far
from home, the children too were silenced: they were often punished for speaking or singing in their own language (Joseph 1991, Lucy Williams in Neel 1992, Neel 1992). At residential school, remembers one former student, "You don't talk before the bell rings and you don't talk after the bell rings either" (Whitehead 1984). Infractions of the code of silence were punished with physical pain or deprivation (ibid, Neel 1992). Sim'oogit Sagaween (Chief Harry Nyce) added that the structure of residential school in Edmonton was based on a military model, which was excessively strict and often unpleasant (pers. comm.)

In contrast, pre-contact education delivered knowledge audibly, through stories and songs. The oral delivery was sometimes musical: "...children, you should gather them together and tell them...what our elders used to tell us...That is what they used to sing in the early days. They used to sing about everything" (Alfred, in Neel 1992). The tradition of singing remains strong. An example from the present is Deanna Nyce's song "I love my jijii (Grandmother) and my jijii loves me" was expanded by grand-daughter Star to include ye'e (grandfather) and other family members: Nisga'a words and family cohesiveness are still taught through the medium of song (Deanna Nyce pers. comm.). The physical settings for the song-filled lessons are the landscape and villages, where family members responsible for education, mostly maternal aunts and uncles (McKay and McKay 1987), share knowledge accumulated over generations.

The setting and the sound of education changed in the late 1870's, when Christian missionaries formalized education in the Nass Valley. Lessons moved to the living room or basement of the mission house. English lessons replaced learning in Nisga'a, and teacher centered lessons stressed "visual/auditory comparisons to written materials" (McKay and McKay 1987:67). After 1920, a few children stayed home in the Nass Valley villages, but their formal education in the one-room schoolhouse only reached Grade six level (McKay and McKay 1987, Azak in Neel 1992, Swanson in Neel 1992). The majority of Nisga'a children, living in residential schools as far away as Edmonton, experienced a school system managed and administered by agencies from outside the Nass Valley. The residential school system, by its enforcement of an alien way of life and absence of vocational and academic counseling, failed to encourage students to pursue high school or post-secondary education (McKay and McKay 1987).

School district #92 (Nisga'a) was born from the Nass Valley people's rejection of one hundred years of mis-education. Under the leadership of Alvin and Bert McKay, new schools were built in the Nass Valley, to house a bilingual-bicultural education system. Nisga'a language and songs rejoined the soundscape within school buildings that were technologically advanced, yet reflective of longhouse traditions in their cedar cladding and sloping roofs. Among the best-attended events at Nisga'a school are the concerts. (Even before the school system was reborn in the Nass Valley, the Anglican Church Women's Home League would sponsor concerts that attracted many people from Nisga'a communities) (Deanna Nyce pers. comm.).

Culturally aware architectural solutions and a modern/ traditional soundscape followed for both the older students and the very young. In 1993 the Nisga'a House of Learning Wilp Wilxo'oskwhl Nisga'a (WWN) offered Bachelor degrees along with academic assistance for
Masters and Doctoral students (Hak’ak’a’a 2002). In 1999, the newly built Laxgalts’ap Daycare Center opened (fig. 3), one of several Nass Valley daycare facilities that now extend the offer of Nisga’a language and culture to preschool citizens.

Fig. 3 Laxgalts’ap Daycare Center with child-sized crest pole and canoe. Architecture and photograph by the author.

2.4 Displacement of history-telling artistry

The priest that was working against the totem poles and the potlatch was J.B. McCullough, up by Old Aiyansh...He didn't consult with the people before he arranged for the totem poles to be taken out of the Nass River area. He did that behind the people's back—the whole Nass River...They cut them down, took them down the river—that's why you don't see any totem poles.

Chief Charlie (James) Swanson, quoted in Neel 1992: 90

A third cultural silence occurred when representative architectural components, along with songs and stories, were removed from Nass Valley villages. Some people attempted to save their carvings by burying them in the structural fabric of buildings. When used as foundations, as structural beams, or as part of a fence, the pts’aan (carved pole) were less likely to be taken downriver and shipped to museums (figs. 4 and 5) (Joe Gosnell pers. comm., Emma Nyce pers. comm.)
Ethnographer and ethnomusicologist Marius Barbeau, misunderstanding the resilience of the Nisga’a, recorded both the music (using gramophone and hand-written score) and the architecture (in photography), fearing them to be the works of "a vanishing race" (Barbeau 1957: 2). Much other anthropological collecting was, however, closer to piracy than scholarship: "The scramble for aboriginal artifacts went on until it seemed that everything that was not nailed down or hidden was gone" (NTC 1998: 7). New York, Berlin, Ottawa, Chicago, and Victoria—all filled their burgeoning museums with artifacts from the Northwest Coast (ibid).
The artifacts, tapes, and musical scores later became silent teachers, alongside orally conveyed wisdom that still resided with village elders. Some carvings and ancestral remains are now gradually being returned to First Nations villages across British Columbia (Union of B.C. Indian Chiefs 1998) as foundations for material well-being and cultural strength.

2.5 Architecture as lived history

When first designing for this then-remote community, I was immediately aware only of the latter silencing: the rich display of totem poles and paintings evidenced in early photographs of Nass Valley villages were no longer present. Planner Zeno Krekic admonished, "Do not look for architectural solutions in museums and books, since most (except those published by the Nisga'a Tribal Council) represent the removal of culture from the village." Instead, I listened to the elders and other members of the village Council. Slowly, architectural solutions evolved under community direction.

Early in the process, I saw some interesting three-poled structures in the yards of some Laxgalts'ap houses. Wondering about their origins, I consulted the British Columbia archives and found, in photographs from the 1880's, three-poled structures nearly identical with the ones present in the village. The photographs that follow, one from 1884 and one from 1990 (figs.6 and 7), demonstrate constancy of form across generations. Over a space of more than one hundred years, the design and use of triangular racks had changed little.

Fig. 6. 1887 photograph of oolichan drying racks (called ganee'e in Nisga'a) courtesy B.C. Archives.
Even though longhouses and totem poles were no longer present in the valley, the persisting form of the ganee'e evidenced longevity of Nisga'a architectural ideas. The three-poled racks also had significance in the British Columbian treaty process: it was during oolichan season that the Nisga'a people gathered with other Northwest Coastal peoples, to pursue their claim that Aboriginal title to land had never been extinguished (Canadian Museum of Civilization display by Allison Nyce, anthropologist). In fact, throughout the long history of First Peoples on the British Columbian coast, oolichan were a key to survival: as the first fish to arrive in the Nass River after the long winter, Nisga'a and other Northwest Coastal nations relied upon them to prevent starvation (Drake and Wilson, n.d.).

The oolichan is a resource that is unique to this area. The Nisga'a really were the central figures for the oolichan fishing. Even though they do have it in some of our neighbouring groups, this was the largest gathering site, traditionally. We had up to five thousand people who would gather at Fishery Bay each year to trade and to fish for the oolichan. In that, it was a sort of a forum for everybody, all Nations, it was a forum. And so when contact was made and then there was starting to be an encroachment on the land, this became the forum for the discussion of the land claim, the oolichan time, because it was the one time when everybody would be together. And so it provided that opportunity. And so it was at the time of the oolichan that they had their meetings about the land to decide what to do: what are your people going to do, what are the Haida going to do, what are the Gitksan going to do. And so it was the time for the Nisga'a to meet as well. And that was when it was decided that we were going to have one claim, for all the families; not that each family would be
separate, but they would be all together. That was the Common Bowl idea because of the oolichan, which is a common resource. You cannot deny that resource to anybody. The resource is shared—that’s the whole concept of sharing. That was around the late 1800's. We had the petition in 1913, but they started working on it, I think it was 1897. There was an actual meeting of all of the chiefs of the Nass Valley, and quite a discussion on what to do, what could we do. There was a meeting towards Greenville of all of the chiefs, and they all placed their name in a bowl, saying okay, "I submit my name and my title to this land for this claim". It was a unanimous decision, to move forward (Allison Nyce Interview 2003).

The oolichan drying structure (ganee'e) became my starting point, an architectural symbol of cultural resilience generally, and specifically of the Nisga’a effort to regain land that had been taken away without a treaty. In early design sketches, I imagined sets of parallel poles that abstracted those of oolichan drying racks (fig. 8).

Fig. 8 A comparison between the 1887 photograph of ganee'e and 1996 construction photograph of Laxgalts'ap Village Government Offices. The office structure is intended to symbolically recall the importance of the ganee'e in Nisga’a ancient and modern culture. The totem pole can be seen in the distance on the axis defined by the row of paired poles (photograph on the right). Photograph at left courtesy B.C. Archives (C-07435), photograph at right by Nancy Mackin.
The paired poles formed an extended entry sequence facing the main roadway and bridge into Laxgalts'ap. For Sim'oogit Alvin McKay, the processional pathway defined by the poles suggested a modern-day meaning that outweighed all other spatial references. He explained that the entry sequence had to begin with the totem pole, since it was the first to be constructed in the village in over one hundred years. The Pts'aan had to face the entrance, or pdo'o, so each person coming to the new building would remember the attempted erosion of Nisga'a culture, and the resilience that led to a cultural renaissance. The new building had to be turned one-hundred-and-eighty degrees on the site. Chief McKay's change surprised several councilors, and dismayed some members of the design team who were committed to the circulation and parking efficiencies of the original site plan (fig. 9).

The modern significance of the pts'aan to the renewed government emerged during the process of site planning. The planning process, in turn, became an extension of the tradition of conveying history through story telling, supplemented with non-verbal, visual media. Community-led design seemed to follow procedures used in the re-telling of oral history, particularly since both involve interaction between spatial representations (carving and three-dimensional artworks), cultural history and narrative, recollection of site attributes and significance, and reconstruction of remembered images of space.

Council's discussion of drawings helped the new building to participate in oral history. As the silent lines on paper enhanced processes of communication, they became an acoustic map, expressive of the interchange between sound and space. Later, Councilors would assign additional audible roles to their new structure, including participation in the sound-filled choreography of village ceremonies. The building was becoming an oral peg within the audible map that traced a procession through the village, to the totem pole—symbolizing the
revival of traditions that were once suppressed—to the council chamber—locus for political and economic renaissance. The opening ceremony and feast was conducted amid a blending of sounds with many meanings: the bishop's prayers; Nisga'a singers, drummers, and dancers' rhythms and melodies; four-part harmonies of *a capella* hymns; bird calls from the nearby river and forests; and chiefs calling out, in Nisga'a, the building name and the name of each guest and elder. The sounds brought together nature and culture, marking space with meaning and connecting past with present, the natural world and the human one.

Reinterpreted within the sounds of Laxgalts'ap, the three-dimensional design of the Government Office Building also began to express connections between past and present. During the ceremonial procession, the paired-pole-to-totem-pole progression that Alvin McKay had requested while we were planning the site became a way to recall the original Nisga'a houses, which also had paired poles surmounted by exposed stringers and roof ridges. The exposed structural elements seemed to recall the exposed cedar skeleton of the first Nisga'a lodges built when the Chief of the Heavens placed people to live in the Nass Valley (Nisga Cultural Infusion Resource School District 92 (Nisga) 1982, Nisga'a Tribal Council 1993)

The Council Chamber wall was intended to bear carved bas-reliefs of the four crests, one for each of the original lodges (although this artistry had not been completed). The tradition of evoking the four crests on the outside and inside of buildings responds to Nisga'a oral teachings or *adaawak*: "The ancient people were given animals to be used as crests by each Wilp. The crest animals are the ones, which showed them how to live, what to eat, and how to catch and prepare the different food animals. This is the way our forefathers lived" (Nisga'a Tribal Council 1993: 22). I had hoped that wolf, eagle, frog and raven, and killer whale crests would be etched or sandblasted onto the large windows that faced the river, because the process would be affordable and the artwork would then be part of the building envelope. Council elected instead to add the artwork afterward, as carvings on the large front wall of the building. Perhaps because of other demands on Council's post-construction budget and list of priorities, the idea remains incomplete. Still, the pole in front of the entrance recalls the four crests, as do interior fittings and furnishings, making the new offices expressive of the unity of the four crests.

By depicting crest spirits, acknowledging traditional and modern totem pole/entryway relationships, and evoking the oolichan as symbol of cohesion and survival, the office building participated in the representation of oral history. Space and meaning, inseparable in architectural thought (Cavell 2002), had joined during planning and design, but a final stage remained. The building had yet to become lived history: it was "a place waiting to be enacted by an assembly of people" (ibid). To this end, heads of church and state began preparations for the naming celebration. *Wilp Saytk'ilimgoothl Laxgalts'ap*, A Place That Lives As One, took its place among named places of the Lower Nass Valley.

At the Wilp Saytk'ilimgoothl Laxgalts'ap official opening in 1998, song, language, dance, and architecture all contributed to the moment when representational space was acknowledged. The author witnessed fusion of the arts that had astonished early European visitors: in 1791 Etienne Marchand wrote: "[Northwest Coast First Peoples'] architecture, sculpture, painting, and music, are found united" (Fleurieu 1801: 338). Then, as in the late
twentieth century, architecture, music, and other forms of artistic production both represented and facilitated the persistence of cultural institutions, moral codes, and political strength.

Laxgalts'ap Government Offices were designed to recall both impending and historic events. The alignment of the totem pole with the building entrance and the conference room beyond recalled an ancient practice of facing building entrances towards a totem pole, and having chieftains face the entry from their seating place opposite (Alvin McKay pers. comm.). The community named the building, in accordance with an ancient practice of naming places and buildings, and recognizing their participation in historic events. As a named building, Wilp Sayt'îlîmgoothl Laxgalts'ap is asked to signify more than its functions. However, in retrospect the building could have been still more significant. Many ecological innovations intrinsic to Nisga'a designs have only recently come to my attention: bringing some of these ideas into the building design would have improved the overall comfort and sustainability of the structure. Importantly, I also would like to have designed the building with very large or interconnected spaces that could accommodate full-community celebrations. The site for the office building barely accommodated basic programmatic needs for indoor functions and parking. The landscape was constrained by the boundary that did not seem to have meaning in visible space: the Indian Reserve (I.R.) boundary.

A second architectural experience in Laxgalts'ap further demonstrated cultural continuity coexisting with community-led change. The Laxgalts'ap Daycare Center heralded cultural change in its provision for early childhood care and education outside the home, while its program and layout stressed continuity of culture. The new center came to be largely due to the efforts of young Nisga'a women, whose complex roles within familial and economic spheres necessitated a facility where young children could learn and grow within the community.

The place marked for the daycare center was a residential house lot, thereby keeping young children within their familiar neighbourhood and surroundings. Though somewhat smaller than a house, the structure uses house-like construction technology and materials, but an exposed-structure extended canopy differentiates it architecturally. While the canopy's practical use is to provide play space protected from snow and rain, it is also intended to recall the posts, beams, and triangulations of traditional houses and drying racks.

Both exterior and interior layouts placed greatest importance on listening to, and producing, Nisga'a language, music, and art. In doing so, the center acknowledges the role of children in perpetuating traditional culture, and in enabling that culture to grow as the world changes around them. Importantly, the role of children in conserving cultural memories has both political and economic significance. Learning language, songs, dances, and oral history teaches the very young skills they will need to participate in, and eventually lead, the settlement feast that "tells what land belongs to what person...our oral proof of title...[that] was not and will not be stamped out because it is essential to our being, essential to our tie to the land" (Nisga'a Culture website accessed 2002).

Voices from outside the village also contributed to floor plan layouts. Provincial legislation and funding agency requirements restricted the way space could be utilized. At first, detailed
floor plan reviews by provincial representatives left the young women who had instigated the project somewhat disappointed. The open area for teaching dance had to be reduced, and the kitchen made more isolated from other daycare spaces. In the end, however, the story-telling corner worked as planned, and the villagers added a carved canoe in which the children could take imagined voyages.

Site size was also a constraint, when paired with the regulatory requirements. The outdoor play space was not ideal. More space for the mobile toddlers was desired, for riding their toy cars and running about. Also, more space was needed for snow clearing and for mechanical systems, both away from play spaces and entrances. Finally, the vehicular drop-off area was far too small to make an effective loop, so some backing up was needed, a less than ideal situation in a facility for children too small to be seen out the rear window of a vehicle. The restricted site size was only that of a single house lot, which meant that the building "front yard" was too small to allow a full turning radius and drop-off/parking area. Further, the building footprint had been predetermined to accommodate a single-family house. The very soft soils and high water table of Laxgalts'ap meant that the footprint had to be preloaded (compacted over a period of about a year with engineered loads of sand and gravel) before foundations could be built with the necessary stability. Also the site had been serviced with swales along the street and a restricted fill-and-culvert area where cars could cross the swale. It was impossible to change the footprint of the building or the point of access without a very long delay, so the front (street-facing) layout was adapted to daycare center vehicular needs as best we could.

A third project, Laxgalts'ap multi-family housing, began with the intention of acknowledging the Nisga'a peoples' cultural distinctiveness while providing much-needed housing and a way to reduce over-crowdedness that was causing dissatisfaction (Zeno Krekic pers. comm.). The cultural importance of feasts influenced project planning. Since goods collected for years to prepare for feasts had to be stored in peoples' homes, ample storage was (and still is) vital. However, providing ample spaces within the relatively small dwelling units became a design challenge. Unlike the two-story houses found elsewhere in the community, the fourteen townhouses offered alternatives to extended family living for seniors, young families, and single adults. Canadian Mortgage and Housing Corporation provided construction loan guarantees, which included mandatory design responses and restrictive construction cost expectations. Known as "modesty guidelines", the CMHC regulations predetermined spatial allocations with nearly formulaic rigidity. Inadequate storage space allotment to satisfy geographic and cultural needs was one problem identified by the villagers. Quantities of food for winter isolation and goods for gift-giving feasts were not considered in the meager CMHC storage space allotment. As a compromise solution, the design combined spaces: goods storage combined with laundry, and food storage was added within specially designed kitchen millwork.

Equally vital to future residents were smokehouses, or wilp-sihoon, needed to preserve oolichans and salmon. However, the loan would not cover construction of smokehouses, so each dwelling was designed with a secondary access from the kitchen to the rear of the dwellings, for access to future wilp-sihoon. The photograph below shows the construction of a wilp sihoon, about six years after the main buildings were completed (fig. 10).
The CMHC budget for the multi-family project also did not allow for architectural meetings with the community. Perhaps as a result of insufficient community participation, this project has received somewhat less enthusiastic community response than the other two, and is looked upon as temporary housing while people await a single family house lot and structure.

Community involvement in all three projects was constrained, to differing degrees, by non-Native government loan guarantees, and by community loss of control as a result of those funding arrangements. Nonetheless, whenever village council and citizens from Laxgalts’ap had an opportunity to participate in project planning, the design team received careful, useful feedback. Traditional practices, and their importance to the buildings, were patiently explained. The people of Laxgalts’ap then adapted the projects after completion so they would better suit their village. Adding a smokehouse for new housing, a canoe for the Daycare Center playground, and artwork within the Government Office council chamber all reinforced the principles that the people knew had both present and historic value. The resilience of Nisga’a cultural values overcame any shortcomings in the expressive or useful qualities of the structures themselves.

2.6 Architecture as a dialogue: across time, among peoples, with the landscape

Because the Laxgalts’ap projects were undertaken at a very important time in Nisga’a—and world—history, they become case studies in how a community renegotiates the way space is perceived, owned, and used. While the architectural planning was underway, the historic Nisga’a treaty was pending. A cultural renaissance, begun by Eli Gosnell and continued by educators Bert and Alvin McKay and Deanna Nyce, was in progress, bringing ancient values and practices back into present usage. The Ayuuk’hl Nisga’a histories had been painstakingly collected and published. Long-standing relationships between groups of people and governments were being renegotiated by James and Joe Gosnell, Harry Nyce, Edmund Wright, and other members of the negotiating team.
By 1998, when the Laxgalts'ap Village Government Offices received its name and opened its doors, Nisga'a communities had spent one hundred and eleven years correcting the injustice of having their land taken away without a treaty. Women and families were working to combine much-valued traditions with their goal of improving access to employment and education. Economic inequities with non-Native communities were being examined under new cooperative agreements. Because of this timing, each project was focused by its position within a changing political, legal, and cultural context. The opening celebrations of the Laxgalts'ap Village Government Offices coincided with a vote wherein the people of each Nisga'a village would elect to support or reject the draft treaty that had just been negotiated. Thus the government offices partook in new agreements for co-sovereignty even before they officially opened. The daycare center encapsulated questions about the role of women in remote communities. The housing project questioned the uniformity of reservation system housing options. Each architectural work represented a change desired by the community, within a history of many changes.

Despite the optimism of the times, and the impending resolution of the Nisga'a land question, the reservation system and the attitudes that had created it continued to restrict all three projects. Invisible on the ground, but highly visible on surveys, were the words I.R. (Indian Reserve) Boundary. The large bold letters, "I.R. Boundary" determined how the landscape could be used and the size of building footprint that would fit in the space. The very words were emblematic of conflict, as they had never been accepted by the Nisga'a people, nor ratified by any treaty. Importantly, I.R. Boundary also summarized the monumental cultural impact of the reservation system. "The reserve system was a particular instance of the assault on custom associated with the expansion of market economies and the increasingly regulative role of the state in a regime of disciplinary power" (Harris 2002: xxx). The three near-silences resulting from Canadian and British Columbian legislations and policies were in fact displacements of treasures: the treasures of land ownership, of children and communities, of highest artistic productions. Outlawed feasting, the residential school system, and artifact removal were all regulatory and disciplinary extremes, and displacements that assaulted custom. Planning spaces within an I.R. boundary made me aware of those assaults, and of the need to better understand the power structures and arguments that rationalized them. Just as "a new geography of Native-non-Native relations in British Columbia may be built more easily and securely if we know more about the arguments, policies, and modalities of power that underlay the old" (Harris 2002: xxvi), an architecture suited to both new and ancient cultural patterns must rely, in part, upon a knowledge of what has been built in the past.

Soon after completing the three projects, the words I.R. Boundary were erased from surveys of the Nass Valley, a provision of the May 2000 Treaty. Nisga'a people regained the right to build outside the cramped delineations of the reservation system. Further, Nisga'a people now could own land and manage resources as they had for millennia before European traders, missionaries, and resource industries arrived in the Nass Valley—but now as a Nation that is fully brought into Canada. Architecture will continue as part of the negotiation between past and present that is needed to make those changes effective. This research seeks to be useful to architecture's participation in bringing wisdom of the past into the present, by clearly illuminating the rich legacy of building and landscape knowledge that has been part of the Nisga'a Nation's long and vibrant history.
Worldwide, architecture also participates in the larger project of negotiating across time, between cultures, and with the landscape. The author's architectural experiences with the Nisga'a Nation can be seen as a case study in the on-going and still incomplete project of decolonization that concerns many peoples the world over. Other spatial changes in the Nass Valley encapsulate worldwide mediations between globalization and regionalism, historicism and modernity, conservation and economic advancement. Since the decisions made about space—designing, naming, occupying—are part of architectural and landscape architectural practice, this history seeks relevance within larger issues. Specifically, it strives to show how architectural history guides place-making decisions, and that those decisions must emphasize respect for and knowledge of the land. In the case of the Laxgalts'ap projects, addressing these larger issues becomes possible through the direct involvement of Nisga'a elders whose wisdom and story-telling abilities will always been far beyond what this writer can achieve.
CHAPTER THREE: Historic Overview of Nisga'a Cultural Landscapes

This chapter looks back through time at cultural interactions influencing landscapes in K'ali Aksim Lisims (the Nass Valley and all its resources). Like an archeological dig that uncovers layers of history from most recent to most ancient, this particular historic overview begins in 2003 and finishes with the beginning of Nisga'a time. Unlike a dig, however, each layer of history remains undisturbed (or nearly so) by the examination. Also dissimilar with scientific excavations, this chapter identifies places through the people who remember them: people whose memories go back to earliest times through a meticulous system of oral history and story-telling. The landscape memories of Nass Valley people also demonstrate the many fields of landscape: political, cultural, legal, ecological, as well as geographic attributes. All are memories of place: "Memories of seasons, and of stories that were told at many places: in clan houses, in hunting and trapping camps" (Dauenhauer 2000: xi).

Two aspects of Nass Valley history led to the choice of a reverse chronology as a way to introduce context and major events of Nass Valley landscapes, and the architecture belonging to them. The first is a reflection on time itself within the context of Nisga'a history. As Anglican Bishop Father John Hannen tells: "Nisga'a time is not linear or limited: it is time immemorial. Unlike many of us who trace our lineage to arrival in North America a century or two ago, Nisga'a people have a sense of the eternal, and of being directly connected to the time and events of the Old Testament. This is even more far-reaching than the Jewish connection with Exodus. Nisga'a adaawak reveal the origins of Light, the Creation, and the Flood: all part of remembered history. This sense of connectedness underlines Nisga'a spirituality" (remembered interview July 6 2003). Significantly to this work, spirituality in Nass Valley architecture also derives from a sense of connectedness between present-day and ancient times. The second impetus for going in reverse is to emphasize that chronologies of landscape change are a continuum, and not two blocks of knowledge labeled as "before contact" and "after contact". Admittedly, the labels are sometimes useful because they distinguish between an age of written and photographic documentation and an earlier age when those two packages of knowledge were not, in the same form as now, being produced in North America. However, the pre- versus post-contact labels applied to many North American histories tend to obscure the reality that vibrant cultural achievements and advanced societies have been exchanging knowledge and accumulating vast stores of wisdom to an extent that is still not fully understood by Western Science (Ostrowitz 1999).

This overview only touches upon moments in time, knowing that a more detailed spatial history will follow in subsequent chapters. The reverse history is also used as a way to introduce the main references for this research. In particular this chapter explains spatial history applications of the Ayuukhl Nisga'a (abbreviated here as AN when used in parenthetical references), or Cultural Law of the Nisga'a. The compendium of oral histories provides a literary map of people's life experiences in their homeland (Allaire 1984), a map which supplements, often coincides with—and sometimes contrasts with—published histories in the sciences and humanities.
3.1 May 2003: The Nisga'a Highway opens

The most recent event in this research, and the starting point in this reverse landscape chronology, is the Nisga'a Highway completion. On May 17, 2003, two feasts serving hundreds of people celebrated the opening of the Laxgalts'ap-Gingolx (Kincolith) roadway. All four Nisga'a villages now have road access, completing one of many promises within the Nisga'a treaty, ratified three years before the celebratory road-opening feasts. Replacing isolation with connectivity, the highway will facilitate other treaty provisions, including restoration of watersheds, forests, and fisheries; repatriation of cultural artifacts; province-wide recognition of bicultural post-secondary Nisga'a education; enhancement of government-to-government communications; and reaffirmation of Nisga'a access to employment, health, and trade (Gosnell 2002). When fully complete in 2004, the Nisga'a Highway will finalize an array of visible and unseen connections between the First Nations landscapes and the rest of Canada.

Before the road was completed, travel to Gingolx from other Nass Valley communities usually meant a boat trip that took several hours, and even that was possible only if the tides at Laxgalts'ap allowed enough depth for boats to navigate between sandbars, if the river was not frozen, or the winds were not too treacherous. For my son and me, traveling to interviews in Gingolx was initially made possible by the kindness of the road crews, who gave us free passage and the opportunity to witness the arduous task of building a roadway along the rocky promontories lining much of the Nass River. The Nisga'a road builders offered us histories of place, recalling a Japanese fishing settlement at Red Bluff where we docked for supplies and an ango'oskw (lineage territory) of a grandparent up a nearly-vertical cliff beside a rocky outcrop crowded with fat sea-lions. Interestingly, we traveled the ice-free Nass River in March, a month when ice had traditionally made boat travel impossible—as recently as five decades ago. Ecosystem change, cultural change, and now, with the road grading, landscape change were all occurring simultaneously along the Nass River. One of our guides spoke of times from three hundred years before, or fifty years before, or back at the beginning of memory itself, all as though the distant events had just occurred. A nonlinear sense of time, the immediacy of the past, and the connections of remembered times to places viewed as we traveled were often evident in two years of conversations with People of the Nass.

The way time was perceived by people traveling to and from Gingolx was now changing: a trip to Aiyansh would take only just over an hour, replacing a day of unpredictable water travel. Further, the road to Terrace was soon to be widened to two lanes all the way. The route to Lava Lake would no longer have hairpin corners bound on one side by mountain and the other by a deep lake, single-lane—and with the potential of meeting a logging truck or other vehicle head-on. With the road completed to Provincial highway standard from Terrace to Gingolx, people in the valley would have easier and safer access to health care, groceries, and cultural events in other Nisga'a communities.
Fig. 11. 2002 photograph of the single-lane road at Lava Lake, en route from the Nass Valley to Terrace. The road continues invisibly around the cliff, making a hairpin turn near the right of the photograph to which on-coming traffic was invisible. Friends of the author's related a time when they collided with a logging truck, and were saved by a large rock that somehow kept the vehicles from plunging into the deep lake.

"Tooyaksim 'Nisim' Wil Bakwsim', we thank you for coming" was the greeting at the mid-day road-opening ceremony at Laxgalts'ap, which began with a moment of silence for all the people who lost their lives traveling to Gingolx by boat or seaplane. Blessings in English and Nisga'a, a cedar ribbon cutting (fig. 12), and a bountiful feast followed, and then a procession of vans and cars moved slowly along the river-fronting roadway. The diversity of life visible even through the windows of a car, was remarkable. Seagulls and hawks watched from the river (fig. 13) and bald eagles glared from the tall cedars adjacent to the road.
Fig. 12. The May 2003 road opening ceremony at Laxgalts'ap included blessings by His Excellency Bishop John Hannen and by His Excellency Bishop Sim'oogit Haymaas, Charlie Swanson. The Laxgalts'ap Daycare Center is visible in the background. Photograph by Robert Mackin-Lang.

Fig. 13. Seagulls and hawks on a log in the Nass River, spotted en route to Gingolx for the road opening feast. Photograph by Robert Mackin-Lang.

Arriving in Gingolx, each car was welcomed by the Nisga'a dancers, singers, and drummers. The people's renowned, tradition-based artistry was matched only by the great diversity of delicious foods served, mostly from the tidal estuary where the Nass River, Observatory Inlet, and the Portland Canal meet the Pacific Ocean. From dried oolichan to fresh crab to salmon, the skilled fishers and food-makers of the Nass had provided, from their own waters, food to feed at least five hundred people at one feast. Knowledge of the land and its resources, of ancient dances, of history-telling, all came together at the Gingolx Road opening.

A postscript of the feast story reiterates the depth and importance of landscape knowledge held by Nisga'a elders. Before and during construction, the elders had advised highway engineers to reinforce the banks of streams that were being re-routed to accommodate the widened and straightened roadway. The streams and other waterways have a life of their own.
own, warned the elders (Deanna Nyce 2004, pers. comm.). Undoubtedly the engineers worked to the highest standard they had been taught in universities, to design the Nisga'a Highway, but elders' knowledge did not factor into their design choices. In November 2003 heavy rains washed away completed roads and bridges between Laxgalts'ap and Gitwinksikhlkw. The elders' knowledge, it appeared, exceeded that of the engineers: or at least had to be woven with engineering science to find workable, lasting solutions.

3.2 1968 to the present: Decolonizing the Landscape

Among the less visible links revitalized by the treaty and its provisions is the interweaving of Western Science with Traditional Ecological Knowledge and Wisdom (TEKW: the first letters are capitalized to emphasize TEKW as a discipline, defined here as knowledge about ecosystems and the land that has been accumulated by a First People over a very long time through careful monitoring, observation, and inter-generational communication) (adapted from Berkes 1999 and Blackstock 2001). TEKW is also a component of the emerging field of ethnoecology. The ways indigenous peoples perceive and manage interrelated cultural, economic, and ecological components of their environments, in turn, describes ethnoecology (adapted from U.Vic. 2003). Educating new generations in traditional Lisims knowledge was made possible in 1975 when the Nisga'a bilingual and bicultural school district first brought schools back to the valley. Now, in School District 92 (Nisga'a) and at the post-secondary Wilp Wilxo'oskwhl Nisga'a (established 1993), students learn history with the assistance of adaawak, ancient oral histories. The adaawak assemble Nisga'a laws, the Ayuukhl Nisga'a. Respect is the guiding principle of the Ayuuk, and of the knowledge contained within. "You respect the forest and its creatures, the fowl of the air, and the animals...you take what you need to survive and leave the rest" (NTC 1993: 66). A leitmotif found throughout Nisga'a oral and modern history, respect is also the essence of the political systems established within the treaty.

The new education system responded to changes in the cultural landscape, and to serious problems in the ecological landscapes of the Nass Valley. Many Nisga'a people had dispersed from their homelands to work in resource industries, while industrial practices in the Nass were causing environmental devastation. Abandoned copper mines leached poisons into land and rivers, clear-cut logging exacerbated erosion and sedimentation: fish stocks, the essence of Nisga'a livelihood, plummeted (NTC 1993, Rose 2000). Elders became very worried about what was happening to the land, and observed that communities were losing contact with their leaders (Calder 2003).

Sim'oogit Eli Gosnell recognized that the architectural expression of the Nass Valley communities was an important part of bringing back the adaawak and Ayuuk, "life values which can form the basis for high self-esteem, self-identity, self-reliance, and self-determination" (Sim'oogit Daaxheet, Alvin McKay, in School District 92 1996: xii). Sim'oogit Gosnell designed and funded a community hall in New Aiyansh that was painted with the four Nisga'a crests: Ganada (Raven/ Frog), Laxgibuu (Wolf/Bear) Gisk'aast (Killerwhale/ Owl), and Laxsgiik (Eagle/Beaver) (ibid: 31). Then he funded the carving of the Unity Pole, to be raised outside the new Nisga'a Elementary Secondary School (NESS).
Yes, that was designed by Eli Gosnell. Eli Gosnell really helped revive the culture in the late 60's and early 70's. Because it was such a stigma to be a part of anything cultural, because of the residential schools and the role of the missionaries, a lot of people were afraid to look at the culture and use the culture, the language, the songs, the dances, Eli Gosnell was one of the ones along with a few others here in New Aiyansh who decided "We need this", so one of his first projects was to create the housefront painting, and then the Unity Pole at the school (Allison Nyce Interview 2003).

Since the school system symbolized and actualized the restoration of Nisga'a language and culture, the school's identity was expressed in stories carved on the Unity pole, the first totem pole to be raised in the Nass Valley for over one hundred years (School District 92 1996). On the pole were stories of all four villages and all four crests. Children from all different communities could look at the pole, and know they belonged at this school. The unity pole symbolized pride in many vital cultural institutions that had been obscured by the residential school system: a near-erasure that left many students unaware of their clan and ancestry. At the opening ceremony, Sim'oogit Eli Gosnell urged all teachers (who, at first, were predominantly non-Native) to become involved in the community, and to be adopted into a clan if possible. He urged them to strive for successful students—and to thereby achieve success themselves (Deanna Nyce pers. comm.).

The tradition of story-telling on poles had been revived with the raising of the Unity Pole. Other stories told at the raising of the pole were written down in the Ayuukhl Nisga'a project, which received funding approval five years after the raising of the Unity Pole. Architectural and landscape histories were a large part of the Ayuukhl Nisga'a project, during which three extensive field trips with elder historians mapped place names and traditional territories (AN III). Elders' histories, many of them about places and architecture, were taped in Nisga'a, and then translated into English. The architectural stories in the four-volume Ayuukhl Nisga'a are sometimes richly detailed with descriptions of crest symbols, carvings, and paintings that had much meaning to the historians, since (as this research tried to do) elders could tell the stories in their own way (ibid).

Just over a decade before the founding of School District 92, the legal and political landscapes of the Nass Valley, of British Columbia, of Canada—and many say, of the world—changed in 1969 to 1973 with the Canadian Courts considering seriously the meaning of aboriginal title (Tennant 1995). The Nisga'a instigated, and paid for, "The Calder Case" (Tully 2003), in which the peoples' "rights to possession of the lands...have not been extinguished by the Province of British Columbia..." (Justice Emmett Hall 1973 in Tennant 1995, 221) remained the undefeated view. During the court challenge, the judges wondered exactly what aboriginal title signified, and concluded that title is not just a document with seals on it, but also clearly includes landholdings that are held communally (Calder 2003).

The Ayuukhl Nisga'a project, an extensive documentation of cultural and physical landscapes of the Nass Valley as evidenced by elders' memories, began in the aftermath of the Calder Case. The express purpose of the project was to document the "entitlement adaawak" (AN
III Appendix p. 9), the oral histories of land title. Many narratives went far beyond this category, however, and became recollections of architectural and landscape decision-making.

The ratification of the Nisga'a Treaty, publication of the *Ayuukhl Nisga'a*, founding of a bilingual/bicultural school system, and land title implications of the Calder Case are all examples of what is sometimes termed "decolonization", or reversal of colonization. To understand why the landscape had to be decolonized, it is necessary to clarify the meaning of "colonialism", both as an ideal and as a practice that changed nineteenth and twentieth British Columbian landscapes. Cole Harris's *Making Native Space: Colonialism, Resistance, and Reserves in British Columbia* (2002), Paul Tennant's *Aboriginal Peoples and Politics: The Indian Land Question in British Columbia 1849-1989* (1995), and Nisga'a leaders' statements recorded in the *Ayuukhl Nisga'a* are references used here to illuminate the geographic, legal, and cultural context of "colonialism" as it was applied to the Nass Valley.

3.3 1870-1968: A collision of cultures and landscape change

Colonialism, like other "isms" was initially an ideal. In eighteenth and nineteenth century England, colonial ideology was seen by administrators in London as a way to administer British settler colonies (Harris 2002). In this context the ideological underpinnings of colonialism oscillated between what were seen as humanitarian concerns—"concern for the plight of the British poor, the opportunity to spread Protestant Christianity, and a sense of responsibility to civilize savage peoples" (ibid: 3) on the one hand, and economic motives—to secure prosperity and "imperial grandeur" (ibid) for England—on the other. The Northwest Coast of British Columbia, one of the more distant settler colonies, came to the attention of Colonial Office in the mid-nineteenth century when humanitarian concerns were losing ground to economic motives. Convictions based upon Charles Darwin's "scientific racism" (ibid) combined with fears that Native peoples' rebellions against British authority would escalate. The two negative (although unsubstantiated) viewpoints of Native peoples culminated in a Colonial Office policy to set aside "reserves" for Native people, initially to keep them separate from settlers, but eventually to permit complete assimilation of indigenous peoples into the dominant society. Colonialism had evolved from a fencing match between humanitarian and economic discourses into a way of engineering land allocation, ownership, design, and economics in favour of the British Crown.

As humanitarian and economic discourses fenced within the meaning and practice of colonialism, the James Douglas-led government of British Columbia had what they saw as a practical reading of the matter: extinguishment of Aboriginal title. Native land must be purchased (the humanitarian thing to do) so settlers could have maximum access to the wealth the land could provide (the economic impulse) (Tennant 1995). However, the source of money was at issue: neither Britain nor the British Columbia government had, or would part with, the funds needed to purchase Native-held lands. After Douglas retired from government office in 1864, chief commissioner of lands and works Joseph Trutch would declare to the new governor, "The title of the Indians in the fee of public lands, or any portion thereof, has never been acknowledged by the government, but, on the contrary, is distinctly denied " (Trutch 1870 in Tennant 1995: 39).
At this point the word "colonialism" became summarized, in the discourse of Native peoples, as the "land question": the question of aboriginal title. Aboriginal title, for the Nisga'a and other Northwest Coast peoples, was also linked with the system of house-groups or Huwilp (the plural of Wilp—literally "house" or "extended maternal family" (WWN 2001), the social and economic unit that has managed Lisims landscapes and economies for thousands of years (McNeary 1994). The system of landholding, explained Nisga'a chieftain Gadeelibim Hayatskw 1897, was simultaneously communal and a system of lineage rights to specific tracts of land, called ango'oskw:

No one man ruled a piece of land. Rather one chief held the rights to land and shared the land with his people. Whenever a chief decided to go out hunting, he would call his people together and show them where he wanted to hunt. He did the same at harvest time for berries and to everything else that was edible. He shared his wisdom and knowledge of the land with his people. He called to all his people who were able to work to come along with him when it came time to go prepare foods for the winter months ahead of him.

This is what the people in the early days called ango'oskw (Gadeelibim Hayatskw, 1897, in AN (Ayuukhl Nisga'a) Vol. I: xviii).

Against the continuous, shared, interlocking pattern of ango'oskw or traplines that spread over most Pacific Coast landscapes, Canadian and British Columbian governments decided to allocate tiny fragments of land for Northwest BC's First Peoples to live on. The process of drawing the reservations was allocated to Chief Commissioner Peter O'Reilly, who in 1881 spent just over one week of one season in the Nass Valley, completely missing the vital spring and summer fishing seasons and all year-round hunting grounds high in mountains and deep within forests. The areas that O'Reilly witnessed being utilized, near the end of October 1991, were only a fraction of the lands actually used by the Nisga'a peoples in other seasons. Further, the Commissioner did not spend time wondering if he had made a mistake: "O'Reilly was never really in touch with the Native people. He had his agenda, listened a little, made his decisions, and rushed on" (Harris 2002: 172). When O'Reilly finished mapping out reserves in British Columbia, only a handful of small allotments were set aside—and the Native People did not own the land. Nor were treaties signed to confirm the "exchange" (Rose 2000, Harris 2002). The peoples of the Nass and Skeena Rivers objected most strenuously and vocally to the injustices of the reservation system, including the absence of treaties, the denial of aboriginal title, and the misrepresentation of the extent and complexity of pre-contact land-use and ownership.

The decision to set aside reserves—without compensation—and allocate all "unencumbered" land (which included the reserves) as Crown Land emerged from an ideology of colonialism that had evolved up to that time that mythologized the land as empty, a blank page on the map waiting to be filled (Tennant 1995: 41). "Native space" (Harris 2002: title), as delimited by the reserves, "was the product of the basic settler assumptions, backed by the colonial state, that most of the land they encountered in British Columbia was waste, waiting to be put to productive use" (Harris 2002: 265).
Under the reservation system, "Productive use" became nearly synonymous with ecological devastation. Many Nass Valley forests were clear-cut beginning in 1958 with the completion of road from Terrace to New Aiyansh (McNeary 1992). The road also gave access to rich mineral deposits: copper extractors at Anyox left behind rivers heavily polluted with industrial waste. While the majority of Nisga’a wage-earners supported their families by tree-cutting in the woods or transporting logs down-river (ibid) (commercial fishing and canneries also employed some people, although mostly close to the Nass River estuary or further down the coast) (Deanna Nyce pers. comm.), the profits from resource extraction were distributed far from the Nass Valley (Calder 2003). The landscape altered. Diversity and abundance of fish diminished drastically with increased sedimentation and contamination of the river (Joe Gosnall pers. comm.).

Despite declines in resource abundance and ecological health of the lands, the system of traditional land ownership remained, although the reservation system had altered the actual placement of houses along with the recording of title deeds. Gadeelibim Hayatskw continued his explanation of the ango’oskw with a description of how the Nisga’a people reconciled the traditional system of title and place of residence with the newly imposed reserves:

“They [the ango’oskw] are all gone now but the people from the same village are responsible for the ango’oskw. Look at what is happening to it now, over the past years when there has been no one to look after it. Our great grandfathers took and looked after this land with great pride and now the white people are taking over our land. They do anything they want to. This isn’t the only place that white people are taking over, but all over the place. They think there is no ownership” (1897, in AN Vol. I: xviii-xix).

As Gadeelibim Hayatskw tells it, the new reservations had become villages whose people would look after all of the ango’oskw belonging to those villagers. However, he acknowledges that the degree of care that the Nisga’a people could offer to the land was much diminished, after the commissioners left and when title deeds of northwestern British Columbia did not list any lands whatsoever as Native-owned. Nonetheless, Gadeelibim Hayatskw says only that the white people “think” there is no ownership. Although others are taking over, he assures his people that there is still responsibility for the land. So even once the villages were drafted onto Commissioners’ maps as tiny coloured blocks within a sea of white space, Nisga’a leaders assured their people that the question of how the land was to be looked after was not resolved by the settlers’ assumptions.

Indeed, the food gathering, hunting, fishing areas that are a part of the house territory remained in peoples’ active memories. Away from home, working wherever resource-related employment was offered, people recalled how resources had been used in ancestral landscapes. The Ayukhl Nisga’a explains how ancestral landscape holdings are founded on the system of four crests, and how the same crests provide an order for the set of Nisga’a laws governing property and society:

The [Ayukhl Nisga’a] narratives have been collected and arranged into four groups, which represent our four pdeeks or tribes: Gisk’ahaast (Killerwhale),
Ganada (Raven), Laxsgiik (Eagle), and Laxgibuu (wolf). The tribal clan system provides the basic foundation for both the social organization and the system of property ownership of our people. In other words, the tribal clan system defines the two most fundamental kinds of relationships of the Nisga'a: the relationships between people, and the relationships between people and the land (AN II: v).

"Through the clan system we will be recognized on our land," promised Sim'oogit Wìi Gadim Xsgaak, Eli Gosnell, during the writing down of the Ayuukhl Nisga'a (AN II: vii). The four crests, and the way the crest spirits "provided, or rather showed, foods which were edible" (ibid), formed the foundation of the ango'oskw land-holding system. The system lived through generations because of memories, and the clan system—but also because the land-stewardship system was based upon watersheds and other physical landscape features that remained tangible even if memories were to fail. The geography-based system ensured that the lines on the map had longevity. As long as the rivers flowed across a place, the ango'oskw boundaries existed, and the building sites for homes and other structures would be clearly defined. "The land you would build on would be your ango'oskw. Every family right from the coastal region to the headwaters of the Nass had certain areas which were their traditional family hunting areas...The Nass River and the creeks and smaller rivers were the natural boundaries on the land that separated the different families' land" (Interview Joe Gosnell 2003).

Colonial concepts of land ownership held at the time of the Joint-Land Commission that was based on a narrow European-based definition of "maximum productivity", and the ango'oskw system that perceived the land and its beings as part of the Wilp and crest system, collided—but were not mutually exclusive. The Nisga'a people found a way to mediate between the two systems, through the villages that pre-dated the reservation system.

The four main Nisga'a villages that had been established in the Nass Valley by the time O'Reilly came to lay out reserves were themselves mediations between the ancient land-holding system and new settlement patterns advocated by the missionaries who had, by then, become active participants in Nass Valley communities. Missionaries and Nisga'a people decided together upon sites for the new villages, built upon places that had meaning and names within Nisga'a tradition. Christian villages gradually gained citizens from nearby "old villages" (School District 92 1996: 74), which were numerous and were usually located within the traditional territories of resident families, although some villages such as Fishery Bay did not belong to any one family (Deanna Nyce pers. comm.). The "Christian villages" (School District 92 1996: 60) were thereby linked directly to the ango'oskw-based villages.

The old villages were becoming less numerous than before (though all the places were still used, owned, and named) by this time, not only because of Christianization but also because of the devastating effects of smallpox and other diseases brought to the North coast by visitors from other continents. After the epidemic or 1836 the population was much diminished (Boyd 1990, Stephenson et al 1995). Subsequently, some Nisga'a people moved from the longhouses of old villages only reluctantly—and often because of their need to receive medical supplies (Collison 1915, Kelm 1998). Indeed, the arrival of several Nass Valley missionaries is coincidental with the end of the devastating smallpox epidemic of
1862-3: an aspect of the humanitarian side of colonialism emerged in the works of some of the medically trained missionaries. European-trained physicians brought medicines to help treat the diseases that the settlers had brought with them, such as smallpox and measles and whooping cough (in 1899, see Kelm 1998). Some missionaries, such as Missionary Dr. Robert Tomlinson from Gingolx, also worked as advocates for the Native people’s health concerns. Tomlinson’s son remembered his father’s disgust with the Department of Indian Affairs, who had sent inferior medicines to the Native communities because the supposedly protective agency believed poor medications to be "plenty good enough for Indians" (Tomlinson in Kelm 1988: 145).

Other missionaries became advocates for Nisga'a leaders pursuing the land question, a fact that made British Columbian government officials uncomfortable with the influences of the church. For example, when the 1887 delegation of one Tsimshian and three Nisga'a chiefs paddled all the way to Victoria (an astonishingly long way by canoe!) to discuss the land question with then-Premier Smithe, they were told in advance that the Methodist missionaries could not attend. The chiefs had intended that the missionaries, including Reverend Green of Laxgalts'ap (Tennant 1995), would serve as interpreters. Smithe and his colleagues, however, were "firmly of the view that Methodists were causing much of the North Coast unrest" (Tennant 1995: 56). The interview with Premier Smithe, Land Commissioner Peter O'Reilly, Federal Indian Commissioner Israel Wood Powell, and Attorney-General Alex Davie, was most unsatisfactory to the Nisga'a/ Tsimshian delegation. "Powell spoke to the chiefs as equals; Smithe, O'Reilly, and Davie were curt and condescending" (Tennant 1995: 57). Provincial officials seemed unable or unwilling to understand that Nisga'a chieftains Charles Barton, Arthur Gurney, and John Wesley, and Tsimshian chieftain Richard Wilson, did not want to talk about reserve acreage. The Premier's comments encapsulate the myth that the land was empty space waiting to be claimed: "When the whites first came amongst you, you were little better than the beasts of the field" (BC legislature Sessional Papers 1887: 264), then proceeded to lecture the chieftains that their views of land ownership were unfounded. Undeterred, Charles Barton replied, "As I said before, we have come for nothing but to see about the land which we know is ours" (ibid). Sim'oogit Barton's calm and issues-focused response to the then-Premier's racial prejudice-laden deliberate falsehood is an historic example of the great dignity, leadership quality, and wisdom of chieftains.

In response to the delegation, a commission came to the Nass Valley in 1887, with the intention of staying for as short a time as possible. "The timing was good for the province since the approach of winter storms would allow only a brief period for travel in the region" (Tennant 1995: 59). The government left early, and many Nisga'a people were unable to travel because of gales, so the time allotments for exchange between commissioner and Native peoples were brief. Still, the Nisga'a people were prepared. Nisga'a Chieftain Charles Russ spoke eloquently about the meaning of land ownership for his people. He connected language to landscape use, and noticed that changing the name of "land" to "reserve" was a monumental, unacceptable change.

_We have no word in our language for "reserve". We have the word "land", "our land", "our property". Your name for our land is "reserve", but every mountain, every_
stream, and all we see, we call our forefathers' land and streams (Nisga’a Chieftain Charles Russ speaking to the BC Commission 1888: 18).

Still refusing to hear that the concept of land, not reserve area, was the Nisga’a peoples' issue, O'Reilly laid out seventeen additional tiny reserve allocations in 1888. The Nisga’a were not appeased, and continued to express, in writing and speeches and petitions, the meaning of land ownership and title.

Yet despite not being heard, despite the unacceptable expropriation of their lands and decimation of their legal rights, the Nisga’a people did not wholeheartedly reject the foreign aspects of the cultural landscape. To the contrary, many western innovations braided together with Nisga’a tradition. Villages and their architectural components provide material evidence for the syncretic lacing together of European and traditional Northwest Coast cultures. For example, spring fishing villages featuring smokehouses and oolichan racks (ganee’e) also included European-styled dwellings built of milled lumber. The large spring village of Fishery Bay also included churches, where elders recall celebrating weddings and Easter festivities (Charles Alexander interview 2004). Winter villages, also church-centered, had large Victorian dwellings and formal gardens alongside traditional plank-covered pole-and-beam houses. The large family houses and the spring fishing village houses both accommodated expanded family units, often following the matrilineal pattern but sometimes diverging from tradition for practical reasons. Thus the Huwilp definitions of household remained significant while the actual form of house and village diversified:

...you see in the historic photos the great sort of Victorian style houses [in the Nisga’a villages]. Those houses were built so that the extended family would be there and would be part of the house. That is very important that you had those grand houses...a great grand house that everyone could be in and participate in (Allison Nyce interview 2003).

However, another non-humanitarian act of government was about to make a change in the cultural landscape that was not as easy to lace with the ango’oskw and other long-standing components of the integrated social and land-holding system, and the clans that are the Nisga’a "foundation on this land" (Eli Gosnell in AN I: viii). At about the same time as the reservation system was being delineated on the maps of British Columbia, and in the lives of Nass Valley people, the Federal Government was deciding to change the way Native schooling would be funded in British Columbia. Up until 1880 "Indian Day Schools", built and supervised by the Nisga’a people (Patterson 1982), received a paltry salary and maintenance allotment from the federal government—far less than the per-pupil provincial government allotment made to non-Native B.C. schools (Barman I 1995). Nisga’a communities made do with the too-modest funding. Then, in 1880, the Canadian Government decided to transfer all Native school funding to residential schools. The Department of Indian Affairs (DIA) reasoned that residential schools would disassociate Native young people from their families and traditional ways, thereby causing full amalgamation with the "white" community (DIA 1880). The churches collaborated with the government, agreeing to run the residential schools.
The Nass Valley felt the effects of the DIA decision immediately. Following the 1880 decree, Gitlaxt'aamiks School closed because "no government aid was given to the school" (Patterson 1982: 87).

"For Aboriginal Peoples in British Columbia, the consequences of federal policy favoring residential schools were particularly poignant, for it removed an educational option already in place that might have given the children rough equality with their [non-Aboriginal] contemporaries across the province" (Barman I 1995: 59). In 1920, legislation supported by Deputy Minister of Indian Affairs Duncan Campbell Scott stated that aboriginal children in Canada must go to residential school. Most Nass Valley children were moved from their traditional lands to residential schools as far away as Edmonton, Alberta (George Gosnell in Brody et al 1991, Tennant 1995). So the cultural landscape of the Nisga'a village changed again. Now the villages had only small, under-funded schools for a few children in the lower grades (McKay and McKay 1987). Many children away from home forgot about what clan they belonged to and how to speak their language (Deanna Nyce pers. comm.). Some Nisga'a words about land and place were forgotten. Others, though, were still communicated from grandparent to grandchild during the summertime when the students were out of school and could be back with their families:

I was wishing I was older when my grandmother died. I was seventeen, all she did was teach and tell me things, and that's where I learned. I thought it would never be of any use. Even my mother said to my grandmother, "Why are you telling him this?" I was very fortunate to meet my great great grandmother, and my grandfather, he knew so many things... I used to go packing with him, fishing, and he would tell me about this... I went to school in Alert Bay, St. Michael's (Horace Stevens Interview 2003).

As elder Horace Stevens attests, the Nisga'a tradition of passing knowledge from generation to generation resisted even the residential school system. This very "Ethic of Persistence" (Tully 2003) was the core of the Common Bowl decision from the end of the nineteenth century. The people would act as one. The land question would be addressed. Money was raised, put into the Common Bowl from individual Nisga'a families' pockets, to resist the land-holding and education systems that were changing their cultural landscape against their will (Calder 2003). The cognitive map of Nisga'a lands still contained all the ang'ooskw, and the municipalities that had emerged from a combination of considerations from reserve geography to religion to health to traditional significance of place. The houses within the villages expressed both the Common Bowl and the feasts and gatherings that reinforced lineage landholdings or ang'ooskw (Allison Nyce pers. comm.)

With the Common Bowl decision, the ang'ooskw edges were clarified to be not boundaries, however, but patterns of land use of a people with common goals and interests. But the 1924 boundaries defining a final total of seventy-six square kilometers of Nisga'a reserve land remained as lines of confinement. To make sure the reservation system stayed uncontested, the Canadian Government under Duncan Campbell Scott added an amendment to the Indian Act that included a prohibition on hiring lawyers or raising money for land claims:
Every person who, without the consent of the Superintendent General expressed in writing, receives, obtains, solicits, or requests from any Indian any payment or contribution for the purpose of raising a fund or providing money for the prosecution of any claim which the tribe or band of Indians to which such Indian belongs...has or is represented to have for the recovery of any claim or money for the benefits of such tribe or band, be guilty of an offense and liable upon summary conviction for each offense to a penalty not exceeding two hundred dollars...or to imprisonment for a term not exceeding two months (Indian Act Amendment 1927 in Rose 2000: 79).

Unlike the Nisga'a people's cognitive map, upon which ango'oskw boundaries became less distinct than those features expressing the unity of landscape and homeland, the Canadian Government had made the lines on the cognitive map of the reservation system metaphorically darker, and legally forming a difficult (though not insurmountable) challenge.

3.4 Asian contacts with the Nisga'a

The time-honoured relationships among watershed units, land stewardship, and social system remained on the Nisga'a cognitive map despite attempted erasure by heavy-handed legislation within the Canadian Indian Act. Nisga'a custom and land-ownership patterns were resilient. The people had, over millennia, become experts in maintaining their cultural, social, and ecological landscapes while trading ideas—including spatial concepts—with other cultures.

Predating the arrival of French, Spanish, and English traders, Asian peoples were among those with whom the Nisga'a shared goods as well as architectural, artistic, and space-planning ideas. The earliest dates of exchange between peoples from opposite sides of the North Pacific are not confirmed. "There is some evidence that goods from the Asian mainland were acquired centuries before direct contact, although these are rare and may be from shipwrecks rather than trading records" (Marsden, Anderson, and Nyce 2002: 269). Nisga'a pre-written and written history includes many exchanges with Russian-speaking peoples living in what is now Alaska; the Nisga'a people traveled a great deal to exchange goods and ideas with the Tlingit peoples to the north as well as with Russian settlers. The Nisga'a record evidences contact with the Russians in the 1780's at the mouth of the Nass River (Marsden, Anderson, and Nyce 2002). Carvings, paintings, foods, and buildings reaffirm that methods and ideas were exchanged between Russian-Alaskan and Nass Valley peoples:

*There were lots of poles then* [in the old days before the longhouses were taken down]. They tell the history from long ago, Gitksih wilp they call it. All of this is part of the history, what they encountered on their way back from Alaska. They lived in Alaska for quite a number of years, but they knew there was a land that belonged to their ancestors. They looked for the land, and made their way back. On their way back they became aware of other types of houses... There was some strain of Oriental blood in us, that is why we look like this. They moved freely back and forth. My great-grandfather said it was more for survival. You know they say the songs have an Oriental swing to them. I've been watching movies and television, and they sound like...
us! So whether we had influence from them, or they were influenced by us, I don't know...I wanted to go up to Alaska and take a look at them [the Russian American people]: a lot of our past is tied in with the foods of the area. (Sim'ooogit Minee'eskw, Rod Robinson, Interview 2003).

Northern and Eastern Russian peoples had many commonalities with North American natives that suggest possibilities for the successful exchange of building ideas. Both peoples made their living within landscapes of active volcanoes and icy winters, economies dependent on fish and furs, and cultures known for wood construction, design, and fine craftsmanship (EVA 2002). Among the traded goods were Russian construction tools and technologies, which were much appreciated by Nass Valley builders for the relative ease in felling the huge trees needed for longhouse construction. Nisga'a seafaring skills made it possible to transport heavy tools over long distances, as elder Ni'isjoohl (Horace Stevens) explains:

During the end of the seventeen hundreds my grandmother said they started building with saws. It was so much easier [than before], we didn't have to split the logs. They call it the donkey engine because it was so strong. They brought [the engines] back in pieces because they were so heavy, the flywheel and the iron and the belt. They [the Nisga'a people] were good sailors, good seamen. Sometimes they had to row, and the whole family rows. Why I am telling you this, they couldn't have just got that from somebody. There were Russians way before, because if you read the history they already knew about the fur trade and all that. We traded with the Russians way before the other people came in from England or France (Interview 2003).

In the eighteenth century, French explorer Etienne Marchand (whose travels are recorded in Fleurieu 1801) notes that iron had long since arrived on the Northwest Coast, and connects the trade of iron tools with Russian trade sources.

The first [European] navigators who visited the Northwest Coast of America, in ascending from the forty-second parallel to the sixtyeth parallel, found that the knowledge and use of iron had long since arrived there; and they saw, in the hand of the Natives, various instruments and tools of that metal. [...] The trade of the Americans of the Northwest Coast with the Russians must, for upwards of half a century past, have made them acquainted with iron and copper; for, as far back as the year 1741, Bering and Tschiricow, having sailed from the coast of Kamtschatka [Kamchatka] discovered that of America from the opposite side (Fleurieu 1801: 229).

While constructing more than 800 villages in the regions north and east of Nisga'a lands, Russians brought their architectural traditions. Evidence of Russian architectural influences on Nisga'a architecture is found in adaawak, in written histories, and in the architecture itself. Horace Stevens attests that the design of the roof ventilation system (called ala in Nisga'a tradition) changed with the influence of Russian people. Nisga'a builders exchanged the moveable ala to be a stationary unit like those found in Russian Alaska (fig.14). Minee'eskw points to the prevalence of square towers and rounded domes, particularly in the rebuilding of Gitlaxt'aamiks and Aiyansh (fig.15).
Fig. 14. Russian-style smokehouse vent (vent style identified as Russian by Emmons 1991: 71. Drawing by N. Mackin based upon smokehouse near Angoon, Alaska photographed by Frederica de Laguna.

Fig. 15. Russian influences in Gitlaxt'aamiks: Domes and cupolas were inspired by Nisga'a travels to Russian settlements in what is now Alaska. The church steeple and the domed house element shown under construction near the right of the photograph are specific influences (Sim'oogit Minee'eskw interview 2003). Photograph taken by Marius Barbeau c. 1929. Canadian Museum of Civilization Photograph Catalogue Number 69691.

Nisga'a architectural traditions, then, were amenable to adaptation and change. They were also a source of resilience, as attested by Nisga'a survival strategies used after the terrible volcano that altered Nass Valley geographies about three hundred years ago.
3.5 The volcano

About three hundred years ago, from a vent near the headwaters of the Sii Aks Mountains, a great lava flow spread down through the valley and spread across a plain about thirty square kilometers in area, killing thousands of people and changing the landscape into a lava plain, much of which is now called Lava Bed Memorial Park (*Anhiuat’ukwsim Laxmihl Angwinga’asanskwhl Nisga’a*). The Nass River moved to the North side of the valley (School District 92 1996, *Ayuukhl Nisga’a*, Fladmark 2001).

The Nisga’a people resettled in the areas around the lava plain, and re-learned the landscape that had changed so dramatically. The volcano was only one among many tremendous landscape changes that had occurred over time in the Nass Valley. "Natural variables influenced cultural adaptation, defined the basic availability and nature suitable for occupation, and controlled the long-term survival of such sites in the geoarcheological record", notes Knut Fladmark (2001: 40), listing the Sii Aks Mountain volcano among the truly catastrophic events that influenced cultural change in the Pacific Northwest.

The *Ayuukhl Nisga’a* retells several elders’ retellings of the volcano as it was in turn recalled by their elders. In each retelling, the volcano is used as a reminder of their vitally important ethic: respect for nature. Within the adaawak (oral histories), the Ayuuk (law) of respect for nature is nonnegotiable. Human misuse or abuse of the environment instigates cataclysmic environmental events, warns the Ayuuk, "The volcano occurred just before the white traders came to this land. The leader of the young boys responsible for the eruption of the volcano...had an innovation to amuse the children. He would catch a male humpback, the males of course were very broad, slit it at its broadest part and place a piece of shale there. The children thought this was very comical because the pink salmon was unable to swim on an even keel, as it was too heavy. This kept on every day" (Eli Gosnell, *Wii Gadim Xsgaak, Ayuukhl Nisga’a* II: 210). Then the volcano erupted, a "flame like rolling water".

The story addresses a time and event so cataclysmic that the ethic of persistence, on its own, might not have been enough to ensure survival. As the adaawak continues, a great supernatural spirit comes and places his beak in the path of the volcano, thereby stopping the flow of lava and saving the downstream villages. The ethic of respect for nature was also needed, as was connectivity between people and the beings of the natural and supernatural worlds. Without respect for and connectivity with nature, environmental processes become chaotic (Fladmark 2001). The devastating volcano became a lesson instilling crucial environmental values.
Fig. 16. The Sii Aks volcano, a catastrophic event, was sometimes recalled with the intention of teaching crucial environmental values including the value of respect for all living things and the knowledge that human actions have a direct impact on the environment.

3.6 Cultural exchanges with other Native peoples

Between the time of the Nass Valley volcano (c. 300 years B.P.) and 2000 years B.P, interactions among Northwest Coastal peoples increased. Both adaawak and archeological records explain the enhanced cultural exchanges: neoglacial advances impelled Athapascan peoples to migrate southward (Cybulski 1992, Fladmark 2001); intertribal trade was lucrative; and marriage across boundaries increased knowledge, wealth, and diversity. The Nisga’a, who lived in a landscape rich in trade-worthy resources, were a vital part of the trade network. The People of the Nass harvested a diverse selection of resources at different times throughout the year. Nisga’a resources were so vital to northwest coastal economies that the trade routes, Genim Sgeenix or Grease Trails, were named after the valued Nass Valley oolichan grease, a commodity produced by rendering the finger-length fish whose mid-March arrival marked an end to winter scarcity (Bert McKay pers. comm.)

The Nisga’a people exchanged people, goods, and ideas with many other peoples on the Northwest Coast (McDonald 1984, Ayuukhl Nisga’a, Cybulski 2001). Architectural ideas were among those exchanged. The craftsmen and woodworkers of the Nass and other Tsimshian speaking peoples have a long history of architectural excellence (Nabokov and Easton 1989), and many were commissioned to work on buildings outside of their homelands.
Marriage alliances between Northwest Coast peoples were common. Because the crest system was common to peoples across the region, and marriages could only occur between people of different clans and crests, the architecture brought together symbols from different crest lineages as well as ideas and stories from different parts of the region. "The adawx [the Tsimshian spelling for adaawak, oral histories], together with totem pole carvings and sacred songs, commemorate historic events and are akin to the classic epic poetry of the ancient peoples in other regions of the world" (Marsden, Anderson, and Nyce 2002: 279). By measuring the skulls of excavated individuals, and finding familial similarities among them, and by documenting similarities in cultural artifacts, archeologists surmise that the Nisga'a peoples probably married most often with the Tsimshian, Haida, Tlingit, and ancient Namu (south of Bella Bella) peoples (Cybulski 2001). The adaawak substantiate archeologists' claims, telling of migrations and exchanges with nearby peoples, and of the architectural paintings, detailing, and pole carvings that expressed the histories of some of the migrations and crest exchanges.

During this time, adaawak and geoarcheological evidence concur that coastal peoples' sociopolitical and legal systems became increasingly complex, as societies shared knowledge, people, and goods. Sacred and practical uses of landscape, essential to survival, underpinned other histories. Protecting abundance and diversity was a key to prosperity, and prosperity in turn inspired new allegiances. The corollary was also evident: in times of scarcity, wars erupted. Through times of prosperity and scarcity, the Nisga'a people both shared and guarded their resources, aided by an evolving land-stewardship system and its supporting clan structure.

Sometime between 2000 and 2500 years B.P, some archeologists argue that excavated villages near Prince Rupert offer evidence for a change in the way Northwest Coast land ownership was organized. Basing their conclusions on the size and arrangement of depressions which indicate the layout, size, and form of houses, David Archer and Knut Fladmark suggest that ranked or non-egalitarian villages replaced earlier, more egalitarian village layouts (Archer 2001, Fladmark 2001). According to Archer's research, settlement patterns changed to reflect inherited social ranking. In a village carbon-dated to about 100 AD, houses of different sizes seemed to be arrayed according to social position (the largest chieftain's house in the center, flanked by houses of the next highest rank, with the lowest ranked houses in a row behind the others) (Archer 2001). Nisga'a adaawak do not acknowledge that there was a change in the crest and chieftainship system: to the contrary, the adaawak indicate that social ranking has since earliest times been a key to systematic ecological monitoring and harvesting, thereby ensuring resource abundance. Highest ranked individuals have responsibility to educate others, and to manage resource distribution. In Archer's interpretation of archeology, harvesting and food storage technologies, such as oolichan grease used to keep many foods free of airborne bacteria (like a flavorful edible non-plastic wrap!) increased salmon abundance, and expansion of regional trade, are among the explanations for the emergence of social ranking among Northwest Coastal peoples (Archer 2001). As during other historic "layers", both the technologies of landscape use, and the dissemination of landscape knowledge, explain social and structural systems.
Fig. 17. Oolichan processing was vital to food storage. Photographer unknown, date 1884, courtesy British Columbia Archives. Wood detailing, including tied connections, is evident. In the bottom right hand corner is a drying rack made of tied poles and places on top of a food storage box. The woman in the photograph is wearing a mixture of grease and soot used as repellant for biting insects and as sunscreen (School District 92 1996: 107).

An earlier layer of the cultural landscape, from about 3000 (or as early as 4000) to 2500 years B.P., sometimes known as the "North Coast Interaction Sphere" (Sutherland 2001), is characterized by archeologists as a time when Northwest Coast peoples, including the Nisga'a, exchanged knowledge, goods, and people over long distances. Trade routes over land and waterways enhanced cultures and ecosystems from the Olympic Peninsula to Alaska.

In earliest times, the adaawak and archeological reports concur that the earliest Nisga'a and other Tsimshian-speaking peoples lived mostly in "paired single-clan communities of several house-groups, each led by a head chief or other lesser chiefs" (Marsden, Anderson, and Nyce 2002: 275). In these early times, as later, transitory settlement patterns were an environmental necessity. "For reasons of limited dry firewood supplies and for food conservation purposes, our ancestors moved their villages often" (Ayuukhl Nisga'a I: 74).
3.7 Earliest clan histories recorded in the landscape

Mostly the early years, we wondered, how far back can you go? They say in our language dawihl, years ago. And after awhile they carve and I taught my children how to carve, and that's what they did [to teach the old stories]. It's so far back, the years roll by so fast, that when they [the elders] talk about way back we never believed them, until they started finding petrified cockles and clams here and yet there is a river! Just below us [at Laxgalts'ap], and when the banks gave way there were baby clams below us, they were right. We knew about that, [that the sea was up this far] by passing on from generation to generation (Horace Stevens interview 2003)

How far back can you go in memory? wonders Horace Stevens. The elders' stories go back very far indeed, if they knew about rising sea levels that occurred after great sheets of ice melted in North America.

Science tells us that people lived in the area as early as sixteen thousand years ago, when pollen records evidence ice-free areas that supported diverse ecosystems and plentiful sources for food (Fladmark 2001, Oberg 2003). Adaptability to change would have been an essential characteristic of the people living in those early times. "The region formed a very dynamic natural context for human endeavors with significantly shifting ice fronts, rising and falling sea levels, and changing biota" (Fladmark 2001: 40). About thirteen thousand years ago sea levels were about one hundred meters lower than they are today, and lands that are now beneath the sea were livable landscapes. Then about ten thousand years ago, geological records also tell of a great flood, when huge glaciers melted and sea levels rose to over one hundred meters above present levels. The waters subsided to near-present day levels by about 9000 B.P (Fladmark 2001).

The Nisga'a adaawak tell that the four clans were brought to the Nass Valley by the Creator, K'amligihahlhaahl (Marsden, Anderson, and Nyce 2002), at the beginning of time, before memory. From the starting place of a village on the upper Nass River, the people encountered tumultuous times, including a great flood which they escaped by fleeing to the mountaintops. The land that Nisga'a ancestors first lived on not only disappeared, but had all traces erased by the great ice sheets or buried deep beneath the sea. The adaawak continues with stories that tell of the glaciers, and how the people learned to live with changing and sometimes chaotic environmental conditions (Ayuukhl Nisga'a). The histories later became encoded in crests that helped the people know how they would deal with difficult times.

The crests would reflect some encounter that was very important to the family. In a way it was like your genealogy, as you evolve. Some of the people came after the great flood, they came overland, and as they embarked to come here they ran into great obstacles, some of them were profitable, others were very sad. Usually the spiritual side of all that would intervene, and that always is shown on the totem pole: the Nagnok (supernatural being or power) came and saved us here (Dr. Bert McKay interview 2003)
Nisga’a elders knew that the sea-levels had risen, and how people had coped with the change, just as they knew about the sheets of ice and who had traveled over them. The memories of all these events were retold in the crests.

3.8 Completing the circle from time immemorial to the present

The final layer of this overview reaches back from the beginning of time immemorial, and circles forward to the present. "You are going to stand just where you stood in the beginning, and you will stand there as long as the world exists" (Ayuukhl Nisga’a I: 93), promised Sim’oogit Wi Gidim Xsgaak (Eli Gosnell), speaking in 1977 both to the Unity Pole being raised and to the Nisga’a gathered to watch the historic event. As the first totem pole to be raised in the Nass Valley in over one hundred years, the unity pole is an ayukws, or pictorial representation of an adaawak (School District 92 1996) of great significance.

At the raising of the pole, Sim’oogit Gosnell recalled several adaawak, including the recounting of red-cedar, the first tree in Lisims history. "In the beginning of Nisga’a existence...when there was only semi-darkness and no daylight...the land on Lisims was nearly bare" (Ayuukhl Nisga’a I: 88). Then the tree of life—the Simgan, or red-cedar—appeared, and Txeemsim, grandson of the Creator, taught Nisga’a ancestors to use the fronds for tonic, balm, and medicine; the roots for nets and rope; the bark as roofing, siding, rain gear, blankets, and fire starter; the wood as walls, posts, beams, canoes, and pts’aan. The cedar tree becomes a key to Nisga’a culture and livelihood. Sim’oogit Gosnell related the coming of the cedar tree with the beginnings of the great longhouse architecture for which people on the Pacific Northwest Coast were famous.

Looking at landscape history as layers of entwined natural and cultural transformations offers an opportunity to examine present-day landscape change as still another layer within an ongoing transformation. Within their historic context, the Nisga’a Treaty and Highway can be seen as a continuation of millennia-old negotiations with globalization and connectivity. This layered historic overview of landscape change also suggests the importance of landscape and architectural evidence in reconstructing a First Nation’s ideas about the environment, society, and cultural interactions.

Three links between constructions and ideologies are traced in the section that follows. Firstly, materials used to create Nass Valley architecture demonstrates the in-depth ecological knowledge that is needed to adapt those materials to different functions and sites. Secondly, specific architectural/landscape works are reconstructed in drawings and models, and their significance and details are verified through elders' testimonies. Thirdly, maps of Nisga’a places are correlated with different architectural productions, thereby illuminating correlations among social systems, ecosystem pattern, and the design of structures. Within these three tasks, elders' memories of places are recorded and, when possible, transcribed into drawings. Elder Alice Azak says that her memories of spaces "just keep flashing" (pers. comm.); these flashes of recollection are pieced together to form the images found in the next three chapters.
CHAPTER IV: Materials for Architecture and the Landscape

4.1 Introduction

Many Nisga'a historians who contributed to this research spoke of materials used in pre-contact buildings and landscape constructions; methods of teaching and learning about those materials; and the reciprocity among tools, materials, and the design of structures. In most interviews, the three factors interrelated. This chapter records present-day elders' recollections of tools and materials. Adaawak from other sources, archeological evidence, and personal observation add to elders' memories of construction materials.

Nisga'a oral histories stress that learning about materials was a vital part of education. This is exemplified in an adaawak from very early days in Nisga'a history, at a time when there were only two Nisga'a winter villages. When the story begins, one of the two villages had recently been decimated by warfare, and only three inhabitants remained: a young woman, her jiits (grandmother), and her infant son, named Hasa Galyeen. (The traditional story was adapted by Niitkw'ililtkw) (School District 92 1996: 258). The education of the young child began with lessons about tools and materials, which were undertaken using all senses, and with respect for every substance, plant, or animal.

He [the very young Hasa Galyeen] spent many hours studying plants, bugs, and other fascinating objects in his environment. When he was little, he already knew a great deal about rocks. He knew what they tasted like, what they sounded like when he banged them together. He knew what it felt like to walk on pebbles and on rocks. He could sort them out by colour, shape, and size. To encourage him in his learning, his mother made him a rattle by putting pebbles in a hollow bone and securing each end with a piece of leather tied with a thong. He loved to make music with his rattle (School District 92 1996: 259).

Using the adaawak of Hasa Galyeen as a guide, materials are discussed here in the approximate order that they are learned about in a pre-contact Nisga'a child's life. Beginning with stone and minerals; then water, animals and small plants; and finally specific uses of large trees, the pedagogy-inspired re-telling emphasizes the importance of experiential teaching and learning in the acquisition of traditional ecological knowledge (Turner, Ignace, and Ignace 2000).

As Hasa Galyeen's education continues, he learns about a crucial first step in knowledge: keen observation, and an ability to look beyond initial perceptions. Before he could be trusted to harvest plants and animals for practical purposes, Hasa Galyeen had to come to know how materials in the environment are alive and are replenished. So that her son could acquire the necessary depth of understanding about his environment, Hasa Galyeen's mother engages a blind teacher.

What Hasa Galyeen had begun to notice was that colours had become more vibrant and that sounds had become more distinct. When he looked down on the ground he marveled at how the duff in the forest seemed to be alive, especially the seeds from
the deciduous trees. Without looking for them he was now able to see insects on the bark of the trees (School District 92 1996: 261).

Awareness of the sensory qualities of materials is then translated into skill. Hasa Galyeen constructs implements from different woods, learns how to haul and store water, and prepares plants for medicine. Then, his awareness and knowledge are tempered by respect for the sources of useful materials. Before shooting his first deer, the boy learns to direct his arrow through a soft spot behind the ear so there will be no holes in the valued hide. After his first hunt, he uses all parts of the animal. He cleans the animal without contaminating any of the meat, cuts the meat in strips and climbs high in the house to hang them to dry, and saves the marrow so his grandmother can eat it and be warm. Conservation, attests the story, is as important to the hunters’ success as meeting the mark.

Other oral histories convey content and methods of architecturally-directed education. After learning the skills of implement carver, water gatherer, maker of medicines, and hunting, young Nisga’a men showing promise in woodworking became highly trained in the uses of different tree species (McKay 2003). Carvers and builders were highly trained, and valued within Nisga’a society both for their botanical knowledge and for their power in creating structures that enhanced people’s earthly living conditions and relations with the spirit world.

The following section on tools and materials approximately follows the order a young Nisga’a, such as Hasa Galyeen, would follow in learning about the environment, presenting technology and materials approximately as they would have been organized in pre-contact Nisga’a pedagogy. Materials are presented in parallel with the “learning by doing” and “lifelong learning” principles that underpin Nisga’a, and other aboriginal peoples’ traditional ecological knowledge (Turner, Ignace, and Ignace 2000, Deanna Nyce pers. comm.).

Also, as in traditional learning, both oral history and a collation of observed evidence contribute to this discussion. Western science helps to situate technologies and materials within a specific time frame. Technologies useful for dating archeological re-discoveries include carbon dating (calculating the time since an organism died by measuring its emissions of carbon-14, a radioisotope found in all organisms that gradually decreases at a set, predictable rate after death) (Potter and Stockley 1987). Western science rarely provides complete explanations, however, and many theories of Western Science remain challenged. Therefore, as with many reconstructions of the non-written past, this research relies upon adaawak and elders’ memories to guide archeologists’ explanations of the tools and building parts they re-discover (see de Laguna 1960, MacDonald 1984b). Adaawak also help this research to explain how cultural and spiritual realms inspire technological and architectural advances, working within a changing ecological context.

Included here is a history of materials used for interior and exterior fittings and furnishings as well as fixed building parts. The history explores how, when, and where different materials were used, and their significance to architectural production. Changes in materials used, and the reasons for change, provide a means to explore relationships between changing ecological and cultural conditions, and evolving Nisga’a architectural and landscape constructions.
4.2 Rocks, metals, and minerals

Stone tools

Vital to construction were stone tools, as described in 1976 by Laxsgiik chieftain Sim’oogit Titus Minee’eskw, recorded and translated by Harold Wright:

*This was the story of our original ancestors, passed on through the centuries, and it cannot be erased as the wise old people kept this in their memories. These stories were passed on continually. At this time there were no steel knives. Stones of very thin and hard blade-like edges were implemented. Not just any flat rock was used. There were special places where they could be obtained. There is a place above present-day New Aiyansh where this stone can be procured, for example. The stone had many uses, such as the daaawiis which, although not having a very sharp edge to it, served its purpose in many ways. Also, our forefathers were very powerful men to be able to use their hand-made tools (AN I: 4).*

Stone adzes (daaawiis) have been found in Northwest Coast archeological sites as early as 5500 years ago (Carlson 1976: 2003). Like many other innovations, the daaawiis emerged from a number of earlier traditions. Precursor tool-making traditions included the microblade tradition, found thirty thousand years ago in North China or Siberia, in Alaska 11,000 years ago, and in other Northwest Coastal communities between ten and nine thousand years ago; and the pebble tool traditions, originating on the Northwest Coast about ten thousand or more years ago and continuing until six thousand or fifty-five hundred ago (Carlson 1976). These precursors to the adze are part of the “Early period” of Northwest Coast architecture (sometimes called Period one) (Carlson 2003), a time of rapid change as ice continued to retreat, new plant communities emerged, sea levels fluctuated rapidly, and distinctive cultures evolved (Fladmark 2001). By contrast, the relatively stable Middle Period of Northwest Coast traditions (also called Periods two through six) from 6000 or 5500 years ago to about 1500 years ago, cultures exchanged ideas and goods through trade, ecologies stabilized, people experienced material abundance, longhouse structures become evident—and the stone woodworking tools, including the adze, become prevalent. “About 5500 years ago there occurred a world-wide change in sea levels. This change affects the archeological record of coastal areas, and roughly coincides with a change in technology of coastal cultures” (ibid: 22). Quartz was the main stone selected by Nisga’a adze-makers:

*The woodworkers, they had to know how to fall the tree. There wasn’t just any way. We didn’t have the implements that make it easy today. We did have stone adzes. The main implement they used was quartz* (Bert McKay 2003).

At about the same time as adzes are found in the Northwest, cedar increased in abundance in the Northwest Coast (Hebda and Mathewes 1984), supplying straight-grained, rot-resistant poles and planks that characterize Northwest Coastal structures. The advancement of woodworking tools, the availability of cedar, and the design of longhouses (ibid) all have parallel histories, giving insight into how architecture, landscapes, and technologies form overlapping spheres of enquiry. The co-evolution of tools, materials, and building forms in
the Nass Valley also tells a specific story of interconnectedness among ecology, technology, culture, and architecture.

Copper

Copper, according to archeological sites near Prince Rupert on the Northwest Coast, was used by the Nisga'a and their neighbours as early as 3000 years B.P. (MacDonald and Inglis 1976). Native copper, or copper stored in the earth in metal rather than as soluble crystals requiring ionic transfer (Knapp 1996), was found near the Copper River and on a tributary of the White River. These were the major sources of copper traded among people of the coast. Other sources closer to the Nass and Skeena Rivers, notes surveyor George Dawson during his work for the Geological Survey of Canada, were kept secret by the Native people. "[I was] shown fine specimens of copper pyrites and bornite [a copper ore material] by an Indian. [It was] said to come from a place a little below the Forks of the Skeena, and to exist, of course, in great quantity. Indian believes the locality unknown to whites" (Dawson 1878, published 1989: 521). Dawson's information suggests that copper would have been available to the Nisga'a through regular trade routes along the Grease Trails.

Although copper does not appear to have been used on the exterior of buildings, some stories tell of copper canoes. Nagunak (the two-headed whale spirit in Tsimshian and Nisga'a oral histories) gives a chief's party a magical copper canoe as insurance that the people will be kind to all sea creatures (Miller and Eastman 1984). Carvers valued copper for its resistance to water-induced damage or corrosion. However, the rarity and value of Native copper would likely have made it too expensive to use for flashing or other exterior construction purposes (Drucker 1965, Emmons 1991). Trade increased the value of copper still further. Each time a piece of copper was sold, its worth escalated, until the southernmost recipient of a piece of copper paid more than double its original price.

Copper also had other symbolic associations related directly to architectural production. As items of wealth and decoration, "coppers" were displayed by a chief during ceremonies and feasts. Hammered to form a slab between one foot and three feet high, a copper consisted of a keystone-shaped upper section and square section below, reinforced with a t-shaped thickening horizontally across and center, and from the center to the base. Northern coastal peoples then incised coppers with crests, thereby working out of themes that would later be used for housefront paintings (Miller and Eastman 1984). Coppers represented a link among wealth, souls, and the universe: the longhouse portrayed similar linkages.

In comparing housefront designs with the coppers belonging to the same family lineage, similarities are found, both in design characteristics and in the way both houses and coppers are named. "The symbolic relationship of coppers to house front designs is supportable. The main difference [between copper and house front designs] is that the side panels of the house and screen design structures...have been rearranged and placed below the central panel" (ibid: 134).

Copper was sometimes used as rivets to join together parts of fine household items, such as spoon handles and bowls, or other works in bone, horn, or shell (Emmons 1991). Spoon
handles, in turn, had crest significance and, like copper slabs, may have been used to work out design ideas for larger structures.

Another direct use of copper in architecture was at the final stage of finishing: as blue-green pigments. "Copper-impregnated clays" (Garfield and Wingert 1979: 63) were traded at the Copper and White Rivers, and mixed with fish eggs to form a prized blue-green paint. Copper oxide, probably azurite, was also used as pigment (McLennan and Duffek 2000).

Iron

Iron was amply evident on the Northwest Coast some time before the arrival of eighteenth century European traders, and available in small quantities, perhaps since about 1000 B.P. (Drucker 1965) and possibly as early as 1630 B.P. (MacDonald and Cybulski 2001). The possibility of iron use by early Northwest Coastal peoples has architectural implications, mostly in terms of the woodworking details that are possible with iron tools, and not with known tools of stone or bone. Indeed it would seem that peoples of the Tsimshian language group had the ability to carve with iron tool-like precision long before the last millennium. In Prince Rupert wet site excavations, for example, one of the surprising features of the heavy woodworking were the smooth and broad cross-grain cuts, and detailed mortise-and-tenon joinery, neither of which would seem to be the product of mussel shell adze blades or stone tools. (Mortise and tenon joints link two pieces of wood, one of which is the mortise—slotted to receive wood—and the other the tenon—a tongue that fits into the mortise). In the same excavation, dated by the surrounding peat to be from 1630±100 B.P., archeologists found straight shafted chisel handles and elbow adze handles—but no tool blades for either. "Unless the blades were very thin ones made of jade" (MacDonald and Cybulski 2001), the assumption is that iron tools were used by peoples of the North coast over fifteen hundred years ago.

Where did the iron come from? Archeological sites in northern Tlingit territory, near Pillsbury Point, contained iron tools, including a chisel and barbed arrowhead (Drucker 1965). As to Tlingit sources of iron, anthropologist Philip Drucker speculates: "The source of iron, which was not smelted on the North Pacific Coast, is something of a mystery. I am of the opinion that it must have been traded in a long series of exchanges, via Bering Strait, from some Iron Age in Siberia. It is known that the Inuit of the Bering Strait region received iron in small but increasing amounts from the beginning of the archeologically defined Punuk horizon, dated about A.D. 1000, and it seems reasonable to believe that some of the metal was traded along the coast until it reached the hands of the North Pacific Coast Indians" (Drucker 1965: 23). Trade with the Tlingit, of which there is a long tradition, probably provided pre-contact Nisga'a with iron. Mobley and Eldridge (1992) offer a wider range of possibilities. Pre-contact Northwest Coastal peoples could have obtained iron from trade with Mexico, or from Siberia, or from Japanese vessels that were washed onto the west coast of America by the Japanese current. Supporting the latter theory, Frederica de Laguna noted that the Native people had obtained iron from driftwood. The "drift iron" was shaped by beating and pounding, skills the people had perfected through long work with native copper (de Laguna 1960). The Pillsbury Point site also contained some wooden artifacts that were likely carved with iron tools, judging from the finely detailed workmanship (ibid).
During the "exploration and fur trade period" of the North Pacific Coast that spanned from Bering's arrival in Alaska in the early eighteenth century to the "epoch of establishment of administrative and religious controls" (ibid) in roughly the last third of the nineteenth century (Drucker 1965: 191), iron became still more available in the Northwest Coast. Researchers are divided on the influence of increased availability of iron on architectural production. Drucker (1965) attests that the eighteenth century iron tools had little cultural effect, since the native people were probably already familiar with iron. Further, carving styles were already established, and technologies for carving did not change with the more abundant iron supply. Perhaps, he concedes, there was some increase in the volume of carvings produced—but not in the actual production itself.

Records of the traders themselves concur that iron was already available on the Northwest Coast before their arrival:

*The first [European] navigators who visited the Northwest Coast of America, in ascending from the forty-second parallel to the sixtieth parallel, found that the knowledge and use of iron had long since arrived there; and they saw, in the hand of the Natives, various instruments and tools of that metal. [...] (Fleurieu 1801: 229).*

Other traders' journals of the late 1700's indicate that there was a demand, among coastal peoples, for additional iron in the form of iron adzes, chisels, and picks. These were purchased by Northwest Coast peoples in exchange for Native-owned goods (MacDonald and Inglis 1976). However, the demand for iron was not as intense as the traders may have supposed. Spanish, American, British, and French traders all vied to sell goods, including iron, to the Native people. Markets for iron were quickly glutted, discovered Captain Cook, who returned from the Pacific Coast of America to Canton with barrels of unsold iron in his ship (Drucker 1965).

Some analyses suggest that abundant iron obtained through trade with Europeans led directly to a renaissance of building and carving throughout the exploration and fur trade period (sometimes called the proto-historic or early historic period). For example, Gunther (1951) asserts, "When the early explorers brought iron into the Northwest, the Indian [sic, meaning Aboriginal] craftsmen seized upon it to improve their tools and the great development of art can be traced partially to this stimulus" (Gunther 1951: not paginated). The greater ease with which the traditional plank house—in production for about 5000 years (Fladmark 1976, McLennan and Duffek 2000)—and the carved pole could be constructed using iron may have influenced volume of production. However, a much larger factor was likely the greater availability of wealth from increased trade, which would affect the "number of housing starts". Also, more elaborate housing would be enabled by vibrant, fur trade-fueled eighteenth and early nineteenth century Native economies.

Improved access to iron tools may have facilitated fabrication of mortise-and-tenon joinery in house construction, replacing earlier tied joints in some cases. In the nineteenth century Nass Valley, and earlier, tied joints continued to be used on some buildings and in some situations (Jacob McKay 2003), with mortise-and-tenon joinery selected for the main connections on
more permanent structures. Tied joints remained common on less expensive structures, such as smokehouses (Emmons 1991, Jacob McKay 2003) but the main poles, planks, and beams of longhouse construction were interlocked with intricate woodworking details.

Joints that were probably made with iron tools common in the eighteenth and nineteenth centuries are shown in the building drawings that follow. Among the intricate joints used in Nisga’a buildings were those at the corners of the longhouse. The sizable planks were slotted to receive side beams from two directions, and were grooved at the top to hold the gable end beam that spanned across horizontal or vertical wall planks. Kerfed joints were also used, as were lap joints that were either bound together with spruce root rope, or doweled together with hardwood dowels. While post-contact iron tools are easy to attribute to European trade, the question remains as to what very hard, thin tool blade enabled architectural craftsmen from sixteen hundred years ago to fashion the intricate cross-grain cuts needed for different woodworking joints.

Just as the last longhouses were being constructed on the Northwest Coast, sometime in the 1880’s, nails and Western-style platform framing were introduced. The increased abundance of iron due to European trade was, in all likelihood, not the reason Nisga’a builders came to choose nails over mortise-and-tenon. In the eighteenth and earlier centuries, nails were expensive and rare. Further, the massive poles and beams used in much Nisga’a construction would have required sizable spikes and bolted connections to withstand wind, earthquakes, and other forces—even more expensive than small spikes or nails. Iron connections remained expensive until about the 1880’s, as the iron produced until that time was hard and required hand-forging. In the 1880’s a new manufacturing system for making inexpensive soft steel, the Bessemer process, facilitated the marketing of factory-built nails from soft-steel wire (Visser 2004). By the beginning of the twentieth century, nails were affordable and easy to obtain. Once available in the Nass Valley, nails became the preferred way of joining wood building parts together (Jacob McKay 2003). The availability of nails coincided with increasing availability of milled lumber in the Nass Valley. After the missionaries arrived, mills were constructed in or near many villages, to produce the milled building materials favored by the missionaries.

**Gravel**

_The longhouse, it's built right on the ground. You see all the thick gravel, the clean gravel? That's what they used all around as a floor, on the inside and the outside. Every so often they take that out and change it. They bring in new clean gravel. They don't just use it for years. The same way they use the wing of the bird to get the spider webs, to clean up. I can't go without the vacuum myself_ (Emma Nyce pers. comm.).

Being able to change the material on house floors, for cleaning purposes, was an innovative use of gravel, a material readily available and easily cleaned.

**Andesite pebbles**

Still another use of pebbles, this time larger than those used for flooring, was round pebbles were made into scrapers. This use is archeologically evident as early as 10,000 B.P., a time
when glaciers had mostly receded from the Northwest Coast. Scrapers continued to be uncovered and dated (by radio-carbon dating of nearby organic materials) through the close of the Lithic Stage of Northwest Coast history—that is, until about 5500 B.P., when sea levels dropped close to modern levels (Fladmark 2001, Archeological Survey of Canada 2004). The Greenville (Laxgalts'ap) excavation, dated much later than the Lithic Period, mostly from 1500 B.P. to about 800 B.P., nonetheless uncovered eight relatively flat andesite (hard, grayish black volcanic) rocks or pebbles that had been "flaked" in the manner of microblade tools: that is, one or both faces of one end were chipped off or "flaked" to form a sharp steep blade; the other end was left rounded to fit into the hand (Archeological Survey of Canada 2004).

Scrapers were used in woodworking, which makes them important to architectural production. The presence of the scrapers in the Greenville site indicates the very long tradition of woodworking practices: consistent use of tools for millennia. From their size, the Greenville stones appear to fit nicely in the hand, since they ranged in length from 35.2 to 61.2 mm., slightly narrower in width than in length, and between 5.9 to 10.9 mm. thick (Cybulski 1992).

**Slate**

Mirrors, worn about the neck, were part of personal decoration, although they may also have enhanced small interior spaces when not being worn. Likely, mirrors were a Nisga’a innovation. "The Nishka (sic) claim to have been the originators of the mirror in this region. They fashioned it from a homogenous, grayish-black slate found in a ledge on the north bank of the Nass across from the old village of Kitaix, flushing the rock with water to procure pieces of suitable size for working. It is a fact that specimens found among the Nishka an Coast Tsimshian seem to be of like material and are similar in form, thus tending to substantiate the Nishka claim" (Emmons 1921: 10). Unlike most building elements or accessories, slate mirrors were not shared between cultures of the Northwest Coast. "The stone mirror...was the product of the Tsimshian, and if known to their neighbours of the coast, the Tlingit, Haida, and Kwakiutl, it was never used by them, and is not represented in any of the very complete collections gathered among them (Emmons 1921: 7).

Carved and shaped slate mirrors are found in the Greenville excavation. The slates are about six inches high and four inches wide, and several are shaped approximately like the shadow of a front-facing (but flattened) head, neck, and shoulders. The keystone-like "head" narrowed to a neck-like extension and then widened at the base or "shoulder, a shape that enabled the mirror to be attached to a cord made of hide or twisted root and worn as a pendant necklace (Emmons 1921). Other Nass Valley examples are more like the shape of "coppers", but smaller: a shape indicating wealth and also connecting the bearer to family crest spirits and wealth from the land.

Like other carved works in the Nisga’a repertoire, most mirrors are crafted to a near-perfect bi-symmetry, sometimes engraved on one or both sides. Zoomorphic, or animal-like images (MacDonald 1976) were carved on some, whereas others had more geometric designs. An additional example from the Nass Valley was carved with finger grips (Cybulski 1992: 212),
showing it is probably intended to be used as an implement other than a mirror. As with other
dercoration on household, personal, or architectural elements today or in the past, the choice
of carved pattern likely indicated personal preference of the artist or wearer (McLennan pers.
comm.), or different meaning, function, or significance accorded the object. Individuality of
design choices, as in the slate mirrors of the Nass Valley, becomes an indicator that
individual experimentation was often a key element within cultural wisdom, as were
everyday objects and the discourse of daily life (Turner, Ignace, and Ignace 2000). One of the
slates found in the Nass Valley is incised with a pattern of parallel lines and cross-lines in a
style reminiscent of Tahltan or Babine hunting knives (Emmons 2001). Since these are
peoples who came to the Nass Valley in the adaawak histories, it is possible that this slate is
a work from the time of those particular migrations. Trade and migration, another set of keys
to the origins of ecological knowledge and wisdom, are suggested in the artistic patterns of
Nass Valley mirrors.

The slates had numerous uses, as indicated by the shapes and carvings. Several mirrors have
notched top edges, indicating they may also have been used as scrapers (Emmons 1921).
Nisga’a people used the hard, reflective implements as palettes for mixing minerals and fish
eggs used for paint (Cybulski 1992). Some were also ground to form ulu-shaped knives
(ibid). In effect, it was not unusual for people to have multiple uses for their artistic works,
and more than one reason for making them (McLennan pers. comm.)

Obsidian

The continuous presence of obsidian between Tsimshian-speaking peoples and the British
Columbian Interior is verified by the presence of obsidian tools in excavations as old as 5000
B.P. (MacDonald 1989, Prince 2001). The trail network that connected the Nass Valley with
Interior and Coastal trading partners facilitated the transport of a continuous supply of
obsidian to coastal regions. The hard volcanic glass was quarried south of the Nass Valley at

Obsidian was highly valued for the extremely sharp tools it produced. Fine cuts in wood
made with obsidian blades would have enabled carvers to express details common in Nass
Valley carvings, such as the very small faces within eyes of crest figures, and other delicate
work for which Nisga’a carvers were known.

4.3 Zoomorphic Materials

Birds’ wings and feathers

Several historians of this research mentioned the importance of selecting construction
materials that could be kept clean, and of having implements to maintain order in the
household. Neatness, explained Emma Nyce, was always important to the Nisga’a. For this
task, birds wings were carefully selected.
They have their own way of cleaning where they are, so it’s not messy. They use a wing of a grey bird from the sea. I forget the name. They use it to clean where they are so it is always neat... (Emma Nyce 2003).

Most archeological sites, including Greenville (Laxgalts'ap), evidence collections of bird wings. At Prince Rupert archeological sites, "almost sixty percent of the identified bird bones were wing elements, whereas such bones comprise less than ten percent of the total number of bones in a complete avian skeleton" (Stewart and Stewart 2001). Wings collected at the Greenville site include those of Bald eagles (of the nine bones collected, six were from the wing), gulls (Larus sp.) (sixty-six bones collected, of which twenty-eight were from the wings), five different duck species (four of the seven collected bones were wings), and raven (two wing elements collected out of a total of three bones). Judging from the archeological discoveries at Laxgalts'ap, the grey bird from the sea that Sigidimnak' Nyce refers to was probably a mew gull or glaucous-winged gull. These birds were also captured for food in early spring during the oolichan run (Bert McKay 2003), supporting Dr. McKay's assertion that the whole animal was used, following principles of conservation. For example, the gulls whose wings were saved for cleaning were also used for food at certain times of the year:

Certain types of seagulls are edible. That is part of the new foods that are being harvested now [in March]: not as much as they used to. I had my last seagull feed about five, six years ago. It's not just any kind of seagull; these are what you call the herring gull. They are white with sort of a grayish blue on wings. There are others too, that are almost brown from the soil, but they are garbage eaters who have come in from the urban centers. You don't eat those. The hunter has to know exactly what kind he is hunting. It is part of the foods that come with the spring season (Bert McKay 2003).

Animals whose parts were used in dwelling construction or maintenance were rarely used solely for those purposes. Whenever possible, the remaining parts were used for food or for utensils. For example, the long hollow limb bones of birds were used for construction tools such as awls (ibid); they were also used for tubes, whistles, and beads. Drinking tubes for medicine were made from eagle wing bones (Stewart and Stewart 2001). Multiple uses of resources was one key to ensuring that each resource would be sustainable over many generations.

Spiny dogfish (Squalus acanthias, Nisga'a=gasgaasts)

Nisga'a builders used dogfish skin as "sandpaper", to complete the finish on wood carvings and structural components. The Greenville excavation, along with other archeological sites of peoples with whom the Nisga'a exchanged ideas and goods, contained bones from the spiny dogfish, and their use as sandpaper is remembered by elders (AN IV).

Swimming close to the surface, the shark-like fish can be caught relatively easily. The skin is sandy-rubbery to the touch (Bob Lang pers. comm.). Nisga'a people would have been able to catch immature spiny dogfish year-round and mature specimens in summer, where they were found in Hecate Strait and Dixon Entrance (Cybulski 1992).
Mountain Goat (*Oreamnos americanus*, Nisga'a=matx)

The most important resource is the mountain goat, because the total animal is used. The horns, for instance, were used for arrowheads, or for knives, and used as a breastplate for warriors: they were stringed together so the arrows would bounce off. So that was the importance of that resource (Bert McKay 2003).

Mountain goat horns were also used for spoons (Deanna Nyce pers. comm.). The intestines were used for tying building elements together, particularly inside a building (Horace Stevens pers. comm.). The wool was manufactured by hand and used for making sweaters, socks, slippers and gloves, and the goat hide made ceremonial drums, men's pants, and shoes (AN IV: 68). The rich meat was "the first meat of winter" (Robert Moore (Niis xbakh) in AN IV: 68), and was eaten fresh or dried.

Mussel shell blades

Very sharp blades were made from mollusk shells. The blades of adzes—important woodworking tools—were made from mussel and other mollusk shells in the "Early Pacific" period of about 3500 to 1600 years B.P. (Ames and Maschner 1999: 92), coinciding with the earliest recovery of planks in wet-site research on the Northwest Coast (dated to 3000 to 3500 years B.P., see Hebda and Mathewes 1984: 712). The use of mollusk shells has been correlated with the emergence of longhouse construction technologies and practices (ibid).

Sitka black-tailed deer (*Odocoileus hemionus sitkensis*; Nisga'a=wan)

*Hasgaltkw* or antlers were used for tools and for utensils (School District 92 1996). Archeological discoveries of deer teeth were also found at Greenville archeological site; the mandibles and bones of deer extremities were used to make tools as well as for ceremonial items (Cybulski 1992: 89). For example, a chisel 105.5 by 14.7 by 11.9 mm. was formed from a metacarpal of a Sitka deer (Cybulski 1992: 221). Awls were also made from split land mammal bones, including those of deer (ibid: 215).

Fish egg proteins

Used as the binder for paints, fish egg proteins were vital to the expressiveness of painted buildings, boxes, poles, and other wood carvings (McLellan and Duffek 2000). .

4.4 Small plants

Fireweed (*Epilobium augustifolium*, Nisga'a=Haas; inner fiber=Waahaas)

String from fireweed stems was sometimes used for tied connections (Hańimgoonisgum Algaxh Nisga'a 2001: 182). The availability of fireweed in the Nass Valley and surrounds is readily observed: even the lava fields have sufficient soil and nutrients to enable the tenacious and colourful plants to thrive.
Stinging nettle (*Urtica dioica*, Nisga’a=Sdatx)

Stinging nettle was an important source of twine. Both the stem fibers and the roots were softened and then twisted or rolled together to make a fine cord (Turner 1998: 175). Stinging nettle twine was commonly made into oolichan nets as described below:

*The oolichan net was made from the roots of the stinging nettle. Within our family’s hunting area which starts just a little north of this community and continues up, is Lax Ansdatx which means the rotten stinging nettle. Its roots were used to make the nets in the early days. The roots were softened and then woven together; they look like modern day twine. It was fine enough to be able to be used for nets. In fact I think a stinging nettle net from the Nass may be in the Canadian Museum of Civilization in Hull* (Joe Gosnell, Hleek interview 2003).

4.5 Trees

Evidence of wood and fibre uses from as long as six thousand years ago are found in waterlogged, or wet sites, since wood and fibre remains are often preserved in water-saturated environments (Makah Nation 1984, Croes 2001). Wet site research has enabled scientists to verify that Northwest Coastal Peoples spent millennia utilizing various trees, optimizing the individual qualities of each species (MacDonald 1984a), and making woven or tied connections (Croes 2001). Prince Rupert Harbour, an excavated wet site close to Nisga’a lands, demonstrates that Tsimshian speaking peoples from as early as 3000 B.P. used crabapple, western fir, alpine fir (*alda*) yew, birch (*haawak’*), juniper (*ts’ex*), alder (*luux*), and pine (*sginist*) as well as Western red-cedar (*simgan*), yellow cedar (*sgwinee*), spruce (*seeks*), maple (*k’ookst*), and Western hemlock (*giikw*), for architectural and interior components (all italicized words in this paragraph are Nisga’a). Douglas-fir, *Pseudotsuga menziesii*, is not recorded by the archeologists at Prince Rupert site, is missing from lists of trees in Nisga’a dictionaries (see WWN 2001), and is noted in Turner (1998) as absent from most of the central or northern coast; yet in 2004 botanist Nancy Turner found Douglas-fir near Gitwinksihlkw (fig. 18a). Climate change may be a factor in this observed change in vegetation, since climate change was noted by numerous elders interviewed in 2003 (Bert McKay, Alice Azak, and others).

Fig. 18a Douglas-fir is now found in the Nass Valley, which is north of the expected range of this wood. Photograph by Nancy Turner 2004, taken across from a fishwheel near Gitwinksihlkw
When testifying about trees, most Nisga'a elders include a proviso that trees should only be used with a thorough understanding of their properties. Cedars had particular value, and many elders spoke about cultural laws of conservation while specifically addressing the great value of cedar. Cutting down a tree of any species was a matter of great deliberation. Experts were consulted before a tree was cut:

...some of the guys were good at knowing which trees would split straight. They know just by looking: they would walk around the tree. They would take the bark off and then lay the tree down flat. They would put it on a nice level area and then they would walk around it. They would always use wedges that were made out of the hardest type of wood, and especially the branches of the trees—spruce and [Western] hemlock. Hemlock branch is pretty tough. It doesn't crack no matter how many times you use it to split the cedar. That's what you use for wedges. (Jacob McKay Interview 2003)

...And they were very selective with the types of trees they cut down for whatever purpose. Cedars were cut for building longhouses, because of their light weight and length, and making shakes. Never at any time did you see trees just laying about rotting. Only at the time of need did they chop any trees down (Ksdiyaawak—Hubert McMillan in AN IV: 237).

...the woodworkers, they had to know how to fall the tree. There wasn't just any way. We didn't have the implements that make it easy today. We did have stone axes. The main implement they used was quartz. They had to know how to control that (Bert McKay 2003).

In Nisga'a law, trees could not be cut from just anywhere. Trees, like other resources, were owned by the wilp (lineage) on whose ango'oskw the trees were found. However, the Nisga'a had sharing agreements: that is, if a tree was needed for a canoe or building, permission would generally be granted by the wilp chieftains. The "purchaser" would acknowledge his debt to the tree's "owners" after the house or canoe was complete, usually with gifts at the dedication feast:

In the case of an ango'oskw, such as Bayt Neekhl's, which was known for its large cedars, anyone could cut down a tree for use as a totem pole, but the wilp could expect payment at the time of the totem pole raising in recognition of the fact that the tree came from their ango'oskw (Bayt Neekhl—Gordon McKay in AN IV: 49).

The ango'oskw pattern of land ownership reinforced Nisga'a conservation principles. Since each wilp was responsible for the trees on their ango'oskw, wilp members became stewards of the trees, recognizing their value and protecting the family resource. Knowledge of resources did not end with one's own ango'oskw, however. Nisga'a people were expected to learn about other territories beyond their own (AN III: 64). Knowledge of the land and its resources was conveyed at the same time as knowledge about the social structures on lands throughout the Nass Valley and beyond (ibid). For the Nisga'a, resources and social structure formed inseparable constellations of knowledge.
Woods for wedges and dowels: Wild Crabapple (*Malus fusca*, Nisga’a=milks), White Maple, Douglas Maple (*Acer glabrum*, Nisga’a=k’ookst) spruce (*Picea sitchensis* or *P. glauca* Nisga’a=seeks) or Western hemlock (*Tsuga heterophylla*, Nisga’a=giikw) branches

*I think the pegs, again [used to fasten longhouse planks together] were a hardwood, usually the white maple or the wild crabapple. That was very hard* (Bert McKay 2003).

Longhouses were not only carefully crafted with fine joinery and many woods; the joints themselves were pegged at critical junctures to ensure stability and longevity. Sometimes the pegged connections were designed with great ingenuity: Nita Morven spoke of longhouses that were constructed so if one pin was removed, the whole longhouse would fall down. That way if a village was under attack, the people could keep the attackers from taking everything (Nita Morven Interview 2003).

Wild crabapple is a member of the rose family, and can be recognized by its dark green leaves, pinkish clusters of blossoms, and in fall clusters of pale, yellowish or purplish elongated fruit. The branches of the tree were selected and then seasoned with oil before being made into pegs (Turner 1998: 182). Sim’oogit Baxk’ap relates specific usage of crabapple:

They [Nisga’a ancestors] looked for wild crabapples, because they are hard. They take small little pieces, branches, and they burn them through and then they wedge pieces in like these. They make these long too, because of no nails on the shingles everything was bound by weights and wedges (comment made during the April 3 2004 charrettes).

Crabapple was also used to make hooks for fishing. Construction materials rarely had only one form and application, and ideas were traded between disciplines, from house-building to resource extraction to food preservation. This interchange is indicated in Volume four of the *Ayuukhl Nisga’a*, which documents how land and resources were used by Nisga’a ancestors.

*These men made hooks of [crabapple] wood; the halibut would swallow the wooden hooks and the men pulled them ashore* (Rufus Watts, Gadeelibim Hayatskw, in AN IV, 153).

Horace Stevens explains how the pegs were made: "The pegs were [white] maple. They used that because it’s really hard. They burned it…to make it sharp. Then they used kibax to make holes, and then they make it so that they put the nail in" (comment during the April 3 2004 charrettes). Bert McKay added: "The implements were obtained from the white maple, and that grows up on the banks, especially the Lower Nass. Here again, the wood was all part of it. They used it for decoration (Dr. McKay gestured a crescent shape). It was hard, durable. It became part of the longhouse, where they did the ornaments" (Interview 2003).
Fig. 18b Wild crabapple wood was important for making pegs and other construction uses that required a very hard and dense wood. The fruit is distinctively pale compared to many domestically grown hybrids. Photograph courtesy Nancy Turner

Wedges were used for splitting cedar into planks, and to tighten mortise-and-tenon joints. Very hard and fine-grained woods were required for wedges, so they could be sharpened to a thin cutting edge and driven into wood without breaking on impact. Although Sitka spruce and Western hemlock branches were most commonly used for wedges (Jacob McKay 2003), the small, very hard branches of crabapple also made excellent wedges for splitting cedar. Chief Mountain, Sim'oogit Sagaween, tells a story of a girl and her grandmother, left alone in a Prairie town after the Chief of the Heavens sent the rest of the children away for making too much noise at play.

The girl found an old wedge made of crabapple wood, one made of sloe wood (possibly Viburnum edule, highbush cranberry) (Felter and Lloyd 1898), one of spruce wood, and she also found a little grindstone, a little knife...(Killer Whale story told in 1894, recorded in AN II: 42).

Western Red-cedar (Thuja plicata, Nisga'a=simgan), Yellow-cedar (Chamaecyparis nookatensis, Nisga'a=sagwinee), spruce (Picea sitchensis, Nisga'a=seeks) maple, and Western hemlock (Tsuga heterophylla, Nisga'a= Giikw)

In the old days, the buildings would be cedar...The trees they used for wood were spruce and hemlock. Hemlock was a very hard wood, so it was used for all different purposes, like the anchors for the oolichan nets, because they could withstand the ice floes and the currents. They were durable, they bend, and they had their stake. That was the hemlock.

The spruce was a lighter wood, and that was used for boards. That was the most accessible, but certain areas, towards Lava Lake and down towards the salt water, the red-cedar was more abundant, red-cedar and yellow cedar. The yellow cedar they would find in areas like up by Portland Canal, Observatory Inlet. These were all traditional territory. What they looked for was a tree that was straight. They did that, for one reason, so they didn't have to labour at de-branching. Also, it provides straight grain, easier to split. So they looked for that. I am told that they grew so
expert at it they would pick a tree, and prepare it; they would make it stand and dry for over a year, in other words cut off the sap so they become dry. They were using boards about this wide (Dr. McKay gestured about two feet by three inches thick). I did see them at Fishery Bay, when we used to move there in oolichan season. They were in use in some of the buildings, where you house the produce, but you don't see them any more. Anyway, they were able to make lumber, and they did this by selecting the trees they wanted.

The most expensive would be the yellow cedar, a very classic wood, and the red-cedar. They were very huge and straight grained. Both are used for carving, the totem pole—but not the implements [which were white maple: see above] (Bert McKay interview 2003).

In the history of Nisga'a architecture, different woods had both practical and expressive significance. Western red-cedar and yellow cedar were vital to the evolution of longhouse and other Northwest Coast pole-and-beam structures (Hebda and Mathewes 1984). Bert McKay's assertion (interview 2003) that "The wood was all part of it" helps to explain the how the emergence of cedar in the Pacific Northwest coincided with the evolution of the longhouse: how wood was selected, its technological potential, its cultural significance. For instance, bringing together different woods in works of architecture is expressive of the cohesion essential to the Nisga'a nation. "The trees are there for a purpose, they are just like us. We're all born for a purpose, for a job on this world. Some of us do lots, some of us a little. But we're all used for one thing or another. The Nisga'a came from all one root that makes us strong" (Sim'oogit Hay'maas, Reverend Charlie Swanson, in AN I: xxv).

Cedar withes and their use as connections

Wet site research unveils surprising distinctions between Tsimshian and Tlingit-Haida uses, of cedar withes and ropes (Croes 2001). Dale R. Croes (2001) notes that "basketry and cordage artifacts appear to be much more sensitive for the identification of ethnicity than procurement related stone, bone, and shell artifacts" (150). Specifically, mats and baskets found in wet sites near Prince Rupert B.C. are typically made of plaited or twined cedar bark; these Tsimshian baskets were square based, then becoming rounded-cylindrical (ibid): this is also the form most frequently seen in the Nisga'a repertoire. Tlingit baskets were mostly round-based and made of Sitka spruce root; instead of a combination of plaiting and twining, the Tlingit used mostly twinning (information from Silver Hole archeological site dated 6000 years B.P., see ibid: 157-159). Thus the more northerly baskets contrasted in form, material, and technique with Tsimshian baskets and mats.

The Nisga'a people seem to occupy a cultural "ecotone" (on the boundary between two systems) that is enriched by influences from both the North and South. Ideas and materials were readily available because the Nass Valley is near the center of trade routes linking the Upper Skeena with Alaska (Prince 2001). Further, Nisga'a people used both Western red-cedar and Sitka spruce for cordage (Charles Alexander interview 2004, Bert McKay interview 2003, Horace Stevens charrettes 2004), depending on regional availability. It is therefore possible that the Nisga'a people used a variety of cordage techniques in building
construction and other uses. Techniques used in fishing and fish processing may provide the key to construction tying technology (Charles Menzies pers. comm.).

To this end, photographs of fish processing constructions at Fishery Bay reveal tied connections used by the Nisga'a people to bind multiple wood elements together, sometimes with one or more parts moveable (hinged connections). The sketch below is adapted from an oolichan press connection used in an 1887 photograph of Fishery Bay (BC Archives photograph C-07433, see fig. 17). In this particular construction, the pole inserted between the tied pair of poles became a lever used for pressing grease from aged oolichan.

Fig. 19a. Cedar withes were used to tie poles together, often for the purpose of holding a third component in place. The third component might be a lever pole (shown here) or planks for roofing or siding. The poles shown here are about three inches in diameter. Drawing by N. Mackin

Adaawak confirm that rope made from cedar had many architectural applications, although few examples of tied connections remain in museum collections (McLellan and Duffek 2000). A rare example is the photograph below of a wooden storage box, which demonstrates how expertly the cedar ropes were wrapped and tied to make connections secure (fig. 19b).

Fig. 19b Lids of red-cedar bentwood boxes were held down with twisted cedar bark rope, as shown in this late nineteenth century Heiltsuk box showing the original rope lashing. The tying system on the box, as on buildings, wrapped each section twice and evidences knots that provide strong connections in multiple directions. This box, on display in the Vancouver Museum (AA913), no longer has its ropes. The box is 45.5 X 39.6 X 34.5 cm. Royal British Columbia Museum photo PN 14447.
Cedar Implements

Even cedar boughs were not wasted. The boughs and branches could be used for brooms and to protect food:

*I guess in our great great great grandmother’s time, there were some people that lived just like the ordinary people now, they used the branches of the cedar for a broom* (Alice Azak, interview 2003).

*They used branches too: to keep the food, the cedar boughs. They wash them when they are really new: they are ready to pick next month. They used to tell us to pick it, and leave it around the house. The food would be covered by the cedar boughs. It would keep the flies and spiders off too* (Emma Nyce, interview 2004).

Alder (*Alnus rubra* is red alder, Nisga’a=luux) and cottonwood (usually Black Cottonwood, *Populus balsamifera* ssp. *trichocarpa*, Nisga’a=ammaal).

Alder and Cottonwood were used primarily as fuels for smoking fish. They are included here because the two woods were used within smokehouses, as fuel but also as a kind of flavoring.

*...the wood suppliers not only supplied the main house with wood, they also provided the smokehouses. This is where the salmon was prepared, fully smoked, half-smoked, or fully smoked and dried. There are special kinds of wood for that. Right now it is oolichan season, and people are preparing for that. My wife is working now, getting ready to work with her mother to smoke, get them ready for putting on the sticks. They are smoked oolichan on the sticks. I think there are twenty-four to a stick. It is pretty low ceiling, and there are two or three fires underneath, but it had to be hardwood fire, not just any wood would do, because the flavor is very sensitive to the kind of wood. The oolichan fish required the hardwood, which right here the most available is the alder. I noticed last night when I was coming home that there were two trucks loaded down with alder, so I know that they were smoking oolichan.*

*When the salmon season comes there is another measure of observance, prepared because the salmon requires longer periods of smoke exposure. A softwood was required, and only the cottonwood was used. That way there is no bitterness in the taste, and the completed stock is pliable, it’s not wood-hardened. So that, then, is the smoking, done outside the longhouse* (Dr. Bert McKay interview 2003).

Turner (1998) explains that red alder was used by most First Peoples in British Columbia as a source for red paint or dye. The Tlingit people, northern neighbours of the Nisga’a, extracted red alder dye by carving bowls from red alder and then filling the bowls with children’s urine, which gradually became red in colour. Items to be dyed were dipped into the bowl (151).

Amabilis Fir and Subalpine Fir (*Abies amabilis* and *A. lasiocarpa*, Nisga’a=alda)
"The Nisga'a sometimes split house planks from Amabilis Fir trees (Turner 1998: 80). The prevalence of the tall straight trees in the mountainous Nass region was noted during research undertaken by Steven McNeary with Nisga'a elders in the 1970's. Amabilis fir is less than ideal for construction, as the wood is somewhat brittle and soft (Turner 1998: 80). Sheets of bark of the smaller Subalpine fir were used for roofing by neighbouring Gitksan people (Turner 1998: 82).

**Hemlock** (*Tsuga heterophylla*, Nisga’a=giikw)

In addition to using Western hemlock for wedges, Nisga’a people valued the wood of the thirty to fifty meter tall tree in construction because of its resilience and hardness (Bert McKay interview 2003). The observance for using Western hemlock that was mentioned most often, however, was the preparation of the inner Western hemlock bark or ksuuw as a food. Hemlock bark could even be obtained in the middle of winter when a hunter’s supplies might become scarce (Christopher Calder, Laay, in AN IV: 78). Nancy Turner (1998) adds that hemlock gum, like that of other conifers, could be made into glue.

4.6 Finishing wood structures: materials for Paint

Paints were a critical part of Nisga’a architecture: building exteriors provided large, relatively smooth surfaces upon which families could express linkages between long-past history and important event of the near-present. Monumental house front paintings expressed spirit powers and clan histories of important lineages, while storage boxes, decorative and useful implements, and structural poles displayed colourful histories within. To express stories on building exteriors, structural components, crest poles, and interior furnishings, a variety of pigments were developed using biotic and abiotic materials from the Nass Valley and nearby places. Earliest origins of the pigments are told in the adaawak, recalled here in 1894 by Titus Minee'eskw, James Woods, and Moses of Kincolith (Gingolx). The history tells how Txeemsim prepares to visit his grandfather, the Creator, to ask about bringing fire from Laxha (the heavens) to people on earth:

> He made an Amhalayt [wooden headdress] and a beautiful Gwiis halayt [spun yarn blanket]. To match the carving on his headdress, he also dyed the mountain goat wool and put a blue and red design into the Gwiis halayt. The ksamk’ (dyes) were made from clays which he found nearby in the valley, the red clay coming from a site very close to New Aiyansh today and the dark blue from the vicinity of Canyon City. After baking and pulverizing the clay, Txeemsim then applied it to the cloth either dry or wet, depending on the type of material being woven.

> Because of the importance of the animals to him and to the other residents of K'ali'i'aksim Lisims, Txeemsim drew animals into the design on his ceremonial outfit. He did this as a mark of special respect and reverence, as well as in appreciation to the Chief of the Heavens for having blessed those on earth with the fish and animals on which they survive (AN I: 84-85).
In the history above, some sources of the pigments are identified, and their use is connected to respect for the land and the Creator. The use of rich blue and red pigments is a sign of gratitude for the abundance that ensured survival. Adopting the colour scheme in the story of T'x'eemsim above, pre- and proto-contact Nisga'a artisans used red in their designs, with accents in the more rare blue-green, green, or blue (Holm 1965, McLennan and Duffek 2000). However, on housefronts, boxes, and other larger wood surfaces, black was the most often-used colour. The "characteristic swelling and diminishing line-like figure delineating design units", called formline by Bill Holm (1965: 29), resulting in a "continuous grid of relatively even weight and complexity..."(ibid). Black was also nearly always used for painted free-floating "ovoids" (ibid), flattened oval or bean-like shapes used within formlines for features such as the irises of crest figures. Red, sometimes used for formlines instead of black, most often delineated cheeks, tongues, hands, feet, and arms (ibid, 30). Blue-green pigments were the least used, most often in recessed areas of a carved relief such as eye sockets (McLennan and Duffek 2000).

Fig. 19c. Nisga'a (and other Northwest Coast) housefronts and bentwood boxes were painted with artwork featuring mainly black and brown-red pigments and "formlines" (Holm 1965) "the flowing, almost calligraphic line, which delineates every unit of design...and lends a quality of inner life and dynamism to every object on which it appears" (NTC 1998: 20). The cross-hatched eye sockets are apparently unique to Nisga'a art (McLennan and Duffek 2000: 149). Reprinted with permission from NTC 1998: 21.

Some Nisga'a poles and paintings, such as those carved and painted by Charles Alexander's grandfather, featured only black and red. The pigments' sources varied depending on the surface to be painted:

My grandfather knew how to make paint with berries and hlam [hematite, also known as iron oxide red or red ochre—se also AN IV: 90]. When you go in the creek it is only about a foot deep, and some kind of orange stuff builds up year after year. My
grandfather would take the rocks out of the river, and scrape the stuff off, and when you put it on wood it's almost like paint, it doesn't come off. That's how he makes red. For black, you go down about three layers, and it's smelly and black, and he adds black berries, and you can't wash it off. Fish eggs are used in paint for baskets, eggs are not poison so we use it on baskets. We mostly use berries and a little bit of seal blood. For the food boxes, they use the same paint as they use on the totem pole because it is thick. My grandfather had three boxes. When they had a feast they bring all of these out (Charles Alexander Interview 2004).

Minerals found deep within streams, combined with very dark berries, formed a rich black pigment that could be painted directly onto wood.

The red hematite pigment described by Charles Alexander is an inorganic earth pigment that many first peoples obtained from natural "paint pots" (McLennan and Duffek 2000: 94). The pigment, found mixed with mud in certain streams or rivers such as the one near Laxgalts'ap referenced by Charles' grandfather, was sometimes collected in a wooden box that had a hole on the side near the bottom through which water and least dense solids would drain (Curtis 1915: 45). Remaining in the box would be the densest solids, either iron oxide or umber, a mix of iron oxide and manganese dioxide (Garfield and Wingert 1979, McLennan and Duffek 2000).

About two centuries ago, pigments from other continents became available to Nass Valley artisans. By 1836 the Hudson's Bay Company was marketing vermilion, a mercuric sulphide paint, from their store that was located first near Gingolx, and then at Port Simpson south of Gingolx. The paper envelopes of powdered red paint, manufactured in China, were used about half the time by Tsimshian speaking artists (McLennan and Duffek 2000). The more brown-red hematite continued to rival the new bright red paint's popularity in Nass and Skeena Valleys, possibly because of colour preference for a given design or because commercial paints were expensive and required a voyage to Port Simpson, whereas traditional paints could be freely obtained, usually close to artists' homes. "The ground itself and mud and clay were also important resources" observes the Ayuukhl Nisga'a (IV, 90). Properties of clays and ground rocks used in paints were understood through many generations of learning by doing (Bert McKay 2003). For example, when describing paints used by his grandfather's generation, Charles Alexander stresses that only non-poisonous materials were used to manufacture paints for food baskets. Paints for baskets, made from seal blood and berries mixed with fish eggs, contained all edible materials. Wooden structures that did not touch food, such as box exteriors or housefront paintings, had a different formulation, from things you would not eat: materials such as rocks and river mud. However, even the relationships between earthy materials and human health were well understood, because clays and mud were used in the preparation of food. "Clay was used in the cooking of oolichan grease.; mud was used in the preparation of certain types of fermented food products; and the ground was used as the Nisga'a food refrigerator, for keeping the preserved foods" (AN IV: 90).

By contrast, the highly poisonous nature of many nineteenth century trade pigments was not conveyed to purchasers. Vermilion, or mercury sulphide, was produced from pure sulphur and mercury (Ball 2001). The toxicity of mercury was not readily understood in the nineteenth century: "Mercury is a neurotoxin, meaning it affects the nervous system. The 'mad hatters' of the 19th century suffered from mercury poisoning which caused personality
changes, nervousness, trembling, and even dementia" (Environmental Protection Agency 2004: 1). By the middle of the nineteenth century vermillion was supplemented with an also-poisonous paint called chrome red or red lead, made from lead chromate. Originating in ancient Egypt, lead-based paints at first included lead antimoniate, later termed Naples yellow, and lead tetroxide or "red lead" (Ball 2001: 2). Later lead-based paints were made from a bright red mineral called Siberian red lead or crocite, so brightly coloured that it was named chrome, the Greek word for colour. Lead paint, a "mysterious" cause of illness and death worldwide, became commonly used within Northwest Coast architecture by the late nineteenth and early twentieth centuries (McLennan and Duffek 2000).

The toxicity of post-contact trade paints was not easy to discern. Hudson's Bay sold powdered paints wrapped in plain white paper envelopes (Holm 1965, McLennan and Duffek 2000); sometimes artists could buy premixed oil paints that came in collapsible tin tubes (Ball 2001) "What this meant was that painters became ever less familiar with what it was they were buying, and had no way of assessing the quality [or safety] of the new paints they were being offered" (ibid: 5). Unlike paints made using knowledge of the land passed on for generations, the new paints held untold health dangers. Until the 1950's lead paint continued to be used on and in residential structures without warning, even though scientific studies on the dangers of lead had been undertaken in Europe since the 1700's. Some argue that the suppression of information was deliberate. "Lead and paint manufacturers suppressed information about the toxic effects of lead-based paint products and actively stymied development of alternatives to lead in paint. In the 1920s, painters' unions became aware of the occupational hazards of lead exposure, resulting in workers getting protection from lead poisoning while children of uninformed consumers still ingested paint chips" (Brayton and Purcell 2004: not paginated).

By contrast, fully understanding the properties of nature-derived pigments, and then communicating those properties from generation to generation, is an example of how Nisga'a knowledge was conveyed: "knowledge would be useless to us if it couldn't be communicated, discussed, and passed on" (AN IV: 133). The next chapter tells of how detailed knowledge of materials and the land translates into specific construction solutions, and introduces how those buildings were, at the same time, themselves instruments for gaining and disseminating knowledge.
CHAPTER FIVE: Buildings: oral histories, uses, drawings, and models

5.1 Introduction: bringing together the measurable and immeasurable

In the Nisga'a worldview, each house was envisioned as a box housing the souls of extended family members: a smaller version of the box of the world that contained all the souls of the universe (NTC 1998). Even the house itself had a spirit. The spirituality of each structure is defined within a worldview that perceived buildings as living beings "...with both skin (made of removable cedar planks) and bones (the house posts, beams, and rafters, which are considered to be arms, legs, backbones, and ribs) (NTC 1998: 38). A building as a living being can be understood within Nisga'a and other Tsimshian speaking peoples' worldview in three distinct ways: emphasis on skeletal structure and relationship to food supply; communication between people and food supply; and axes of spiritual power (MacDonald 1976). The first of these recognizes that living beings, including buildings, are essentially a skeleton, and all parts of the skeleton are important individually and as part of their order to each other and the universe. This principle relates to the honour accorded to different woods, and principally to Simgan, red-cedar, tree of life. To the skeleton is added a spirit: "The [cosmological] principle, also widespread in Siberia and northern North America, states that the ultimate reduction of a living creature is to its skeleton as a concrete form, and to its spirit as a power form" (MacDonald 1976: 120). The spirit guides who help the Nisga'a survive appear once the skeleton is complete, as in the Laxgibuu adaawak told by Amelia Morven:

It was still daylight when the young braves reached what appeared to be a frame of a house. That's what the old people said, there was no house, just the frame...That evening the house transformed itself into a finished dwelling. All of a sudden, that area around the house became active and noisy (AN II: 228-9).

Buildings as living beings and as part of the universe can be linguistically, as well as graphically, linked to this cosmological definition of living being. In the Nisga'a language, many parts of buildings are also parts of the human skeleton. For example, wit is the Nisga'a word for wooden crossbars for drying fish, and also means collarbone. Names of building parts also double as places within the universe. Laxha is heaven and a high place in a building, such as the upper floor or a high shelf.

The next section explores how building spirituality directs aspects of architectural design, including ecological responses and formal considerations. While doing so, the chapter reconstructs drawings and models of Nisga'a structures and their components. Reconstructing the buildings themselves is in some ways the core of the research, firstly because the models and drawings were informed by interviews held with elders in this research and in the past, and secondly because the architectural reconstructions became the focus of the charrettes held with the elders in Gitwinksilhkw. Initially, reconstructing buildings from mental and visual images did not seem too difficult, since the production of "as-built" construction drawings is a skill I had honed through architectural practice. This research effort proved more challenging than other "as-built" tasks, however. In the case of Nisga'a architectural history there were very limited visual materials. Fortunately, the elders' testimonies were
richly detailed and helped fill in many of the gaps in visual resources. Combining resources, I found there was often enough information to draw the structures.

The story-tellers’ descriptions helped to explain design principles, structural concepts, technical adaptations to site and climatic conditions, ceremonial significance of buildings, carvings and paintings, buildings uses, and many other attributes. While most compendia of stories about a given building or building type was not quite enough to lead to a complete drawing or model; in other ways the stories provided much more information than any visual resource. Adaawak provided "the immeasurable" qualities of past structures (Scully 1962: 43): the qualities of poetry and dreaming, the spirit of the space that sometimes literally begins as a dream. The "measurable" qualities usually emerged from the immeasurable, along with in-depth examination of archival materials.

In Nisga'a stories, new works of architecture often began as something immeasurable: a vision. The story of a house that starts as a dream in re-recorded here as told in 1953 by Mrs. Emma Wright (Hleek) of the Laxsgiik at Gitlaxt'aamiks. As she begins, a girl and her grandmother are traveling by canoe down the coast, after abandoning the town of Timlaاخ’aam because it remained snowed in and frozen into the summer months. The two travelers have many adventures. At one point along the coast they see a huge whirlpool and a strange being. Their canoe drifts into a branch of the Skeena known as Wilsk’aluux, meaning "among the alders".

_There the canoe landed, and the grandmother led the girl into the woods where they erected a shelter under a tall spruce tree. Here they rested and ate a small amount of food they had left. This place is about where the sockeye station is now on the C.N.R. line._

_As the girl and her grandmother rested they were surprised to see the larger canoe in the distance. They had thought that this canoe had been destroyed by the huge whirlpool, and that its occupants had perished. The girl and her grandmother watched while this other canoe landed and the men began to build a large house at the water's edge. When it was completed, then men painted on its front the figure of the whirlpool and the monster, Gitimnak’, with the body of a man and the head of a woman. It had a wide labret in its lip and long braided hair. In the interior of the house the men painted daxhaaw (sea urchins) and dayts (a type of seaweed). All this time the men were singing dirges. The grandmother also noted that they were dressed in very strange costumes._

_Then the girl and her grandmother awoke to find that they had seen all these things in a vision. But the old woman had heard the songs and learned them, and she had seen the images and remembered them. She knew that it was intended for her to take all these things as crests for her house, that is, for the Wii Seeks wilp (AN II: 60-61)._
through song and drama as well as tools and measurements. All these artforms helped to reestablish interactive connections between the spirit world and the world of land and buildings.

The process described in the story, of translating the visions into structural form, is also reminiscent of the design process itself, during which ideas sometimes seem to form mental images that initially seem complete enough to become drawings. During design, however, the seeming exactitude of descriptive images often fades when pen (or curser) begins to translate them into lines and shapes. In architectural design, as in historical reconstruction, much work must be done to make "the immeasurable" ideas into measurable drawings and models. As legendary American architect Louis Kahn insisted, buildings "make 'being' determinate—which is why [one] insists upon both the 'measurable' and the 'immeasurable'—...reuniting the rational preconceptions of science with the non-rational assertions of art" (Scully 1962: 43).

The measurable was needed within the reconstruction process that is part of this research. Discerning exactly which "measurable" images could be attributed to Nisga'a history was not an easy task, yet the importance of accurate attribution could not be underestimated. I knew, from casual discussions with artists of several First Nations, that sensitivities surround the claiming of artistic merit by one group when the actual creative progeny is either uncertain, or properly shared among several Nations. Bill McLennan, curator of Vancouver's Museum of Anthropology, writes about the dilemma of artistic or architectural attribution, when he characterizes certain painted cedar chests as Nisga'a:

A number of carved and painted chests now dispersed throughout museum and private collections share a similar style or character in their compositions. Some are catalogued as Haida, some as Tlingit, others as Tsimshian. Certainly, each shows stylistic links to several regional styles of the northern coast. Yet within this group are chests collected in the Nass River area and accompanied by reliable documentation. The strong affinities among these examples and ones with unclear provenance suggest a possible Nisga'a attribution for all (McLennan and Duffek 2000: 196).

Other archivists and ethnographers shared McLennan and Duffek's concern, that credit for Nisga'a cultural production had, at times through history, been mis-assigned. Much lack of clarity ensued from ethnographers' writings in which the Nisga'a people, lands, and creative productions were portrayed as indistinguishable from those of their Tsimshian neighbours to the south. Adding to the architectural mystery, Nisga'a craftsmen, renowned for their excellence (Emmons 1921: 8, Halpin 1972: 26, Garfield and Wingert 1979: 70) would often build for high ranking chiefs of other nations. Nisga'a builders and carvers were in demand, and accepted commissions to undertake works in many regions away from the Nass Valley.

The dispersal of architectural and artistic ideas by Nisga'a carvers was, in part, due to their high achievements in both fields. Numerous ethnographers, specialists in Northwest Coastal cultures, write of Nisga'a carvers' and painters' excellence, ingenuity, and renown. In her Ph.D. research notes, Halpin writes: "It is accepted among specialists that the Nass River
carvers were on the whole the best in the country. Their art reached the highest point of development ever obtained on the Northwest Coast. And their totem poles—more than twenty of which can still be observed in their original location—are the best and among the tallest seen anywhere...It is noteworthy, besides, that the Tlingit poles resemble in character those of the Nass River, and the Nisga'a claim that a number of totem poles at Tongas (Cape Fox), the southernmost of the Tlingit villages, was the work of their carvers, within the memory of the passing generation" (Halpin 1972, attributed to TPG? P. 26). Emmons was also impressed: "The Nishka people occupy the valley of the Nass...and are artistic in a high degree. In fact, I think that the most delicate and pleasing examples of carving and painting gathered throughout the whole of the coast are from this people" (Emmons 1921: 8). Viola Garfield, whose "memory ethnography" (Miller and Eastman 1984) is among those most highly regarded by several later researchers (Nabokov and Easton 1989), writes of early post-contact years: "Carvers developed individual styles, introduced new designs, and trained younger men. Their services and the things they made were in demand in distant villages and decorative arts diffused. Thus, totem pole making spread from the Nass into Gitksan (sic) territory, and Nisqa (sic) carvers were hired to fashion poles and train younger men (Garfield and Wingert 1979: 70).

The sharing of ideas was reciprocal: Nisga'a builders both taught and learned beyond their homelands. While artistic ideas diffused from the Nass Valley to other areas, adaptable builders, carvers, and painters selected the best ideas of their travels and used them in their work (Mine'eiskw 2003, Jacob McKay 2003). Complex affiliations, including those between Nisga'a artisans and other Nations, are the nature of Nisga'a prehistory. Much traveling was done during the past several thousand years, some for the purpose of migration (long-term moves from one place to another). Migrations into and out of the Nass Valley have been extensively documented in zoology (Stewart and Stewart 2001) and archeology (Archer 2001, Sutherland 2001). During migrations, materials and technologies were exchanged as populations resettled. These exchanges were instrumental in blurring the boundaries between architectural ideas and styles. Migrations between Tlingit ancestral lands and the Nass Valley related to movement of glaciers and melting glacial waters, such as in the story of Daql'awedi (a Killer Whale-crested group of the Tongas, Hutsnuwu, and Chilkat) shaman of Hood Bay:

"After the Flood, people came down the Nass River from the Interior. Then when the flood went out, they went all over...People from the Nass River also stopped at the North End of Kruzof Island, near Sitka, called kuwatxi' an (de Laguna 1960).

In other stories of dispersion, Laxgibuu move southward to the Nass Valley:

"Territorial expressions are to be found in the...migrations of the Laxgibuu from the headwaters of the Stikine, their settling for a time here and there with other Laxgibuu, who permitted the newcomers to exploit their territories for a while before expelling them, and their final settlement on territories of their own on the Nass" (Halpin 1973: 124).

In addition to migrations, seasonal patterns of movement created opportunities for architectural thinkers to share construction methods and building ideas. Yearly trade travels
to Fishery Bay for the Nass River oolichan run were particularly rich opportunities for the exchange of ideas as well as goods. Ideas about construction were vitally important during the oolichan run, since temperatures were most often below freezing (McKay interview 2003, Emma Nyce 2003) and many people required shelter.

Because ideas and skills were exchanged so readily, the quest for architectural principles, forms, and technologies that are either unique to the Nisga'a, or unique to several groups including the Nisga'a, is not without challenges. The solution, for this research, has been to rely most heavily on evidence directly attributable to Nass Valley sources. This includes elders' testimonies, which are the keystones within the research structure, along with collected materials labeled Nass or Nisga'a. Other materials that demonstrate Nisga'a qualities or craftsmanship are also carefully considered here, with elders' assistance or with ethnographic or adaawak confirmation that they relate to Nisga'a production. In all cases, when some Nisga'a involvement idea is provable, but absolute attribution is in question, the stylistic accomplishments are shared with other nations. Specific building designs remain the property of the families of ownership (Allison Nyce pers. comm.).

This chapter begins where the adaawak begin: with the first Nisga'a buildings, and construction lessons from the Creator to the first people in the Nass Valley. The first Nisga'a architectural adaawak date back many millennia, to time before memory, the time of the great flood and the movement of ice sheets across the continent. Tracing beginnings of the longhouse also relies on efforts of Western science to retrace intertwining ecological and cultural conditions that led to the evolution of the massive wood structures.

5.2 The first Nisga'a buildings

The first Nisga'a architect identified in Ayuukhl Nisga'a was the Creator, or Great Chief. The Gisk'aast (Killer Whale) adaawak of the original mother Sgawo relates the story:

Each of Sgawo's children was educated by the Great Chief. [...] When they were fully trained, the Great Chief of the Sky called his grandchildren together. "Tomorrow, I am going to put you back to earth, at the village of your grandfather's", he told them. "These four houses here I will put down..." (AN II: 26).

The adaawak goes on to explain how people on the opposite shore heard noises that sounded like buildings and chopping coming through the thick fog:

Then the fog disappeared and, behold, the people saw four houses very bright with house front paintings that seemed alive. The first one had house paintings of the Sun, the next of the Stars, the next of the Moon, and the last of a Rainbow in many bright colours (ibid).

The housefront paintings, and the cedar wood from which the houses are made, connect the houses with the cosmos. The Universe itself is as a house-like structure complete with an ala or smoke-removing device leading to the sky. "The ultimate house/ box is the Universe, through which the sun passes everyday, entering the front entrance (symbolic of life) and
exiting from the back (symbolic of death). During the night the sun passes over the world house but can be seen as starlight shining through the holes in the roof" (NTC 1998: 34). The four original longhouses explain the universe/ house connection in their paintings and design.

![Fig. 20. The first four houses connect architecture with the cosmos. Gradually seem through a lifting fog, the imagery suggests that the houses are connected with water as well as the land and the universe. Drawing by the author.](image)

The oral history goes on to explain the social structure of the Nisga'a Nation, and its building-related origins. In the story, the four crests, and the animal and cosmological spirits that are one with the people within each crest, become part of the buildings and part of the peoples' identity:
Thus began the four clans: first the Gisk'aast, then they are together like one company—Bear, Killerwhale, Moon, Star, Rainbow, and many others; and next there are the eagles, and they are also like one company—Eagle, Beaver, Halibut, and also others. Raven and Frog and Sea-Lion, and Starfish and others are the crests of the Ganada; Wolf and Crane and others are the crests of the Wolves (AN II: 33).

The crest spirits of each clan were carved onto structural elements, including the massive poles supporting longhouse roofs. Because these carved poles could not be removed without destroying the house itself, the spirit carvings remained in place to remind family members of their origins (Bert McKay 2003). Similarly, house fronts and sides portrayed guardian spirits on their carved and painted surfaces. Other structures, furnishings, and regalia associated with the longhouse also evoked the crest spirit.

To attempt to date this and other adaawak of longhouses origins, Western science has developed a range of technologies that, when combined, estimate a time frame for longhouse construction. Substantiating the origins of longhouses in different areas of the Northwest Pacific coast involves the integration of disciplines including paleobotany, paleoethnobotany, archeology, ethnography, palynology (the study of pollen, spores, and similar palynomorphs, living and fossil), paleoecology, and zooarcheology (Hebda and Mathewes 1984, Cybulski 1991, Archer 2001). Working across disciplinary boundaries, scientists have been able to demonstrate strong correlations between the evolution of longhouse technology and woodworking tools, and the abundance of Western red-cedar (Thuja plicata) in given areas of the Pacific Northwest (Hebda and Mathewes 1984, Fladmark 2001).

Specifically, radio-carbon dating of archeological artifacts and pollen specimens has been used to estimate the age of early houses, artifacts, and plant materials found in or near settlements of the Tsimshian language group (Hebda and Mathewes 1984, McLennan and Duffek 2000, Archer 2001). Radio-carbon dating, also called Carbon 14 dating, only applies to materials six or more centuries old, however: there is presently no known method enabling us to accurately date artifacts two or three centuries old (McLennan and Duffek 2000), in the absence of verbal or written evidence about the artifact's providence.

Dating the earliest longhouse structures themselves would be impossible, because wood does not preserve well in most sites. The oldest actual longhouse remains found so far are those of a two thousand year old dwelling at Milbanke Sound on the central British Columbian coast (Hebda and Mathewes 1984). What can be found, however, are the tools used for massive woodworking. Richard Hebda and Rolf Mathewes found close correlations between the appearance of specialized woodworking tools—mauls, antler and wood wedges, hammerstones, and stone or shell adzes—and the arrival and abundance of Western red-cedar (Hebda and Mathewes 1984). Comparing curves of cedar abundance with radio-carbon dated artifacts of woodworking tools, both found in discrete areas of the Pacific Northwest Coast, enabled the scientists to comment on the age of longhouse evolution. "The implication is that cultural patterns related to the working of massive timber may not have developed until suitable supplies of Thuja plicata had become available" (ibid: 712). Even wider implications for architectural history can be construed from this evidence. The parallel history of red-cedar and the longhouse indicates that cultural change, and specifically the
development of architectural ideas, runs parallel with environmental change. The idea that architecture and environmental conditions co-evolve, suggest Hebda and Mathewes (1984), has wider applications. In the instance that cultural production—in this case longhouse architecture—relies strongly on the prevalence of a single resource, such as a low density, easily worked and rot-resistant red-cedar, the availability of the resource may limit or inspire the architectural tradition and attendant technological advances.

Applying the research directly to the Nass Valley requires some interpolation, since wet site research has not yet been undertaken in the specific area of study (Fladmark pers. comm.). Extensive archeological research at Prince Rupert provides a similar cultural and ecological context (ibid). A bog wood sampling near Prince Rupert confirms that cedar was present as far back as 8500 B.P., with essentially modern vegetational communities beginning about three thousand years ago (Banner, Polar, and Rouse 1983: 926-940, Archer 2001). "There, a community of pine, alder, ferns, and, perhaps, small numbers of cedar, appeared some time before 8500 B.P. That was followed by a richer array of [Sitka] spruce, alder, [Western] hemlock, skunk cabbage, and ferns, subsequently replaced by a less diverse assemblage of cedar, Western hemlock, and pine" (Archer 2001: 38). Near the Prince Rupert area, cedar began to become more abundant in about 6000 B.P., with maximum abundance between 5000 and 2000 B.P. Coincidentally, tools used for large-scale woodworking have been carbon-dated to about 5000 years ago, although tools for smaller scale woodworking have older dates. The researchers suggests that large, mature trees needed for longhouses and totem poles may have taken some time to grow and develop, so the optimal time for longhouse development on the mainland coast near Prince Rupert may well have been somewhat later than 5000 B.P.

5.3 The Longhouse

"The longhouse keeps the stories alive" (Emma Nyce interview 2003).

Longhouses were more than shelter, to the Nisga'a and other Northwest Coastal peoples. The great wooden structures were also repositories of cultural memory. Many elders contributing to this research stressed the story-telling role of the longhouse. Each individual longhouse, the elders said, helps storytellers to recall details and images of historic events that are vital to longhouse occupants. In addition, several elders, notably Sim'oogit Minee'eskw (Rod Robinson) attested that the history of Nisga'a-built residential structures becomes a revelation of the nation's interactions and migrations. The stories are told in all parts of the structure, in particular beams, columns, housefront paintings, totem poles, ceremonial entrances, and houseposts (Halpin 1973). At the same time as they keep the story alive, the longhouses are widely recognized as admirable works of architecture (Nabokov and Easton 1989). Because longhouses are both story-tellers and magnificent dwellings, then, the task of reconstructing Nisga'a longhouse history consists of two interrelated and inseparable tasks. Along with documenting physical and structural characteristics using drawings and models, the history of the longhouse is a narrative through which Wilp histories, and the wider histories of the Nisga'a nation, are re-imagined and remembered again.
Reconstructing the drawings and models, requires elders' testimony, ethnographic analysis, and examination of visual records. All three, I discovered, are essential to enable the creation of measured drawings. While elders' stories are often rich in detail, they rarely discuss construction methods or measurements. Visual materials also do not permit easy reconstruction of Nisga'a longhouses. A few early paintings and some photographs directly mention the Nisga'a or the Nass Valley. Even these records are limited to the last few hundred years, a very small segment of time within the ten- or eleven-thousand year long Nisga'a history. Interior information is even more difficult to find, leading School District 92 (Nisga'a) to the conclusion that "No photographs were ever taken inside a Nisga'a longhouse" (1996: 102). (Photographs do exist of the Whale House of Klukwan building interior that was at least partially built by legendary Nisga'a architect Oyee (Allison Nyce pers. comm.), and of a later longhouse in Gitla₵'taamiks photographed by Marius Barbeau, see NTC 1998: 27 and fig. 2 of this research). Emily Carr produced a drawing of a Gitla₵'taamiks house; showing little architectural detail but considerable emphasis on the crest spirit carvings. Ethnographic information is in field notes and published works of those who spent time in the Nass Valley. Ethnographers and their years of working in the Nass Valley include Franz Boas (1894), George T. Emmons (worked sporadically in the region 1905 to 1920); Israel Wood Powell (1879), C.F. Newcombe (1911-14), Marius Barbeau (1924, 1927, and 1929), and William Beynon (the son of a Nisga'a mother and Welsh father, Beynon did Nass Valley research sporadically from 1915-1956).

Particularly well-documented as to their Nisga'a origins is Marjorie Halpin's Ph.D. dissertation based on Barbeau and Beynon field notes, since her research stresses the differences among the three Tsimshian-speaking nations. In the past, numerous other ethnographers have been far less careful about provenance, rarely distinguishing between Nisga'a, Coast Tsimshian, and Gitksan and not recognizing the works of Nisga'a carvers within other Nations. Boas, for example, produced drawings of longhouses from the Nass and Skeena Valleys, titling his figures "houses of the Tsimshian and Nisqa" (Boas 1916: 46).

Over a century before Boas, eighteenth century European visitors to the northern mainland coast wrote of the longhouses, although again the Nass Valley is not mentioned directly. In 1791, French explorer Etienne Marchand was astonished by houses of Northwest Coast (described by the explorer as the coastlines and nearby islands between the fifty-second and fifty-seventh parallels, likely including some coastlines very near the Nass River). "...we have found houses of two stories, fifty feet in length, thirty-five feet in breadth, and twelve or fifteen feet high, in which the assemblage of the framing and the strength of the wood ingeniously make up for the want of more solid materials [such as quarried stone] (Fleurieu 1801: 337). Speaking in some detail about houses near Norfolk Sound (near Sitka, Alaska), which he calls Tchinkitanay, Marchand went on to express his admiration for the artistry of the houses. "...each habitation with a portal that occupies the whole elevation of the forefront, surmounted by wooden statues erect, and ornamented on its jambs with carved figures of birds, fishes, and other animals" (ibid). Amazed at the richly carved fittings and furnishings, Marchand acknowledged that the representations have the same significance as written history. "And what, undoubtedly, is no less astonishing pictures painted on wood, five feet long by five feet broad, on which all the parts of the human body, drawn separately, are represented in different colours; the features of which, partly effaced, attest the antiquity
of the work, and remind us of those large pictures those emblematic paintings, those hieroglyphics which served the people of Mexico in lieu of written history" (ibid).

Etienne Marchand recognized the importance of the longhouses as vibrant recollections of long ago events, as works of fine architecture, and as exemplary in both craftsmanship and use of materials. He also noted that Northwest Coastal architecture interrelates with many modes of creative expression as it recreates history: "Thus architecture, sculpture, painting and music are found united, and in some measures naturalized" (Fleurieu 1801: 338).

**The Nisga'a longhouse: Dimensions and construction**

Throughout written history, there are many divergent reports on the actual or average size of the Nisga'a longhouse. Longhouses built by Nisga'a architect/ artisans have been reported as forty-five to fifty feet wide by thirty-five long (Fleurieu 1801), fifty feet wide by fifty-three feet long (Emmons 1991), and forty feet wide by sixty feet long (actual measurements of houses at Ank'idaa, as reported by Bert McKay 2003).

![Fig. 21 "House at Nass B.C.": Pym Nevins painting c. 1850 from Lax anlo'o, a village that was upstream and across the Nass River from Laxgalts'ap. B.C. Archives photo PDP 05323.](image)

Fig. 21 "House at Nass B.C.": Pym Nevins painting c. 1850 from Lax anlo'o, a village that was upstream and across the Nass River from Laxgalts'ap. B.C. Archives photo PDP 05323.

Nita Morven, cultural historian from Aiyansh, ponders the problem of longhouse size relative to the number of people expected within:

*It leaves you wondering too about the longhouses; particularly when we have our feasts the way we do today, in a community hall that has a five hundred or six hundred seating capacity, and sometimes we have a full hall. When you think about the longhouses...I have read that they housed up to about forty people, but I can't*
understand that. It's something I would want to know. Living in the longhouse, I imagine they must have had to move a lot of things around just to make room for all the people. Space is something I would really like to know more about in the longhouse, how they did it...

They had large families in the past, that leaves me wondering...and they conducted the feasts right in the longhouse. But it was always important, especially in yukw feasts, where it was yukw for the Sim'ooogit, it was important to have guest chiefs from all down the river, especially if there was a transfer of title. They were very important witnesses. Because it was an oral tradition, the presence of the Simgigat would be vital. They would bring some of their families when they traveled, if travel conditions were good. I am interested in finding out more about that aspect myself (interview 2003).

Years of working with elders on the Ayuukhl Nisga’a and later projects left Nita Morven with the understanding that some longhouses were much larger than most post-contact reports. Dr. Bert McKay also talked about longhouse size, and its relationship to transfer of land title:

The only area that had boards extends from the platform. That is where they did their ceremonial dancing. These were flat boards around the cooking pit; there is enough space there so the dirt won't get into any of the preparations. But where the ceremonial took place was at the front, in front of the chieftain’s platform. They performed welcome dances, weddings; settlement feasts for the funeral, every facet of our institutions were performed in the longhouse. Right now we have a community house, and when we have observances of our different ceremonials, we gather there. Whereas with the chieftain, you see, it's right in the longhouse. That's why they were so huge. I'm told that what stood at Ank'idaa was 60 feet long and 40 feet wide, depending, again on the stature. They were big because not just the residents of the village, but the whole valley—the four villages—would be invited when there were special observances to be made, for instance the raising of the totem pole. Today we use the tombstone, we call the stone moving, that is done a year after the death. It is a ceremony that has been impacted by many changes. One that is certainly going to be observed and be talked about, that is at the pole raising or stone moving, your property rights are proclaimed in the feast, this is what we own: the names of every place.

Every family has at least two mountains, not only the alpine resources...It all relates back to the longhouse. Because when the longhouse performs a ceremony, your wealth comes from the land, and the land is owned by the family, handed down from generation to generation.

The size of the house, its design, and its name or identity were all intertwined with the history of the site and with the history of the people whose adaawak connected them to the house and its landscape. The name given to a house was often passed along to the next house built on the same site (Emmons 1991). A structure, acknowledged to have a given lifespan, was granted a kind of reincarnation. The stories stayed alive with the longhouse because the
Nisga'a worldview granted it a form of immortality: the name and crests of important buildings remained active in the built environment, while the building itself was torn down and built again.

The longevity granted to a longhouse did not mean that technological and material advances were not welcomed. To the contrary, Nisga'a architects adopted new ideas within an overall structural framework of double ridge poles and internal support posts spaced in a system that appears, in looking at photographs and ethnology, to have remained relatively consistent. The consistency is not surprising, since Nisga'a knowledge of how to build a longhouse frame was both derived from wisdom accumulated over many generations of learning by doing (Bert McKay 2003). Further, the construction system is considered, by the Nisga'a, to be a gift from the Creator (AN II, Nisga'a Tribal Council 1998).

**Roof structure**

Details of the roof structure that follow are based on a description by Dr. Bert McKay (interview 2003) combined with ethnography by Emmons (1991, first published in 1916) and Boas (1916), and substantiated with photographic documentation of dwellings with designs by Nisga'a architects, such as the Whale House at Klukwan (worked on by Gitwinksihlkw chieftain Oyee). Because the Whale House design and its history remain with the family from Klukwan (Allison Nyce pers. comm.), this research uses published documentation of the house as a way to substantiate characteristics of the particular structural system that was shared between the Tlingit and Nisga'a people.

According to Boas (1916), Tsimshian/ Nisga'a roof framing contrasts with that of Tlingit and Haida with the main difference being the spacing of the double ridge poles that characterize most longhouses. In Nisga'a and Tsimshian longhouses, double ridge poles were probably used instead of a central ridge pole so that the ala, or roof vent, could be supported without intrusion of a central ridge beam. It is notable that houses of milder climates further south, those of the Kwakw̓ał̓k̓a'wakw, have ridge beams spaced six feet apart; Boas' research indicates that Nisga'a and Tsimshian ridge beams are placed about halfway between the house centerline and the exterior walls, and Tlingit ridge beams are still further apart (Boas). Seemingly, as the climate becomes colder, ridge pole spacing widens, the area for an ala is larger—the heating system is therefore sized to suit climatic conditions of the longhouse site. More ventilation area is needed to extract the smoke of the larger fire needed to warm dwellings of colder climes.

The four vertical support posts exposed within the structure, as within the whale house at Klukwan, often provided a surface upon which the architect/ artist/ carver would express his crest affiliations in carving and painting. The house poles were the most permanent part of the structure (Bert McKay Interview 2003), since they could not be removed without causing the building to collapse. The double roof beams near the ridge were supplemented by two parallel roof beams inside the outer walls, which in turn rested on corner poles that were usually just inside the wall, leaving the roof essentially independent of the walls (Boas 1916, Vastokas 1967, Emmons 1991, Horace Stevens charrettes 2004). A similar construction system is evident in Tlingit houses (Vastokas 1967, Emmons 1991) and is found in the
Whale House of Klukwan. The model made within this research (fig. 22a and b) shows the framework and resulting appearance of this type of roof structure, with the spacing of the main beams observed by Boas in 1894 (see Boas 1916: 47).

Figs 22 a and b. The model discussed at the charrettes shows the smooth building front, free of projections, favored by Nisga'a architect/ artisans (Allison Nyce Interview 2003) and the roof structure that was documented in late nineteenth century North Coast longhouses by Boas (1916), Emmons (1991), and in photographs of Oyee-built woodwork at the Whale house of Klukwan (Allison Nyce pers. comm.) Fig. 22b has the roof removed to show the structure below; which has been constructed according to structural pattern described and drawn by Boas, based on a house he viewed in Gitlaxt'aamiks in 1894 (Boas 1916: 46-48).

The independence of pole-and-beam framework from the exterior walls of structures is evident in buildings where the walls have been removed, or where the whole building is being deconstructed (fig. 22 c, d, e, and f). From deconstructed buildings a range of roof structures become evident. In the 1929 photograph of a house in Gitlaxt'aamiks (fig. 22d), the frame consists of two side-wall parallelograms each described by a base log, two upright corner poles, and a massive roof beam. In the center of the front wall near the ridge, an entry portal is formed from pairs of posts supporting a cross-beam. Presumably a gable would have been framed along the top plane of the front wall from the side beams across to the roof peak, much as is shown in the next photograph of a house in Kitselas on the Skeena River (fig. 22c).
Fig. 22c. 1881 photograph by Edward Dossiter of a deconstructed house in Kitselas showing a front wall portal and side wall frame similar to the Gitlaxt'aamiks house shown in fig. 22d, e, and f. This house, however, has a gable frame linking the site poles to the doorway portal, and intermediate posts between the side wall and roof peak, presumably to add additional support the very wide structure of the roof. American Museum of Natural History 44294.

A third roof support system used in Nisga'a construction and described by Horace Stevens during the April 3 2004 charrettes, is that of beams parallel with the roof ridge, supported on a pole-and-beam frame. Horace described how the roof beams extend four to five feet beyond the front and back gable walls. A ridge pole carries across the structure from front to back. Ridge construction may have similar to that of an existing pole-framed building at Fishery Bay (fig. 22g). (It is notable that the Fishery Bay building shown here has a roof slope of about 12:12, or about a ninety-degree right angle). Horace Stevens and Lawrence Adams both testified that steep roof slopes were often used in the Nass River area because shedding the snow is vital in a location with heavy snow loads (charrettes 2004). By contrast, structures from the Central and North Pacific coast of British Columbia documented by archeologists have relatively shallow roof slopes (Boas 1916, Smyly and Smyly 1994, Ames and Maschner 1999) somewhere between five in twelve and seven in twelve). Horace explained that the roof planks were held in place with tied poles, to resist the severe wind uplift common in the Nass River Valley. Rocks were not used to secure roof planks in the Nass Valley, unlike on Haida Gwaii. This is understandable, since rocks would probably roll off the steeper roof pitches favored by Nisga'a builders. The upstand corner planks often found in paintings or photographs of Nisga'a houses also would have formed an additional anchor for the shingle-holding rods and ties (see fig. 21 for upstand corner posts).

Horace Stevens' information is based upon memories passed along for many generations (In the interview 2003, he mentioned the seventeen hundreds as a time included in his grandmother's lessons). His knowledge about the roof structure of pre-contact longhouses
therefore appears to pre-date what has been written about houses from the region. Similar construction knowledge does seem to be recalled, with modifications to accommodate nailed connections, in Fishery Bay structures (which use nails and milled lumber atop a pole framework: fig. 22g).

Figs. 22d, e, and f. From left: photograph of Gitlaxt'aamiks house taken by Marius Barbeau in 1929. Canadian Museum of Civilization photograph 72226. In the next photograph, a gable form has been sketched on top of the house frame, and the photograph at right shows the system of purlins described by Horace Stevens in the 2004 Gitwinksihlkw Charrettes of this research. Superimposed framework added by N. Mackin.

Fig. 22g. Pole construction with a central roof ridge and steep roof pitch is shown here as used in cookhouse construction at Fishery Bay. Photograph by Robert Mackin-Lang
The structural systems of Nisga'a longhouses were therefore not of a single type, but rather had several forms that responded to climate and snow loads (Horace Stevens pers. comm.), expanded trade influences, the era during which the longhouse was documented, and many other factors. All photographs and paintings do indicate that Nisga'a longhouses had gabled roofs, finished with cedar planks overlapping shingle-style in two or three courses. The rectangular house footprint, use of massive beams and large planks, and tied connections are also consistent in all visual and remembered records.

Fig. 22h. Steeper-pitched roof forms interpreting charrette comments by Horace Stevens. Clockwise from top left, the sketches show a portal and side pole-and-beam structure as in the Gitlaxt'aamiks house frame (see fig. 22d); a center pole frame that would have the doorway positioned to the right or left of center; a center pole frame that has the doorway cut through the center of a very massive post; a smokehouse photograph taken in 2004 showing how Nisga'a builders continue to use steep roofs and cantilevered purlins, in this case to make covered outdoor space; and another portal and side pole support system. The first two examples are similar to structural systems used on the west coast of Vancouver Island, according to research done by Ames and Maschner (1999:150), which may indicate cross-fertilization of ideas with expanded trade. Working at full scale with the elders on a longhouse reconstruction would expand upon and clarify the charrette-gained knowledge.

The house as part of the universe

The "skeleton" (structural framework) of buildings, like those of the people within, had a set arrangement of linked components, tied together with cedar "tendons". The cladding, like a skin, hid the skeleton from outsiders; once inside the building, the house-box-universe (NTC 1998, McLellan and Duffek 2000) became part of the experience as though the occupants were inside the spirit-being of the Wilp/ house.

The style was very distinct from others in the area in that it was very clean construction right across the front of the house, the traditional houses, rather than having the post and beams out front like you see in a lot of the Haida houses. The
house front would be painted with the family's crest design, and each family had their own. This was for the permanent winter villages. (Allison Nyce interview 2003).

The overall exterior framework was supported by thick planks that were carved to accept side beams and front and rear gable plates. Excavated areas in the center of the living space were about thirty feet square and five feet deeper than entry level, according to Drucker (1965).

Like most Nisga'a architectural solutions, the platform at the back of the longhouse, opposite the entrance, had multiple functions. During feast times, this was the platform of honour, where the highest chiefs would be invited to sit. However, at other times the platform would become a stage, as in the Laxgibuu of Gitlax't'aamiks adaawk told by K'eexkw, Matthew Gurney recorded by Beynon. The stories would recall important histories, supernatural events, and sometimes the universe itself.

[Ksim Xsaan] crept closer to the house and found a knot hole through which he was able to see inside. He was surprised to observe so many people. There was a huge raised platform at the rear upon which the singers, who seemed to be all women, were being led by a Master of Ceremonies (AN II: 147).

The longhouse as House of Learning

In the interview transcribed below, Dr. Bert McKay teaches about the longhouse and its importance to Nisga'a culture.

Some of the pictures I have seen relating to the longhouse show the food being processed inside. That wasn't the case with the Nisga'a. They prepared their food separately, in buildings close or behind the main longhouse or along the side, depending how close you were to the creeks. For transportation and preparing foods, obtaining water, you had to have water available at all times. That was one of the things that they observed very strictly.

The longhouse is for dwelling, for ceremonials, and for training. The head chief is usually the maternal uncle, the oldest uncle of the brothers. He resides in the front. There are two platforms (here Dr. McKay indicates one hand above the other), and underneath are storage spaces. Prior to the storage spaces they had sort of an escape hatch, in case they were ambushed or attacked, and they could always go through the escape hatch under the partitions, you know, under the platforms. Not only do they have that as a route for escape; they also have places there for storage. It's like root houses, where you keep vegetables underground so they are preserved for whenever you want to use them.

They had places accessible underneath the longhouse, at the very back end. And it depends, again, on the stature of the uncle or the chieftain; if he is well off then he has more room than anyone else. But primarily it was used to store food, especially for the months of December, January, and February. March, you see, brings in new
food: the oolichan, the sea lion, the seal, even the seagull—certain types of seagull are edible.

So going back to the longhouse: the two platforms. The top one is usually where they bed down, and the second one is like your closet, your trunks and everything are in there, and especially the regalia, the chief's regalia are stored there. They are worn only on special occasions; they are never displayed for decoration. They had a secret value, a spiritual value. So it was always kept enclosed. But anyway, that is underneath the two platforms. And the platform goes right from the chief's end right to the entrance. They bed down and have cedar bark mats for curtains. Those showed the partitions, so there was some privacy.

So now you are beginning to see why it was called the House of Learning. In it, every aspect of our culture was revealed. And even the young men, as they graduate from wood finding to cutting, if they were suitable to be carvers they were trained. Then again, those who were not adaptable to that kind of training, they were taken out to learn how to hunt, or they were taken out to learn how to make a canoe, or they were taken out to learn how to be fishermen. In the fishing days, they used the dip net. It was already in use here before the Westerners came. It is quite a story; I used to do research when I was still working for the school district. It's really amazing, the knowledge that evolved, and how they were able to find the best natural plants. Now that was a learning process, again taught by the senior uncles. There were hunters, there were fishers, there were carvers, there were canoe makers, and of course there were the ceremonial participants, the actors. Those were all part of the longhouse.

![The interior of the longhouse was furnished with boxes and cedar screens](image_url)

Fig. 22i. The upper platform described in Dr. McKay's interview was divided into spaces using cedar screens and the carved storage boxes of Northwest Coast tradition. Model by N. Mackin

*Under the chief's platform there is an escape route, or else a route to the root house, storage place. The storage is for food primarily, there for the different seasons. Dried fish and berries kept well because they are underground, you see.*
Fig. 22j Drawing of excavated areas under the chief's platform (used for food storage), a food storage building beyond the walls of the longhouse, and excavated side tunnels where women and children would hide during times of danger.

NM: And what about the people who built the house?  
...That is part of the woodwork. Last month, my niece is married to one of the men from the village, who was logging by Lava Lake. As they were cutting there they found a huge log [Dr. McKay gestures about one meter around] all stripped, and with wedges embedded in them. They were in the process of making boards. They phoned the forestry, and I think the museum has got hold of it. I was really excited, although I didn't see it, to know how that process was done, how it was observed.

Anyway, coming back to the woodworkers, they had to know how to fall the tree. There wasn't just any way. We didn't have the implements that make it easy today. We did have stone axes. The main implement they used was quartz. They had to know how to control that. The trees they used for wood were spruce and hemlock. Hemlock was a very hard wood, so it was used for all different purposes, like the anchors for the oolichan nets, because they could withstand the ice floes and the currents. They were durable, they bend, they had their stake. That was the hemlock.

It became part of the longhouse, where they did the ornaments. Depending on how large the house was, there were either two house poles that upheld the weight, or there were four. But on each one there was carving, depicting a story.

Once it was decided that the chief was going to build a longhouse, he didn't do it himself, he ordered. And his paternal relatives, in our language we call that wilksilaks...Each one of them is my father's nephew or niece: those are the paternal relatives. Now in the relationship there are expert carvers, we call them carpenters today, builders: they would be selected. If they didn't have one in their own circle, then they would go to the extended family, but still the same tribe. I'm a raven; my father was a wolf. So if I was to build a longhouse then I would make my order, and I would go to my paternal cousins. But I don't make the arrangements. Then they would hire extended family, so the chain of authority is never broken; it is still fresh with the relationship of father, being the producer of my cousins, all of them, the whole household. They were like carpenters, they were expert at it, and that was their livelihood. It would take them two or three years. I guess they were the forbearers of
engineering. For instance, once the boards were selected they were seasoned for at least two or three years, they added to it until they had the exact amount.

NM: Did they flatten the boards?
Yes. They were laid on the ground. Because of the straight grain they maintained their straightness, and where it was required they would weight them down.
NM: And were they tied on?
Some of them were, and some of them were pegged. Like the tree that was found: some of the wedges were so huge, and they were all very nice; that was all hardwood. It hadn't changed one bit.

So anyway, coming back to the longhouse. Again, in each village there are designated lands for every family. You can't go out and start building on someone else's property—it is just not done. They would have a place ready for that, usually near a well, and near a stream, but close enough to the river so that transporting your garbage from the river was not all that difficult. And again, the need for observing our spiritual side of harvesting, and that was to care for—not so the wastage of the salmon, but the parts that are not used. You are not just throwing them into the garbage pile, you either burn them, or you take them down to the river and you bury them. For the longest time they would go out by canoe and find a sand bar when the water was low, and they would bury it in the tip of the sand bar—especially the eggs. And here, you see, that is your conservation, you maintain the cycle. The villages of the Nass were always honoring the land, for that reason.

Once the site was selected—you are accessible to water, and to firewood, and transportation—that was the main thing. And then in the earlier days it was for defense, in case there was a barrage, or invaders, you had a form of defense. So when you go down to Fishery Bay, it's called Da'oots'ip, that means fortress. The camp was overseen by a block fortress. So anyway, once the site, and once the material, the lumber, was selected, then they would go out for the posts. And here again, they had to be one piece, there was no joining. And they knew exactly how deep they must sink them into the ground, so that they are immovable. And they had to be a certain diameter, that I don't know: it's about there (Dr. McKay demonstrates about a thirty inch diameter), and depending on the string of logs that forms the skeleton of your house.

Now that is the engineering part of it. I asked around. I was lucky, I came back home here in 1953 as a teacher, and there were still a number of old-timers here who came from the pre-Christian days to the present. And they said, "Well, they didn't just lift those big beams. They used the principle of the fulcrum. They had boxes that they transferred to as they became higher—platforms. It took me a long time to figure that one out. In Victoria, I came across a friend who was carving boats there, and they made a longhouse. For them it was hiring a crane. His last name was Hunt (David Hunt), he was a master carver, employed by the province, and I asked him, "Did you ever know how your forefathers used to lift these big trees?" "No, I'm wondering too", he said. It wasn't until I came over here and an old timer showed me by putting wood
on a box, then levering at one end. So they were able to seesaw it right to the desired height. And then they would peg them in there. I think the pegs, again, was a hardwood, usually the white maple or the wild crabapple. That was very hard. So anyway, that is how they were able to do that. I guess this is where they had the rope tying down. They would drill holes in the sheet, and then tie it down. And to make it waterproof they used a certain kind of moss. You have the ground moss, and you have the alpine. It was the alpine: it was more pliable and durable. So anyway, they would fill all the cracks. And on top of that, from here they would go down, there is a place across Fishery Bay that has a section of good clay. They harvested it, and mixed it. They would plaster the cracks that were filled with the moss. So it was reasonably windproof and waterproof, especially the walls. We have very very heavy north winds blowing here, especially the month of February. Until this El Niño animal appeared: this winter we didn't see any north winds, very little if there was any at all. February is known as the month when the north wind never ceases. Buxwlaks means all the leaves on the north side of the tree are blown down to the ground. That's what Buxwlaks means, and that's how they refer to February. Now we haven't seen that for a long time, so the weather is getting warmer in winter, and the winter months are getting shorter. Like right now, in the olden days, there would be a lot of snow on the ground. But there is none.

But anyway, the part that is important is how they used the side poles. Primarily their function was to uphold the beams. With them also is the family history, carved in the pole. That's, very quickly, what the Nisga’a longhouse is about. It was never used to process, or for preservation of foods, like smoking oolichans. It was only used for cooking. The communal fire was used for cooking and teaching.

Now with the entrance, there is only one entrance. That became part of the tradition later on. Apparently there was a certain incident where a princess was molested by a neighbouring village. They were disgraced because of that, her family. The chieftain was a very haughty, hot-tempered kind of person, very very industrious and very well off. He told his clan "We will have our day of revenge. The ones who talked and made fun of my sister: They will pay for it". He built a longhouse, and invited the coastal people and the inland people—all those people involved in disgracing his sister. He invented a single entrance. Before that, the entrance—two or three people could come through. For his case, he had a complete blackout. There was a grizzly skin, and only one person could enter at one time. You see that in today's illustration of the longhouse. That was, for this particular event, for revenge, but later on it was adopted for defense, because outsiders could only come in one at a time. They were thinking that they better do that to the entrance. The chieftain that did this, there are still families who reflect and feel badly about it. He invented this single entrance covered with grizzly bear, and as the guests arrived with his nephews outside there was a heralding drum for every chief in the house, and whenever this drum was beaten, it's an announcement, certain beats. His nephews were instructed to beat this drum. This meant the feast hall was now open. The story goes that the chief himself announced the arrival of the guests. He knew who they were: they desecrated the honour of his sister. So anyway, no one knows except the entrant: the minute he steps
inside the chief's hall he was clubbed to death, one big club, and thrown into the pit. Just at the very tail end, a friend of his came in, and he said, "tell him not to come in, he is not invited". He didn't want him to be clubbed, you see. He's not invited. But he disregarded the warning, and he came in anyway, and was clubbed to death. So that's how the single entrance evolved.

Fig. 22k. Levering the massive longhouse poles into place, following description by Dr. Bert McKay. Drawing by the N. Mackin.
NM: Going way back: Would there be more moss on the north side, typically, to keep the wind out?

They made sure that every crack was filled. That's why the daak' [excavated house] used to come in. It's like a basement, but in the stories I've gathered they were in use further up the river, the villages of Gitlag't'aamiks and New Aiyansh, because it was so cold there. It was dug, that's where the living quarters were, so they would be shielded from the cold and the wind by the earth. That's what the daak' means. (Bert's brother Alvin McKay's name was Daaxheet) (Deanna Nyce pers. comm.).

NM: The graded houses were used the same way as the longhouse? (Dr. McKay nods). How would the cedar trees be brought in?

They weren't shortened or anything. They had the required length. It was processed right on the ground. They had work canoes that could handle it. We call that diwaax, which means to come by paddle.

NM: So the trees up by Lava Lake, would they be brought in that way?

You would carry your material from your own resources. The distance was important. There were places where certain qualities were more available than others. If you couldn't, then you could send word down to Kincolith and say I need, maybe, ten pieces of cedar and I will pay you for it. They would bring it in by raft, they would tow it up.

NM: So the ango'oskw would include river territory, and all the way up through the different ecosystems to the highest peaks?

Oh yes, the ango'oskw was from mountaintop to mountaintop, that was proclaimed by our grandfathers when they were approached by the government, what is your land? That's one of the reasons they tell the story the way it is: from the top of the mountain to the valley floor, to the river to the salt water, to the mountains, all our resources were available.

NM: Would the houses be built along the river?

If you owned the property, but then access to a river and transportation was important.

NM: Would the houses be far apart?

Not too...I don't know how they surveyed their lots, but what I've seen the whole waterfront was maintained for the transportation observance. They usually didn't live in villages, when the longhouse was actually used. It was family. So I could have two or three houses. It was all my huge extended family...

NM: What about the paintings and carvings on rocks and trees?

Not all families had that, were owners of the petroglyph. But again, whenever it happened they wanted to record, it because it was really important.

NM: So if you know how to read the story, you could reconstruct the history?

It reflects back to the migration, at least for most of them, but generally speaking it talks about ownership, all of the resources behind this petroglyph belongs to so and so. Or if there was a battle encounter: we had many tribal wars with the Tahltan, and eventually we drove them out all together. Going toward Terrace, there used to be a glacier there, right on the road. Highways cut through the glacier. This was the last battlefield between the Nisga'a and the Tahltan. The Nisga'a defeated them and chased them right back to Telegraph Creek. That's a true story. It happened just before the missionaries came.
NM: I had another question about the houses themselves. Were the boards from the houses sometimes taken off and used elsewhere?

Oh yes. Every family had territorial rights of their resource area. Like there were people here who had places in the salt-water area, right down to Observatory Inlet, and Portland Canal, and almost right down to Prince Rupert: certain areas where shellfish were harvested—crabs—and seal and sea lion. So the materials were portable, temporary, and if they should reduce the size of the main house they would give out to every designated member by rank and file, as inheritance. But it was very seldom done, the house was always left intact. But they did have portable material, for summer camps.

NM: So if you moved to Fishery Bay, you would take some materials there?

That's right.

NM: Were the ang'o'skw discontinuous, with one section over here and another farther away?

Oh yes, there were people here who owned resource areas right behind Kincolith. That Portland Canal is over on the American Side; the center northward belongs to Alaska, the other is in BC. All of that were territorial rights of the Nisga'a.

NM: And as far as the amount to harvest: the chieftain would look after that?

There was always conservation kept in mind. They were told from the very beginning from the messenger, Txeemsim, use but don't abuse. So they would harvest, and they would make certain that they had more than enough. There would be times when a ceremonial feast would be thrown: if there was a sudden death, you can't go out and borrow, it has to be in your storehouse. So that's for ceremonial use, they were prepared for it.

NM: Was the storehouse called the wilp sihoon?

No that's house, where they prepared the salmon for smoking and drying, and the oolichan. And the storage would be in a cool place.

NM: So the main buildings would be the longhouse and the wilp sihoon: were there other building types?

Those were the two that I know of.

NM: And at Fishery Bay, were those all smokehouses?

They were regular houses, but they were twentieth century, nineteenth century buildings. But they were built like company or cannery: like plantation houses. More than one family lived in one. But it was only for a limited period, during the seasonal run. I remember my father-in-law, and his family, we lived with them. But again it used the longhouse concept. Everyone had a designated role to play, even the children. They were organized.

NM: Within the houses, I have seen pictures of carved interior partitions that separated the chief's area from other parts. Were there carved partitions?

Not for us. The carving was the house poles inside, the pillars. And he is at the head of the building, he has the most space. But he is separated by cedar bark mats, as did every family. So the partitions were made possible by the use of cedar bark mats (Interview with Dr. Bert McKay 2003).

As described in Dr. McKay's longhouse lesson, crest spirits were represented within houses, as carved and painted ayukws (a "'picture' of an adaawak": School District 92 1996: 30.)
These architectural elements were far from inessential. To the contrary, they were part of the title deed that proved land ownership: "It all relates back to the longhouse. Because when the longhouse performs a ceremony, your wealth comes from the land, and the land is owned by the family, handed down from generation to generation" (Dr. Bert McKay 2003). Further, the ayukws form a body of remembered knowledge relating to resource management, medicine, and other age-old wisdom (Nabokov and Easton 1989). Finally, interior and exterior carvings ensured the presence of crest spirits (fig. 23), thereby facilitating the extended family's strength in the spirit world:

_The crests would reflect some encounter that was very important to the family. In a way it was like your genealogy, as you evolve. Some of the people came after the great flood, they came overland, and as they embarked to come here they ran into great obstacles, some of them were profitable, others were very sad. Usually the spiritual side of all that would intervene, and that always is shown on the totem pole: the Naxnok (supernatural being or power) came and saved us here. But not all poles would have that, because there were people who didn't drift away when the flood happened. But there were a great number who did, and who landed in Alaska. They came from Alaska by canoe, if the story was right._

_[The stories] belong to the maternal uncle. He is the overseer of all the family's property. All the poles also are your property rights, the extension of your lands and resources. And that is important._

(Bert McKay interview 2003).

**Named houses**

Although Naxnok plant and animal spirits and celestial spirits all entered the houses of Lisims (the Nass River), houses were also perceived as named, living spirits. The name, like the building itself, had practical uses, as Dr. Bert McKay described (Interview 2003):

_NM: In the spiritual sense, you mentioned that the house had a head, and a skeleton, you told the story it is almost as if the house had its own identity, in a way.  
Dr. McKay: Um hm. They were given names. Every house had a name, and it reflected on the family's prominent role, whatever that may be.  
NM: So the name might describe the design of the house?  
Dr. McKay: For some it would. I attended a housewarming here, put on by one of our prominent people. He was the conductor—we all have concert bands and musical organizations—and it was called wilaawak- band pti'in---that means, where the sound of music echoes. That's the house name. We are beginning to realize, now that our families are getting so large, and they have to have a lot of names, that it is proper to invent names. But it has to reflect your history, and your station in life today. That's the way it was done.  
Dr. McKay: I wanted to know how the music was used to pass stories along. That was done in the longhouse, especially during the meal. That's where the Nisga'a lore was transmitted by the elders and chieftains._ (the following sentences are not
verbatim, but were added from notes made by the author after the taped interview ended) *The children internalized their lessons each day, while they ate. Over dinner, the elders fed the children lessons with their food. Every day, the lessons were shared.*

House names also expressed family history, as in the story told by Lazarus Moody, "Wiihoon, of Gitxat'in village:

> *In memory of one of the chiefs who had been killed during the war with the Laxgibuu a feast was held and a new house with grades was built, Daak'am daaw. This time it meant graded-house-of ice. Then Ts'ooda displayed their new crests from the north in a halayt. These were their new symbols, their halayt. They hung teeth of ice, (Weenagwineek) carved out of wood and painted white, all around the outside of the house. Their house front was named Mukwsim gawax, snow house front painting. The giant Wiiksee (or large north wind) was carved out of wood, just as it was beheld on the glacier. The two birds of Thunder, Tyay'tkw, were also represented and they produced a great noise like the voice of thunder. The people brightened the night sky with a flash of lightning (Ts'amtx) (AN II: 97-8).*

In the graded-house-of-ice history, several connections are made between the house and the cosmos. The North Wind, thunder, and Lightning spirits are all evoked through visual and audible representations. Nisga'a elders remind us, however, that each house was more than a place for spirits. Practical considerations could not be forgotten: "The part [of the longhouse structure] that is important is how they used the side poles. Primarily their function was to uphold the beams. With them also is the family history, carved in the pole" (McKay 2003).
"HVAC": Heating, ventilating, and Air conditioning

Architectural knowledge enfolds with ecological wisdom, in the relationship between structural and mechanical systems. The Nisga'a craftsman, elder-trained to build houses in a variety of climatic conditions from near-glacier cold to current-warmed temperate, designed the massive cedar structures to accommodate an adjustable heating system composed of two parts: a fire pit, and an ala. The ala is shown in the author's model below: (fig.24).

![Fig. 24. The moveable vent known as ala.](image)

The ala, combined with the central fireplace, forms the mechanical system of the longhouse: the heating, ventilating, and air cooling (HVAC) technology of Northwest Coastal peoples. Care and durability of HVAC design and construction is documented in excavated house sites. For example, Prince Rupert Harbour excavations indicate that the large fire pit retaining walls were strongly built of cedar planks joined at the corners like a box, thereby resisting inward-pushing forces of people walking and sitting near the fireplace. Since wood is strong in compression, the fireplace walls could not buckle. Keeping the retaining walls from collapsing outward were the heavy floor planks placed around the fireplace pit. The admirable strength of retaining wall/ firepit construction is evidenced by several excavations of house remains, where in several cases house pits remain as the only intact, in situ elements (MacDonald and Cybulski 2001). The care taken to build fireplaces so that they would last for many generations is evidence that longhouse builders granted much importance to the central hearth, perfecting the design and construction to ensure longevity.

Dr. Bert McKay explains fireplace construction, its social significance, and the on-going work of keeping the fireplace stocked with wood:

*The Nisga'a longhouse is different from the other North Coast architecture in the sense that it is truly communal. They only had one communal fire to do all their cooking, a huge center (round); it was in a depression that was lined with stones. And this not only gives warmth, but was also where they cooked their food. This is where the women, like the grandmothers and the mothers and the auntsies, all worked, that was primarily their responsibility, plus making clothes and things like that. This is where it was passed along to the young ladies. As they became older, their chores increased, until by the time they have passed the age of womanhood they are educated to go out and run a house of their own. So that is one of the reasons why it*
is called the House of Learning. With the young men the same thing was true. The main chore they had to carry out was procuring firewood. It wasn't just any kind of wood. And that is how the village sites were selected, there had to be a plentiful supply of wood, both for domestic use and for firewood.

*It was the senior uncles who taught the young people how to fall a tree, make bark, make board lumber. That was all learned; it was usually the senior uncles who did this. But the main chore for many of them was to maintain the supply of firewood, because the fire was continuous, twenty-four hours a day. There was always someone there to attend to it. And this eventually became the chore of the older boys. As they grew older, they tended to the fire* (interview 2003).

Paired with the fireplace was a second HVAC component, the ala:

*The Nisga’a used ala, or smoke control device, to keep smoke from getting into the longhouses. The ala faced north and east, and could be controlled from inside the longhouse using ropes* (Bert McKay 2003).

The ala, like other components, was part of roofing technology as well as mechanical systems. Like other construction systems examined in this chapter, the ala integrated with other components that it cannot be talked about in isolation from site, materials, and the longhouses as a whole. The ala was essentially a movable shutter positioned over the center of the roof, which was left open to admit light and fresh air and to allow smoke to escape. It could be adjusted to admit more sunlight, but particularly to manage air quality in the longhouse by adjusting air flows. Through the device, most (but not all) of the rain and snow was kept from entering the roof opening (McNeary 1994). The ala itself was a plane of cedar composed of vertical planks, secured with horizontal cross-poles tied together. The fulcrum for the ala consisted of a ridge pole resting on crossed poles secured at their bases to corners of the roof opening. Atop the fulcrum the ala could be levered from one side to the other (Bert McKay 2003). Using ropes, longhouse occupants could adjust the ala from within their dwelling, according to the direction and strength of the wind. Generally the ala would be set to prevent wind-driven rain or snow from entering the longhouse. This would mean that the open part of the roof was protected from direct winds.

The heating system also influenced excavation practices. Sometime in the mid-1800’s, according to paintings and photographs of the area, many new houses were built on posts, with their main living space raised about nine feet above the ground. Although many houses before the eighteenth century were built up on posts on the water side of the house (MacDonald 1984b), all houses had a ground level hearth until wood stoves became preferable and available (Emmons 1991). By purchasing wood stoves, Nass Valley builders could raise the entire house on piers, since a ground-level fireplace pit was no longer needed. Constructing houses on piers kept living spaces well above the water table, and added additional storage space below the house.

In their preference for wood stoves, Northwest Coast builders joined a construction trend that was widespread across North America throughout the nineteenth century (Brewer 2000).
Scientific American enthused of the wood stove: "Perhaps no one thing has contributed...to the increased comfort of American homes as the great improvements which have been effected in stove manufacturer within the lifetimes of men who are not yet old...There are none so poor, but the have the advantages of stove[s]" (anon 1880: 340). A manufacturer's brochure in 1885 declared it to be 'one of our crowning [national] triumphs,' an invention 'fully as conspicuous' as steamboat or cotton gin, revolver or telegraph, sewing machine or typewriter (Brewer 2000: 156). Priscilla J. Brewer maintains that historians have neglected the cookstove "precisely because it was a domestic technology used mostly by women" (American Historical Review 2004). However, the history of domestic architecture proves that women's concerns have a major influence in many planning decisions, including mechanical systems and labour-saving devices (Annemarie Adams, pers. comm.). The evolution of the Nisga'a longhouse structure to accommodate new cooking and heating technologies is further evidence that women-centered activities are indeed significant in architectural history.

Alice Azak recalls, however, that the stoves did not always provide comfort, especially during difficult times (she was widowed very young and had many children). She remembers her "little post house" from when her children were small:

'It's a wonder we used to survive. I guess we were so used to the cold. They had these campstoves. Every morning we get about two pails of water in the kitchen. Every morning we had to break the ice. My kids grew up washing their face in cold water before they go to school, because we don't have time to heat up the water before they went to school (interview 2003).

Although some innovations, like the cookstove, were only partially successful (the raised structure with a cookstove was likely more drafty than a structure built into the ground with a fireplace!), Nisga'a and other Northwest Coastal architectural thinkers were adept at bringing new ideas into their work (McLennan, pers. comm.). Technologies were replaced or altered as innovations emerged. For example, eighteenth and nineteenth century Russian influences led to the ala being controlled from within the longhouse using a chain (Horace Stevens, interview 2003). Over time, some houses substituted a fixed vent for the ala (Emmons 1991); this may have been because the heating system changed from open fire to manufactured stove. Another kind of ventilation chimney, again a Russian influence, was built with walls and a roof atop the main roof; the "walls" of the miniature roof were screened or open to permit air circulation (see fig. 14).

Longhouse innovations and cultural resilience

An overview of Nisga'a longhouse history exemplifies exchanges of knowledge and materials that was far-reaching. Far from resulting in globalizing sameness, the exchange of architectural ideas led to great diversity of ideas, yet retains a constant spiritual and structural framework that represents "strong threads firmly binding the people to past traditions and values" (Doreen Jenson in McLennan and Duffek 2000: 241). The richness of architectural expression at the point of exchange, where Nisga'a and Tlingit or Nisga'a and Tsimshian neighbours combined their skills, suggests that the transition spaces between architectural
styles are more diverse and resilient than the sum of their components. Where architectural influences intersect and blend, the results often become more expressive of social conditions, since the changing conditions demand new expression. For example, the "graded houses of ice", an astonishing integration of the spiritual, natural, and human environments, was constructed after the wilp (household) had lost its former crest in battle. Technological innovations also resulted when exchanges and migrations suggested new materials and environmental responses.

In this way architectural "edges" can be compared to the ecotones between ecosystems, those areas of greatest resilience and diversity where two or more distinct ecosystems converge (Turner, Berkes, and Davidson 2001).

**Pacific Rim Similarities**

Comparing the architectural work of two cultures that did not influence one another directly provides additional evidence for the argument brought forward by Hebda and Mathewes (1984) that ecological succession and architectural production are strongly correlated. It is also possible that the degree to which ecological and architectural patterns correlate depends, in part, on the ecological knowledge of a people, and on the spiritual importance of plant, animal, and abiotic resources within a given culture. A brief comparison of Nisga'a and Japanese architectural histories explores how similar ecological and cultural developments may have led to similar patterns in the evolution of architectural innovation.

The materials used in Nisga'a longhouse architecture are an important component of the Nisga'a building technology. Coniferous trees, particularly cedar, were the key to large Nisga'a buildings. Similarly, across the Pacific in Japan, architectural traditions based on coniferous wood structures began to flourish (Seike 1977). Many similarities can be found by comparing the architecture of the two Pacific Rim cultures.

With similar latitude, climate, and orientation to the Pacific Ocean, the spirituality inherent in Nisga'a materials use also resembles that of early Japanese construction. "The Japanese climate was as admirably suited to the conifers as those tall, easily worked straight-grained trees were to Japanese architecture...everyone in Japan knows the word *kodama*, literally 'spirit of the tree'" (ibid: 12). *Simgan*, tree of life in Nisga'a, was also revered.

Both Nisga'a and Japanese traditional religions worked within a concept of spirit guides from nature. The ancient Japanese religion, Shinto, has ancestral spirits that belong to families. The spirits, or *kami*, which take the form of elements from nature: wind, mountains, rain, rivers (JapanGuide.com: Shinto). Festivals show kami to the outside world, and architecture is an important part of festivals and other celebrations. Similarly, "the [Nisga'a] people were famous for ceremonies, they were famous for their spirituality, because they believed they were part of the land" (Dr. Bert McKay, in *As Long as the Rivers Flow* 1992). Spirituality, as defined within School District 92 (Nisga'a) teaching materials, is that which is "concerned with the spirit" (288), and includes the knowledge that each of us has a spirit guide, or special spirit that helps us (School District 92 1996: 145).
In physical as well as spiritual ways, the history of large wood buildings in Japan resembles the history of Nisga'a longhouses. The similarities are perhaps surprising, since many historians believe that the two peoples probably did not exchange ideas directly because of the great distance between them. (Because of ocean currents, Japanese artifacts have washed up on Northwest Pacific Coastal shores. Although there is no direct evidence that people survived the voyage until after the eighteenth century, there are stories of Japanese sailors surviving shipwrecks on the coast of British Columbia centuries ago).

Architectural histories on both sides of the Pacific proceeded within nearly parallel time frames. Early dwellings in Japan, from about 5500 to 5000 B.P., were "pit dwellings" (Seiko 1977: 7), designed, engineered, and constructed from large pieces of wood. About 1800 B.P. iron tools permitted the fashioning of mortise and tenon joints, replacing the earlier Japanese practice of lashing planks or poles together with vines and ropes. Then, in about 1500 B.P., there was a great exchange of ideas between Japan and other nations. "Japanese carpenters quickly assimilated the new technology" (ibid: 9). Paralleling Japanese architectural history, Nisga'a dwellings had fireplace pits in the center, were able to evolve during times when cedar became abundant about 5500 B.P. Nisga'a buildings initially had both pinned and tied joints—soon to evolve into highly developed joinery, particularly when iron tools facilitated the detailed carving of wood. Cross-cultural exchange of ideas and materials enriched Nisga'a architectural culture over millennia, with dramatic increases during the North Coast Interaction Sphere peaking in about 2000 BP (Sutherland 2001), somewhat earlier than the cross-cultural fertilization period of Japanese architecture.

The production techniques used by architectural craftsmen on both sides of the Pacific also show many commonalities. The main woodworking tool of both Japanese and Nisga'a cultures was—and often, among traditional carvers, remains—the adze. Forms were also similar: both cultures designed building forms to suit the straightness of wood (rectangular in plan), to shed water (sloping gabled roofs), and to resist earthquakes and heavy rainstorms (heavy wood members connected to permit movement). These factors combined may explain why the joinery of Japanese and Nisga'a buildings has so many similarities.

5.3 Other buildings for shelter or defense
Spring houses and large smokehouses

Conserving valued materials for building was achieved, in the Nass Valley, through a way of reusing building cladding on different housing and in different seasons. Longhouse joinery permitted the large, sometimes four-foot wide planks to be slid into place, in a way that they could be slid out again and transported to spring villages. Then at the villages the planks were tied onto the building frames.

Because of the way the house is constructed, you have those side panels that are pretty much inserted into the groove; they fit right into the groove. And so when they are moving to another camp where they are going to be staying for quite a while, they take those side panels out and use those for the construction of their temporary camp. In winter buildings, the spaces between panels would be filled with moss. (Allison Nyce Interview 2003).
Fig. 25. Pegged and slotted connections used in building large structures. Drawings by the author.

Photographs of smokehouses and spring houses (such as unidentified photograph from the National Museum, Ottawa found in Gathering what the Great Nature Provided 1980: 20) show that the tying was sometimes accomplished not board by board, but rather by placing a pole across a row of planks and then tying the supporting pole across the planks so they would stay in place (fig. 26). The roof planks were tied on in a similar way, with the planks laid in place, then poles laid across the top of the planks and firmly tied to horizontal projecting poles from the main roof structure, and to the vertical corner poles. (According to Nisga'a elders present at the charrettes, rocks were rarely used to hold down roofs in the Nass Valley since the strong winds sweeping down from mountaintops and through the valley necessitate the more wind-resistant tied connections such as those shown here).
Fig. 26. Wall and roof planks on this smokehouse drawing are indicated as tied in place using poles placed across the planks and secured with a double-wrapped tied connection made of cedar-bark rope (AN), Sitka spruce root rope (Charles Alexander pers. comm.), or animal intestines (Horace Stevens pers. comm.). Elders at the charrettes agreed that this was how tying was done. In the drawing at left, seaweed is shown drying on a rack that is braced back to the main smokehouse structure.

A similar concept was used for the large smokehouses that became temporary summer residences for people traveling to and from fishing and hunting sites. The structural system, like a human skeleton, was nearly always the same arrangement: a double ridge pole supported on front and rear twinned posts, two side pole and beam frames composed of corner and intermediate posts spanned with large side beams, then the whole made rigid by base plank "grade beams" and planks used as bracing (fig 26).

Fortresses (da'oots'ip), bridges, and other structures for defense and trade

Once the site was selected—you are accessible to water, and to firewood, and transportation—that was the main thing. And then in the earlier days it was for defense, in case there was a barrage, or invaders, you had a form of defense. So when you go down to Fishery Bay, it's called Da'oots'ip, that means fortress. The camp was overseen by a block fortress (Bert McKay 2003).

Nisga'a fortress structures formed protective walls near habitations that had great value to others, such as the resource-rich spring village of Fishery Bay. According to elder Ksdiyaawak, the history of defending Nisga'a land had a long history:

Our grandfathers were like the Israelites, that is the way I see it after studying the Bible. Many times other people would come up this river to try and take away our land. That is the reason they went to a high place, what they call Da'oots'ip (Fishery...
Bay) to live, so that they could see whenever a war party was approaching and get prepared (Ksdiyaawak—Hubert McMillan, in AN IV: 218).

A fort near Fishery Bay utilized a volcanic landform as the pre-existing structure:

The Ganada group of Haqwanlaxe and Txaatk'anlaxhatkw, part of the Ksim Xsaan group of Gitlax't'aamiks Ganada, held the fortified village on an island off Ts'imm K'olhl Di'oots'ip (Fishery Bay) as well as the adjacent territory together known as T'uutsagam Galt'sap'.

The island adjacent to the territory was hollowed out on top because of volcanic action and a goodly number of people could take refuge there. There was always plenty of food and rocks stored there in case of attack. There were dangerous currents around the island and it was difficult to approach (AN II: 167).

Architectural components of the fort were used for defense. The fort behind Gitlaxt'aamiks, like other fortresses of nearby places and peoples (MacDonald 1984b) employed ropes and logs, like the ones used for building construction, to keep attackers away from the villages.

While living at Gitlaxt'aamiks, they would go up to the place they call Miinh Neeł'g'wit the minute they saw a war party coming. They would already have a number of logs bound together, hanging over the side of the hill on the river side. The [intruders'] canoes would run alongside this hill, for if they were to come from across the other side of the river they would be easily seen.

The ones who kept watch would probably stay up all night and just as soon as the canoes were directly beneath them they would chop the ropes and the logs would go down, wiping out the enemy.

The old people in those days did not kill others just for the sake of killing. If they were first attacked, then they would counter-attack (Ksdiyaawak—Hubert McMillan, in AN IV: 218).

The site was chosen carefully, and the grades amended to suit the defensive functions of the fort. An adaawak explains the placement and components of the fortress at Gitlaxt'aamiks:

The fortress was surrounded by trenches and was situated at the top of a slope so that raiders could be destroyed by rolling large logs released by Ksdiyaawak and the other Gitlaxt'aamiks warriors (AN II: 201).

Nisga'a engineering skills, as demonstrated in structures such as bridges and fortress walls, modified the environment to enhance trade and resist invaders. As with other structures, acquiring and transferring complex engineering knowledge relied upon in-depth understanding of materials and their combinations. Engineering innovation and knowledge transfer also relied upon stories and dreams. "Like the bridges, details of fort construction often came in dreams, particularly the devices to trick the enemy, such as trapdoors and
deadfall ceilings and doorways, hidden compartments, rolling logs, wooden decoy figures to draw enemy fire, carved sentinel figures of people, animals, or birds who would give warning of attack, or strings of dried deer hooves strung around the fort or houses for the same effect. Drawings dated around 1804 by Lisianski, a Russian, as well as the archeology on forts to date, serve to confirm that the use of such devices was common to all forts” (MacDonald 1984b: 78-79). MacDonald (1984b) notes that he had been able to find out about thirteen eighteenth century forts on the Nass and Skeena Rivers, but that many more likely existed (78). He is less specific about bridges on the Nass River, noting only that "there were many bridges associated with the trading trails on the Northwest Coast... It appears that bridges were built and maintained by individual chiefs as part of their trading interests" (ibid).

In particular, the parts of structures that moved or altered in shape assumed active roles within stories and dreams, which in turn inspired architects and craftsmen in their composition of new structures and components (MacDonald 1984b). Structures that moved and changed acquired spiritual as well as practical powers in the adaawak, and were given names to acknowledge those powers. The fact that Nisga'a people were able to physically, as well as imaginatively, construct dreamed structures, demonstrates their possession of a knowledge equivalent to science, gleaned through experimentation and generations of observation and practice (Corsiglia and Snively 1995; Berkes 1999; Turner, Ignace, and Ignace 2000).

Physical examples in and near the Nass Valley demonstrate the successful integration of tradition-based and dream-inspired engineering. Stone breakwaters over one thousand years old indicate that the constructors knew tides and currents, even with changing sea levels. Fortress walls using pre-contact technology resisted shot from eighteenth and nineteenth century guns "at the short distance of a cable length" (Lisiansky 1814: 163), indicating considerable knowledge of objects in motion and their impact on stationary structures.

Forts and bridges, particularly numerous in the eighteenth century in the Northwest Coast region including the Nass Valley, utilized a variety of materials and forms. As described earlier, many included amended or constructed rock formations to add stability and defensibility. Stone assemblages used at Northwest Coast fort sites include artificial causeways, sometimes constructed between landforms such as between a steep-sided island (used as a fort site) and a larger island supplied with fresh water (Moss and Erlandson 1992, Carlson 2003). Causeways improved the defensibility of fort islands, since defending warriors could access fresh water when not being attacked, then retreat up the sheer rock faces back to refuge, to watch for invaders (Moss and Erlandson 1992).

Design features of forts are sometimes described in stories, as in the adaawak about Nekt, the warrior son of a Nisga'a woman. According to legend, Nekt built a fort at Kitwanga in the late seventeenth century.

He established his headquarters on the Ta'awdzep (fortress), a pyramid-like hill two miles north of the present village of Kitwanga, on the Gitwinkul River. To protect his stronghold against a surprise attack, which was anticipated, he made a fence of logs
around the five houses of his tribe, and a trap door covered with deer hoofs, which would rattle at the least contact. When the enemies one night tried to climb the steep slope of Tā'awdzep, they were crushed to death by the logs that rattled down as soon as they were released by the besieged warriors above (Barbeau 1929, quoted in MacDonald 1984b: 68).

Kitwanga fort, built under the direction of a warrior of Nisga'a descent, is used here as a starting point for a reconstruction of the architecture of seventeenth, eighteenth, and early nineteenth century Nisga'a fort architecture. Nekt's fort itself was built in Gitksan territory, but six similar forts were documented post-contact within Nisga'a lands along the Nass-Skeena-Stikine trails system, known collectively as the Grease Trails (MacDonald 1984b).

The two Nisga'a forts at Gitlaxt'aamiks, near the center of the trail system, shared many design features with other neighbouring forts along the Grease Trails. The similarities are further indications of the cross-cultural exchange of ideas that enriched Nisga'a architecture. For example, forts throughout the Pacific Northwest were located on high ground, with comprehensive views of trails, waterways, and other routes attackers would use for access (School District 92 (Nishga) 1996).

Many Nisga'a forts were made of two log palisade walls placed back to back (School District 92 1981), a construction strategy that in this case would have added additional resistance to attack as well as stability in the extremely windy weather often experienced on exposed, waterfront fort sites. From research by Emmons (1880's, reprinted 1991) each wall was made of large logs planted in the ground to form a palisade. Walls measured twelve to fifteen feet high, held together with horizontal stringers on either the inside or the outside, and braced at the corners and at intervals along the walls (ibid, Lisiansky 1814). Inside some forts, a row of forked uprights were driven into the ground about four feet from the walls. Atop the uprights, planks were laid to form a platform, upon which warriors could stand to view or defend against oncoming attackers (Emmons 1991).

The wooden fort walls surrounded houses and storehouses. In Aiyansh, two fences were built the full width of the fortress, with a trench between them. Another deep trench outside the outer fence was often filled with water (perhaps the structure was built on a lucrative creek situated so that water could be directed into the trench) (Deanna Nyce pers. comm.). Logs were then tied around the base of the fortification, which would be released upon the approach of the enemy (School District 92 (Nisgha) 1981).

**Hudson's Bay forts**

Later fortifications constructed by the Hudson's Bay Company had building layouts not dissimilar to Native peoples' defensive structures: multiple house-sized buildings surrounded by a palisade of vertical logs. The individual buildings themselves were different in construction and appearance, however. The "usual style" (Dawson 1989: 516) of Hudson's Bay forts was "Building[s] painted white and red facing on a quadrangle, Surrounded by a palisade which once had bastions" (ibid). The red and white painted wood frame structures of
the Hudson Bay buildings would have contrasted with the dark red, black, and blue-green on thick cedar planks that characterizes Nisga'a and other North Coast peoples' houses.

It is not clear how directly influential Hudson's Bay designs were on existing structures in or near Gingolx. However, in nearby Lax Kw'alaams, Viola Garfield directly links Hudson's Bay presence with the Native peoples' decision to renovate their crest-painted plank structures to imitate features of the trading company's architecture. "Gradually, in imitation of the buildings at the [Hudson's Bay] post, the natives began to make changes in their dwellings, adding floors, doors and windows, and furniture. These modern features were first added, not so much for convenience and comfort as for display...They added a plank floor, a solid wooden door hung on iron hinges, and two windows in the front 'where everyone could see them'...They enumerated the house front paintings that had adorned the dwellings of the lineage in the past and announced that henceforth they would have no more paintings" (Garfield 1939: 278-9). Hudson's Bay forts, and the buildings within, were an influence on peoples' decisions to modify their plank structures that were still in use the mid-nineteenth century.

**Daak'**

The daak' wilp was like a longhouse, but was dug into the ground to insulate the house interior. Joe Gosnell explains:

*One of the forms of building that is known here is the building in which the ground was dug out. They dug into the ground because of the extreme winter conditions here. There were people not only from this part of our territory, but who lived in parts of our territory that extend hundreds of miles to the North of here, and that are much much colder than here. When they built houses up in the north part of our territory, in the extreme alpine areas where it is cold, the people dug into the ground and then built their houses around that, sort of for insulation purposes* (Joe Gosnell, Hlek, 2003 interview).

Like longhouses, daak' wilp expressed the stories of the house owners. Because the excavated construction system was a response to cold climatic conditions, daak' wilp stories would sometimes tell of glaciers, snow, and storms. The graded house-of-ice story (p. 99) is an example of an architectural history that also tells of rigorous climates and the intense experiences a family would undergo to survive while traveling through ice-laden landscapes. Architecture, climate, and stories interlaced. All three became memorable because of the association: the buildings kept the stories alive, the stories recalled the buildings, the climatic extremes made the stories and the architecture tangible and unforgettable.

Daak' wilp structures, designed with several floor layers excavated into the ground, also ensured that materials were not wasted, but could be saved and reused through many seasons. Horace Stevens explains that the Daak' Wilp offered a way to store the extra boards that were moved back and forth from the spring villages. The vertical rises of each terrace had plank retaining walls, which could be layered with other boards brought from the fishing camps:
In some places, they said, where they all gather (that's the places they use during the summer) they put a log across [and put the boards on top] and they take the boards along. In the winter they stand them along there [by the steps of the daak' wilp]. Some of these boards were wide. There were still some in Fishery Bay. That's a really good question, because in some places they just stay a few weeks and then they finish and then move to another place...Especially if they had children, especially if they had children [they would bring the boards] but the ground they didn't cover [with boards] because the ground gives off heat (Horace Steven Interview 2003).

The daak' wilp optimized the use of materials people already had while using the ground for its maximum insulation value. The design reflected ecological knowledge, both in how to resist the cold winter temperatures, and how to conserve the heavy planks that were laboriously split from wedges. Later, explains Horace, the Nisga'a people found easier ways to split the boards, particularly after the Russian traders arrived in the 1700's.

In building homes., before the Indian affairs, the Federal Government, they were still using boards. You had to bring your own log [poles for construction]. They don't look for dry logs even if it's very long, because it's hard to split. In those you had to take the tree down. Later on they got the saws, hand-saws, you know those big six foot saws, so they cut their own logs. There are some places upriver that split really well. There are places in the river...where the trees are good for making planks. So you take your whole family and cut down the tree, but after the saws came they found it easier. During the end of the seventeen hundreds my grandmother said they started building with saws. It was so easy. We didn't have to split the logs (Horace Stevens interview 2003).

In some photographs, daak' wilp retaining boards include painted or carved crest images; in the same photographs, the boards are carefully adzed with the same care that present-day Nisga'a carvers, such as Alver Tait, use to smooth poles. The craftsmanship is further evidence of the value placed upon great pieces of wood: the Simgan, tree of life, receives the most care possible, and increases in value as a result.

**Hunting cabins (wilba gan) and sheds (wilp-doos)**

Our people were hunters, trappers, and they periodically moved away from their main residence temporarily, where they built temporary accommodations to house them for a one night stay when they ventured to their traditional hunting grounds where they went to check their trap counts. My father had several buildings all the way up the mountain, and we would reach a certain place and we would camp as darkness would descend or the weather would change. So we would temporarily stay in small houses, smaller than this room, built just for housing people to stay overnight.

My grandfather, in his family hunting area downriver, had built a lean-to halfway up the mountain, and it was made out of logs that were this big (indicates over three feet in diameter, larger than the circle made by his arms) made of spruce trees that had
been cut down—a huge lean-to with logs that big. The logs were tied together. The reason I think for using those huge logs for the lean-to was to resist the wind. I remember going up there in the fall, when the wind blows, and the huge beams were creaking and groaning and I thought my God, what if one of those huge logs came down on top of us! So that huge lean-to that my grandfather built down river was a permanent home away from home. It was built not only to house them but to protect them from the weather that changes so drastically in fall and winter (interview with Joe Gosnell 2003).

When they were traveling to where they were going and they know when the weather is going to change, so they make a lean-to. They tie a good sized tree against two big trees and that's where you build the fire, and the wind sucks the fire. They were good at telling what kind of weather they were going to have, whether it blows south-east, or north—these old people they already knew that (Horace Stevens 2003).

Fig. 27. Drawing reconstructing the hunting lean-to, using memories from interviews and corrections from charrettes. The tied roof structure, secured with poles and with each joint double-wrapped, is characteristic of structures built before nails were common. The tied joint shown here has been extrapolated from joints used in early photographs of Fishery Bay (see fig.17). Horace Stevens (charrettes 2004) said that the roof planks were long as shown here, and were installed in a double layer.
Underground dwellings

Underground houses were also part of Nisga'a architectural history, although the origins of the houses were from further inland than the Nass Valley, "from the hills of the groundhog country" (Emma Wright (Hleek) in AN II: 272). Robert Stewart (Txaalaxhatkw) (1953 interview with Beynon, in AN II: 271-273) tells how underground houses were built in the Nass Valley. The architects of a subterranean village, led by their chief Sanik, became known as the "Jits'aawit children of Chief Mountain". Originally part of a nomadic people of Tahltan origin, Sanik's Wolves (Laxgibuu) became Nisga'a after fleeing Tahltan Ravens (Ganada) who threatened war and enslavement.

They [Sanik's people] went through the passage under the glacier. They did not stop but kept traveling south. They came to Na'a, but having no fishing or hunting grounds, went on. They came to Laxseel but could not stay there. The Laxsgiik [Eagles] of that place taunted them as people of unknown origin, and resented their superior fishing skill. Finally, after traversing high mountains, they reached a large lake full of salmon. Traveling down the stream flowing to the lake, they reached salt water. Here they made their village and called it Smeelx...They made underground houses and were very skillful in the woods. From the head of the inlet, Portland Canal, they had a trail that went over the glacier to the hunting grounds of Meziadin Lake at the headwaters of Nass River. It was a few days' traveling time (AN II: 272).

The actual appearance of the houses is not revealed in the adaawak quoted here. The houses referred to, however, were likely Plateau pit houses, frequently built east of Nisga'a lands by Tahltan and other nations (Nabokov and Easton 1989). Plateau pit houses, one of the oldest type of dwelling built in the Americas (ibid), also used a wood framework similar to those shown below.

Fig. 28 a. Tied foundations of an underground structure, worked out from elders' descriptions combined with photographs by Emmons of early Tahltan underground structures (Emmons 1911). Drawing by N. Mackin.
Houses for coming of age or marriage

Wilba yaskw (isolation hut) for girls at puberty, explained Emma Nyce, was often a cave or hollow place in the rocks. The wisdom of this construction type is illustrated in the adaawak of the young girl who was saved from the volcano by the protective walls of her Wilba yaskw. When the young woman emerged from the experience, she was ready for betrothal (Deanna Nyce pers. comm.).

Fig. 29. Cylindrical hollows in the lava rock, like this one made by Sitka spruce or Western red-cedar poles trapped and burned in the molten rock, were sometimes used as shelters. Photograph by Robert Mackin-Lang
5.4 Resource structures

Architectural achievements among the Nisga'a included more than shelters for people and their belongings. Some structures were used for monitoring the changing abundance of resources. These structures, and the processes associated with their use, were vitally important to survival. "Operating a hunter/ gatherer/ [philosopher] economic system, especially one as elaborate as ours, is not simply a matter of going and taking...People need to understand where they can harvest. With seasonal resources large degrees of organization are required to operate the harvesting efficiently and, at the same time, conserve the resource abundance. People also required a kind of differential harvest strategy for times when the populations of the key resource species are particularly low" (AN IV: 131). Differential harvest strategies based on long-term cycles of resource abundance demonstrate Northwest Coastal peoples' knowledge and practical use of ecological succession (Turner Ignace and Ignace 2000), as defined by McGraw-Hill on-line as "the process by which organisms gradually occupy a site, alter its ecological conditions, and are eventually replaced by other organisms" (McGraw-Hill on-line). However, this definition is ecologically inaccurate and metaphorically imperfect: the original species, and a people's original ideas, remain part of the system, ready to be brought back when conditions change again (Deanna Nyce pers. comm.). Resource-monitoring structures were part of the knowledge system that monitored ecological succession, building upon ecosystem diversity, abundance, and change.

Other structures were part of food storage and preparation. "Only the people who could store foods for the seasonal time of scarcity, during the winter, would continue to have foods throughout the year. The emphasis among our people was not simply the harvest but the preservation of foods. The activities of the harvest were not separated from the preparation and preservation of foods from the raw harvests. The Nisga'a diet is one of great variety. The preservation of abundant seasonal resources required a lot of labour and a lot of organization" (AN IV: 131).

The architecture of resource preservation and monitoring was an integral part of survival. Over thousands of years, the people of the Nass Valley experienced climate change, dramatic alterations in sea level, catastrophic events such as volcanoes and floods. Through all these changes, they survived. The buildings that follow were part of the knowledge, wisdom, and practice that sustained the Nisga'a people throughout gradual and cataclysmic changes. The landscapes associated with buildings were also part of the infrastructure needed for survival, and also for enjoyment: these are discussed in the final topic of this section, on Nisga'a gardens.

Wilp sihoon (not for living in)

*Smokehouses, from my grandmother's and mother's specifications, are very important. It's simple, but interesting. A lot of the modern Nisga'a build smokehouses according to the way you build a house—the size, the height—but that's not right. You need the height, and the space.*
You should be able to stand up straight under the crossties [wit, or wooden cross-bars for drying fish]; you shouldn't have to bend over. There is a good reason for that: you need to be able to build a good fire. It took me a while to work it out.

Foundations are not usually required. What you need is a hard perimeter where you would normally lay the footings: as long as you have the ground on the exterior wall well-packed so it will withstand snow or heavy-rain that might come down and wash everything away. But in the middle of that you don't want rocks or sand, but you still want any rain that will get in to be able to run away, not to gather. The reason for that is you want smoke, not heat. The heat will spoil your fish—spoil your oolichan. My mother said you don't want any rocks in there. Get some gravel, pound it down, put some sand on top, and build it up so it has a good layer of pure, mainly clean soil that slopes away from the smokehouse. In addition, you'll find out that your smokehouse, even in the winter, will have a good fire going.

My smokehouse is about ten feet by twelve feet, with a full ten-foot ceiling. Inside, all the way around, I have some good rocks where you put the pit and build a fire, and your fish are hanging down from above. And the floor is sand that I keep clean. You don't want to build up [the soil] too much in there; you want a pit. If you have too many rocks the heat builds up in there and you can start a fire. We never had a fire in our smokehouses, as far as I know. That's one of the things my grandfather said.

If you want to build a smokehouse you lay out four corners. The old way of doing it is by putting corner posts in, then either tie or nail your joists. Nowadays it's nails but before that it was tied—the peak, roof beams, everything. The roof had to be a good slope, because you don't want any rain to build up on top. It couldn't be too flat. Mine is about like this (indicates between 6:12 and 8:12). That way there is no chance of the water getting in, the rain just goes right off it.

One of the reasons for a big roof like that is that there has to be different spaces for different purposes. It has to be for multiple uses. Oolichans are the first fish to come in. You have to be able to convert your smokehouse for oolichans. You smoke them for two days, and then you move them up right up and hang a new batch underneath, until the space is full. When they're dried you take them off. When the salmon comes, it is a totally different way of preparing your smokehouses for salmon, because of the delicate strips that we put on the racks to dry. Then you string them on sticks. That is really important: you don't want them to get too close to the fire so they cook, but you want the most smoke at the shortest time. It has something to do with the way the smokehouse is put together—the height, and the way the roof is facing. You have to know which way are the prevailing winds on the Nass—northwest, or southeast —and you have to catch the winds from the southeast. Some people don't realize that, and they wonder why their smokehouse gets hot—it's exposed to direct wind facing either north or south.

When you put a smokehouse together, you leave space underneath the eaves and on the wall sides. Rather than closing it all off, you leave just enough [space] so when the wind comes in it blows the smoke around. It's very important. Nowadays I see a lot of young people building
smokehouses, and they wonder why it doesn't work—it's because it's facing either north or south.

There is a second roof on top where the air comes in, and also the holes underneath your rafters for air. At the eaves, you put a hole in there like you do with today's buildings. You have to take advantage of the air. You want the air to move around in the smokehouse all the time (shows circular motion). You can't just fill it up and let it sit there. With everything you smoke, you want that product to dry and smoke in the quickest possible time... [Deanna Nyce later adds that the smoke also keeps the predators out].

In the old days it would be simpler construction: more or less just the four posts tied together, and some of what we call wit—joists. Some of those you tie down so they will be strong, then you put the cedar planks on the outside. How you attach those planks is a mystery to a lot of people. But they used pegs, and some of those are tied on with holes in the planks, just like shiplap, to shed the water off. On the roof they laid split cedar, more or less the same slabs, laid them down in ten-foot, twelve-foot, and sixteen-foot lengths—split, you see, and tied together inside with collar ties. Mind you, I haven't built one like that myself, but I have been told, from my grandfather, and my father, and my mother. Well, that's about it for smokehouses. (Jacob McKay Interview 2003).

Several facets of ecological wisdom emerge during Jacob McKay's recollection of smokehouse construction. Smokehouse builders were aware of air movement through roof spaces, an important consideration for nearly all construction on the damp Pacific Northwest Coast. Smokehouses have the additional advantage of having an air movement that is visible because of the smoke. Like a construction laboratory, smokehouses teach builders about natural ventilation and air circulation in and through buildings. Further, smokehouse orientation is determined by predominant wind direction at the time most of the smoking will be done: not an easy calculation in a region where winds sweep down from mountaintops or through river valleys, influenced by glaciers and ocean-going storms (Harry Nyce pers. comm.). Jacob McKay harvests the southeast winds of spring storms; another builder might need to use many generations of knowledge about wind on and near his ango'oskw in order to decide which wind direction will make the most prevalent and effective source of air movement for drying fish.

Smokehouse builders also considered the heat-retaining properties of construction materials. Showing greater awareness of heat-absorbing and reflective attributes of flooring materials than many architects, the Nisga'a smokehouse builder would carefully assess the size and quantity of rocks and sand relative to temperature. The calculation is not optional: too many rocks mean a smokehouse fire, complete with valuable loss of food and materials.

Understanding tied connections also meant having detailed knowledge of materials and of wind and snow loads. The rope that was used had to be sized for the job. In the absence of written building codes the knowledge about rope strengths or wind- and snow-loads, many generations of experience decided an oral building code. The building itself reinforced the memory through smokehouse construction and the accompanying lessons of elders.
Fig. 30. Details of a smokehouse. The plan (top) shows how the four posts were located inside the walls, so that planks could be tied to them on the inside of the structure. The siding detail (right) indicates a tie pole placed over the planks and tied. This detail would sometimes be used on the outside of buildings, although Nisga’a builders preferred connections on the inside face of walls (Horace Stevens pers. comm.). The section (bottom drawing) indicates two levels of poles in the roof space; often even more levels were added, so the fish could be moved up as the smoking was completed. The use of a cedar pole fragment as a footing is characteristic of smokehouse construction (Jacob Nyce pers. comm.). Drawings by N. Mackin.
Food storage buildings

The other thing that I observed and marveled at was what you call storage—underground storage with a roof on it—root cellars. I don't know how they learned to do that, but I know it was used extensively to store our vegetables or anything, when my Mum would go to the Hudson Bay store up at Observatory Inlet or Portland Canal. We would go to the company stores where we would get bacon in brown bags, then wrapped in burlap and tied, and put them in the root cellar.

The way the root cellars were built really amazed me. It was just like a roof, but the ground would come right up. Nothing elaborate—just a roof, and a door you crawl in to put your stuff in, not a very big door. And when they finished they piled up all kinds of stuff so the animals couldn't get in there. And over here they'd have a little structure that lets in air.

It went about four feet into the ground, but when you walk in there I was able to stand right on the floor. I'm five-feet five-and-one-half inches tall, but my Dad was over six feet and he had to crouch down. All around inside was dug out. The front part was like any other structure I've seen. Mind you, these were all put together with planks and nails.

We had one at our big house where all of our bacon and ham was stored. It was right under the house. We had a big house. It was three storeys tall. My father built it himself. He saw one house in Anyox, the gold mine. He liked the design of that house. He went to the manager's office and told him he liked the design of that house, and could he get him a blueprint. Sure enough, the manager was good enough to get him a blueprint. All he had was a square, a carpenter's square, to help him build it. Someone in the canneries had taught him how to use the carpenter's squares. Somewhere up and down the Nass, it must have been Mill Bay, there were several old guys, and what they wanted to do was learn how to build the same type of structure that they saw [in pictures and other places]. And they taught my Dad. With the square he could build just about anything. He made perfect cuts for the roof. It had a dome on top, and needed very intricate cuts. The pieces fit perfectly, not with the gaps like you see nowadays. I saw him work out problems, like the problem of building a set of stairs. I figured if he can do it I can do it too (Jacob McKay Interview 2003).

Fig. 31a. Food storage building, dug about four feet into the ground. Drawing by N. Mackin.

Food storage buildings were also made from stacked logs (School District 92 1996: 87), thereby keeping food safe from the elements and from prowling animals. The adaawak tell that stacked log structures were used near the beginning of Nisga'a time, to construct windproof houses and for caskets:
...in a certain ancient village, Gwinsk'eexkw...there dwelled four chieftains. The population of this village had greatly increased since their descent to earth. It happened that the wife of one of these chiefs became dismayed and disgruntled and went on a fast...The medicine men had been doing their best to try to cure her for almost a year. By this time she had been reduced almost to a skeleton—her skin was just clinging to her bones.

At this point she spoke to her husband, requesting that a huge casket be made of round logs—after the fashion of a log house. She wanted it to be chinked with moss, over which a coat of mud or clay will be applied all around so it will be absolutely windproof (Sim'oogit Titus Minee'eskw of Gitlaxt'aaamiks, recorded and translated in 1976 by Gitlaxt'aaamiks cultural researcher Harold Wright, reprinted here from AN I: 11).

Fig. 31b. Food storage building photographed on the Upper Skeena River, showing the manner of stacking logs then chinking between them with moss and clay to make a wind-and animal-proof structure. Photograph courtesy British Columbia Museum PN 277, used with permission.
Food Preparation Buildings

They had houses there [near the Georgie River, near the northern tip of Portland Canal], long wooden houses where they dried food. There are no walls on them, just a roof. They picked seaweed there. They had long wooden houses. The reason they put the slope on the roof is because of the snow: it has to slide down. [Shows me how the roof is pitched in two directions] (Emma Nyce 2004).

The structures in Emma's grandmother's story were probably not unlike open structures in summer villages near Glacier Bay, and at Fishery Bay. Several summer villages in early photographs indicate pole frames with planks on the roof, and drying racks nearly for fish and seaweed.

Fig. 32. A drawing from about 1850 showing a structure with no walls. The roof appears to be made from a membrane-like material, possibly bark. Drawing by Pym Nevins Compton, courtesy B.C. Archives.
Ganee'e (frame for drying oolichans)

The oolichan drying structure, or ganee'e, has been in use since time before memory in the Nass Valley. The three poled rack is efficient, essential, ecologically responsive, sturdy, timeless—a work of architectural mastery, as described by Harry and Deanna Nyce in the interview below.

![Fig. 33. Panorama of Red Bluff showing ganee'e, cooking sheds, and smokehouses. Photograph 1927 by Marius Barbeau courtesy Canadian Museum of Civilization 69583.](image)

Harry Nyce: The ganee'e structure is made of one of two kinds of cedar trees: on the coast they used yellow cedar, and now we use the red-cedar. Historically, they were made of cedar poles about ten inches in diameter at the base, and what we use now is eight to six inches in diameter. The older models that were used at Fishery Bay were taller: they were between fifteen to twenty feet high, and they were supported of course at the bottom. As they got higher, there were platforms made. The supports were permanent; on certain levels, about every four to five feet, there were permanent supports for the platform. They used planks, and they were moved up to hang the oolichan to sun-dry, and they would move up and of course move down as needed.

What we are using now is a smaller version. We have one now in Ottawa, a ganee'e that my fish crew put together. It is a lot smaller. It would fit inside a room like this—about ten feet tall. We shipped over oolichans, but the oolichans kept dripping; they didn't know how to stop the oolichan from dripping. It is just symbolic of a ganee'e that we sent over to Ottawa for the purposes of an exhibit.
The ganee'e themselves are used for two things: one is the oolichan, and some of the fishers when they were drying other fishes used the ganee'e for drying other fishes as well. If it were sunny, they would dry k'ayukws, which are strips of fish drying. They would cold smoke it then hang it on the ganee'e using crosspieces so the air gets through the ganee'e. That was the two uses. My grandmother told the story of that, but I never did see it: it was quite some time ago.

Fig. 34. Two photographs of Horace Steven's ganee'e. Robert Mackin-Lang photographs.
So as the fishery took on a different mode, techniques started to change. They used canoes before for harvesting, and then they used powerboats. When the whole river would ice up solid, by springtime the water would start to melt the water underneath, and sometimes we would fish on the ice. The ice would be five feet thick. There were different methods of harvesting: using the modern method, they would use horse and sleigh. They used big boxes, about four or five feet by six feet long cedar boxes, and you would fill them up with oolichan on the ice. The horseman would drive the cedar boxes back to the bin, where it would be unloaded. Later on after the horses we would use skidoos. So different methods came into play with the harvesting. And so likewise with the ganee'e the younger people are starting to use different things. The younger generation now is using different things. I'm sure you'll probably see, maybe, aluminum, ganee'e made, because the structures are very similar, because you use different material. For the most part, what you see in the valley are the smaller ganee'e made from cedar—cedar poles.

Deanna Nyce: There was spirituality about them as well, when they raise it.

Harry Nyce: Certainly because of their use of the food, it was very much important that the area be kept safe for one, and sacred for the other. All the people were very much environmental at heart, so some of the practices were very much spiritual.

Nancy Mackin: Would the ganee'e be constructed a certain way or a certain time that the ganee'e would be built in time of year? Were they built every year, or were they left to stand?

Harry: Some of them were left to stand. The ganee'e that were left at Fishery Bay were left to stand, because that is where the major work was carried out and the operation was carried out. In the communities: I don't recall, in the early days when I was growing up in Gitwinksihlkw, I saw only one that was built and left up, but it could have been more. They were taken down. The major reason was at Fishery Bay, because people moved away, it was just a camp for that, and so people moved away. When you put them in the other communities other things can happen like children could start climbing and those sorts of things, so they were taken down.

The three poles were supported by smaller part of the tree, the part and the top is small, or we would harvest a small tree. They were fastened. There would be a triangle that at one point would be about five or six feet, depending on the individual that was making it. It wouldn't come together as a teepee: it was more or less straight. It remained straight up and down.

Nancy: What tools were used?

Harry: Mostly shale rock was used. My understanding is that there was a lot of inheritance of sharp rocks that were made into heads. Those were the main ones. We have some. You can see the handle on them, and it is tapered. They just hit them
towards the person that is working (Harry shows downward cutting motions). They just notch out of the tree enough to add into the pole itself.

Nancy: Why three poles instead of four: would there be a reason?

Deanna: It's to do with how the air flows through three is very different from how the air flows through four, and it's an efficient way of drawing air. It's incredible technology, and a very efficient form.

Harry: Rather than having the four, where one side would cover up the other side, with a triangle the wind could go through in various directions, there wasn't a preferred direction because it was a triangle. To anchor, you would go down about four feet into the ground. They would probably last about six to ten years, depending on the tree itself, the weather, and the saturation on the ground. They would test them, and rock them. Historically a lot of them used spruce roots to fasten them, and those that weaved would weave rope out of cedar and roots as well, to make the ganee'e stronger. It would wrap around the pole so that it is secure. Of course it is notched in there, so it is really sitting in there, all you are doing is fastening it to the pole itself. There is not much movement, you are not rocking it. All you are there for is to place the oolichans on the ganee'e (Deanna and Harry Nyce interview 2003).

**Building the ganee'e**

"They start putting the rope around [the ganee'e]. and start tightening it up—you need the help of a young tough teenager...'til it's tight enough... You start putting it on the strings from the top and you work down. The ganee'e is left and they put sticks and branches on top...so the crows or whatever don't sit there...[and] start eating it from the top...They're going to come back in May to pick it up, real dry" (Hleek—James Gosnell, in AN IV:176).

In several ways, the ganee'e is emblematic of the highly complex economic and social fabric of Nisga'a and other northerly peoples of the Pacific Northwest Coast (Mitchell and Donald 1988). Construction personnel had to be related in a specific way to the person stringing oolichan on a ganee'e. As Gitwinksilhkw elder Grace Azak explains, "The person who erects the drying rack is the woman's wilksiwitkw" (AN IV: 177). Because wilksiwitkw, the woman's male relatives on her father's side, such as her paternal uncles and nephews, are of prime economic and cultural importance in the matrilineal Nisga'a society, they must be builders of the ganee'e, a structure keyed to economic and cultural strength. The ganee'e is also an architectural expression of gender divisions of labour that still characterize some traditional economic activities. Along with weaving nets, mats, fabrics, and rope; gathering plants and shellfish; and manufacturing clothing and baskets, women were mostly in charge of processing and storing fish and meat. Within traditional social structure and when possible, men hunted and fished, made fishing and hunting equipment (with the nets and rope made by women)—and provided all woodworking, including making ganee'e.

Grace Azak (in AN IV: 177) notes that pole spacing is determined by the length of the cedar bark strips strung between poles: "Cedar bark is used. The inner bark of the cedar is made into narrow strips about ¼", [and then] strung through the gills and mouth of the oolichans.
The length of the cedar bark strings is one arm and one half... It is the men who make the drying racks using three cedar poles set upright in holes in the ground and nailed together at distance far enough apart to hang the oolichans between the poles" (ibid).

**Fishwheels**

The fishwheel is a more recent adoption of the Nisga'a people, although it is based on fish weirs that were used in the Nass Valley since ancient times (Harry Nyce pers. comm.). Harnessing wind, water, and solar power, the Gitwinksihlkw fishwheel shown below is based on a Native design from the Fraser River area, and is specifically to help maintain diversity and abundance within Nass Valley ecosystems. The river current-powered structure consists of a tower made of poles, triangulated for strength. A "basket" also made of poles is connected to the tower.

Fig. 35. Fishwheel near Gitwinksihlkw has an explanation that reads: "The tower structure is used to elevate the entire basket assembly out of the water for moving the fishwheel and during flood conditions. This fishwheel captures from two to seven percent of the upstream-migrating sockeye, three to seven percent of Chinook, and about three percent of the Coho". Since early times, the Nisga'a had used fish traps to monitor the abundance of species within the lands and waters of each wilp or household (Harry Nyce pers. comm.). Fishwheels, an adaptation of the earlier fish trap (Harry Nyce pers. comm.), were long a part of constructed history along the North American coastline at least as far south as Oregon. In the Nass Valley, river current-powered fishwheels have recently been reconstructed as part of the renaissance of traditional ecological knowledge and wisdom. Photograph by the author.

Fish are captured in net-lined baskets. Then, as the basket lifts out of the river, they are directed towards slides and finally enter live tanks situated alongside the pontoons. A crew visits the wheel several times a day throughout the one hundred days that the fishwheel is in use each year, tagging and releasing all but the most abundant species, which are retained and sold to support fisheries monitoring. The remainder of the fish returns to the river
unharmed, after the census is complete. The Nisga'a people have won a resource award for their fishwheel design and use (Deanna Nyce pers. comm.).

**Fishing and cooking sheds**

The buildings at Fishery Bay provided an opportunity to measure and draw the cooking sheds that are still used in the processing of oolichan. The structure of the cooking structures resembles that of the longhouse, except that there is only a single ridge pole. Since the buildings are largely open on several sides, there was sufficient movement of fresh air within the structure without adding a ventilation opening in the center of the roof.

![Exposed structure in a cooking shed at Fishery Bay](image)

**Fig. 36.** Exposed structure in a cooking shed at Fishery Bay. Photograph by Robert Mackin-Lang

**5.5 Teaching places**

Before the missionaries arrived in the Nass Valley, schooling was undertaken in the longhouses, and in the surrounding landscapes. Elder Dr. Bert McKay explained that the longhouse is really the House of Learning, for the Nisga'a people. Design attributes of the Nisga'a longhouse facilitated "lifelong learning" (Deanna Nyce pers. comm.)

Around the fire, wisdom was offered along with food. Nisga'a elders note that knowledge nourishes children as much as salmon and berries, especially when served together (McKay 2003). Longhouse architecture and interior fittings responded to the intertwined tasks of teaching and serving, learning and eating. Logs supported the backs of elders as they sat near the fire teaching the young (Emma Nyce 2003). The light and warmth of the central space enabled teachers to demonstrate as well as explain knowledge gathered over many
generations. Then, during meals, each child "swallowed" knowledge about the land and how it should be used (Interview Bert McKay 2003).

The details of longhouse design were also a part of education. Each of the great log-framed structures told a story about the family, whether on crest fronts, supporting poles, or pts'aan (totem poles) (see fig. 1). Many architectural narratives detailed how the extended family group, or Wilp, came to be a landholder, and of the plants and animals who partook in the journey towards land ownership. The building itself became a history text. Sometimes it was also a medical text, as in one nearby village wherein each housefront told of a medicine (Nabokov and Easton 1989). The interrelationship between building and its function—to teach—was explicit.

In earliest Nass Valley missions, educational and residential uses were still integrated. "School" meant the living room or basement of the mission house (McKay and McKay 1987). Separate school buildings were soon added. In 1867 Gingolx, "locations were chosen for a mission house, school, and five residences" very soon after the founding of the village itself (Patterson 1982: 47). Despite its small size, the school building was a focal point both in community life (ibid) and in its siting, near the center of the main village street facing the Nass River estuary. The same position was usually given to the highest chieftain's residence in pre-contact villages.

Day schools were also constructed in the other villages. At least two factors determined day school design. The first was affordability, ensured by a minimum of doors, windows, and floor space area, and a simple house-like gable-roofed form constructed of wood framing and clad with wood siding. The second was political: choosing to build in typical mission style using milled lumber stemmed from many nineteenth century missionaries' teachings that "the [Native] people must become Westernized or be overrun and evicted from their land" (Patterson 1982: 128).

In contrast, the residential schools attended by Nisga'a children after 1920 were not house-like in form, nor were they sited anywhere near Nass Valley villages. They were large, H-shaped, usually made of brick, and constructed away from the river or sea. Inside school dormitories, the children's living spaces were crowded, with little space for personal belongings or for expressing individual taste. Crowded schoolrooms became ever more so as cash-strapped schools attempted to increase their enrollment, and thereby increase the number of meager per-student grants (Kelm 1998). Rigidly orthogonal configurations facilitated colonial control of students. Desks, beds, and chairs all described parallel or perpendicular lines within which students' movements were largely predetermined. Further, distinctive cultural elements that belonged to the First Nations students were absent.

With the founding of School District 92 in 1975, built on Nisga'a wisdom and through Bert and Alvin McKay's vision, the Nisga'a people built schools that reflected the longhouse in their sloping roofs, the Nass Valley lava fields in their rock cladding, and technological innovation in fittings, furnishings, and electronics. The British Columbian Government took notice. Lieutenant Governor Budge Bell-Irving enthused over the physical beauty and educational excellence of NESS (Nisga'a Elementary Secondary School), adding, "this is a
very fine school and all concerned are justly proud of it" (Bell-Irving memoir 1981?).

According to ancient Nisga'a culture, the community gave the school its identity and name.

Later educational structures were creative re-uses of non-educational structures that became available. In 1993 Wilp Wilx'ooskwil Nisga'a (Nisga'a House of Wisdom) opened its doors in the old St. Peter's Church structure. As with education in pre-missionary times, learning at WWN is largely student-driven and non-hierarchical (Deanna Nyce, pers. comm.). Downriver in Gingolx, the band office administration building, with its frontal painting of four crests, received renovations to become a Media Center. Computer drawing and Internet communications bring new audiences and expressions to Nisga'a culture. Artists of all ages meet, share ideas, and teach interactively. Often, the children impress the elders with their knowledge and creative abilities (Nelson Clayton pers. comm.), and young artists become the teachers.

5.6 Public Works buildings

The ancient Nisga'a practice of bringing many people together to build a structure remains strong in today's Nass Valley villages. "Public Works", the system wherein villagers contributed time, materials, funds, and sustenance for volunteer builders was also an important part of constructing the villages from the time of the missionaries forward. Feasts were held in Community Halls and church buildings built and in large part funded by the villagers themselves. The funding process, called public works, supplied financing for buildings, sidewalks, road-works, and other improvements enjoyed by all. Sometimes the villages would compete for the best-kept village (Drucker n.d.).

Villagers of modern New Aiyansh and its predecessor village Aiyansh funded and built numerous public works projects including Holy Trinity Church and recreation center. Finished in three woods—red-cedar, balsam, and spruce—Holy Trinity derives colour and texture from the diversity of Nass Valley forests.

As in Aiyansh, church and community buildings of Laxgalts'ap were constructed largely through work parties. St. Andrew's Church, the largest Anglican Church on the BC mainland outside of Vancouver (St. Andrew's Parish website 2003), was constructed from "Public Works". One family would contribute food for a week, while workers volunteered construction time and materials. Through this community-led process, the villagers added their personal commitment to the church construction and design. A similar process was used for the churches for which Gingolx has become famous (Nelson Clayton pers. comm.).

The public works system was an extremely important part of architectural education, explained Horace Stevens. It was during the construction of buildings by parties of volunteer labour that young people learned construction and design skills that had been passed along through generations.

_I went to school in Alert Bay, St. Michael's, same place as Rod [Robinson] and the others. All I knew how to use was the square and the tape measure. That's a really good question because you had to call on a certain person that knew how to build. In_
those days they only built by [laying out the foundations with] string. When I came out of school, right away they had public works, and they built the house with a string. And I was amazed, how can they build it without a square? And it was right on! They did have tools to build, but they still had to make the foundation string. I watched them, and they already had a level made out of maple. We have glass in ours but they just had a gauge that was filled with water (Horace Stevens Interview 2003).

5.7 Structures for worship: blended spirituality

Churches were among the earliest public works buildings built within the four modern villages, demonstrating continuity between the ancient system of cooperative construction and the present, as well as the villagers' great pride in their churches. Construction practices also mediate between reverence for an ancient culture and the growing needs of modern communities. For example, a vital part of all construction is the blessing of piles or footings, and a second blessing and naming of the finished building. Holy water and goose down are both used; sometimes cedar chips are mixed with holy water to recall the spiritual qualities of cedar (Bishop Hannen 2003, pers. comm.).

Furnishings of the churches, as well as the rites held during construction and within the services themselves, reflect reconciliations between Christianity and traditional Nisga'a spirituality. Sacred cloths, vestments, and altars, and fonts used in Nisga'a churches evidence traditional carvings and designs.

Architectural form also invites comparisons between Christian and Native spirituality. For example, a few years after St. Andrew's parishioners completed the church in 1990, the people of Laxgalts'ap began construction on the church spire and tower. Again, both practical and spiritual matters were addressed. As planned, the addition would protect churchgoers from snow and ice falling from the roof, and supply an entry foyer useful for weddings and other gatherings. In addition, the spire has religious significance. While church towers have long held a dual purpose as bell-towers and as highly visible elements directing people to worship (Pugin 1853), they also form "a beautiful and constructive emblem of a Christian's highest hopes" (Pugin 1853: 42).

Reaching skyward, the spire may be seen to serve similar tasks to those of the great cedar crest poles that also link the physical and spiritual worlds (Blackstock 2001), and express highest hopes and accomplishments. Both church and pts'aan, completed in Laxgalts'ap within a year of one another, express spiritual ideals vital to the past and the present. Both are celebratory: the pts'aan celebrates freedom from over one hundred years of oppression under the Indian Act, the church and tower offer places to gather and worship that is a fusion of Nisga'a and Christian religious practice. The use of cedar is an additional commonality between St. Andrew's and totem poles. St. Andrew's is finished inside and out with cedar, a material that connects the everyday world with spiritual forces living in the sky world above:

The Simgan was especially delivered to our forefathers by the supernatural being from above. That was what my father told me. It came from K'am Ligi Haalhaahl, our Creator and Chief of Heavens. [...] Its use for totem poles, pts'aan, is especially
important to us as Nisga'a. On completion of the pts'aan, the Chief would conduct a ceremony and commemorate the very origin of the Simgan. He sang a lim'ooy, a song of sorrow or dirge. The lim'ooy of his forefathers, that is what he sang. After the song the Chief then commemorated the beginning of the Nisga'a...when the tree was first discovered by them...he remembered all this (Sim'oogit Wíi Gadim Xsgaak (Eli Gosnell) quoted in AN I: 92).

The adaawak above associates the pts'aan with music of ancestral spirits, just as the church tower is linked with songs expressing ascendance to the spirit world above. One Northwest Coast explanation might be that the song is a stairway leading down from the heavenly world reached by the totem pole (Will Tsosie 2003 pers. comm.). However, it is possible to interpret bell tower and pts'aan as opposing symbols: whereas totem poles are components of cultural memory and continuity, church towers symbolize an institution that, particularly through their role in residential schools, fractured First Nations land ownership, language, and culture. More recently, however, many churches have become partners in reclaiming Native land and identity, and active support of Anglican and Salvation Army Churches persists in the Nass Valley. The spiritual and constitutional principle of respect for diversity of belief may be the key to strong partnerships between churches and Nisga'a communities (Rev. Ian McKenzie pers. comm.). Also, the ancient Nisga'a religion is not all that different from the Christian religion, in its essential views of the Creator (Joe Gosnell Interview 2003). The complementary and similar views of the sacred knit together, helping people become stronger (Rev. Ian Mackenzie, pers. comm.) and enriching architectural expression.

5.8 Buildings of the Cultural Revival

In the 1960's, an architectural symbol of the Common Bowl was built in New Aiyansh. Sim'oogit Wíi Gadim Xsgaak designed a new community center, fronted with a painting representing all four crests. The painting was based upon a design found on a decorated cliff downriver from Gitwinksihlkw (AN I). The cliff was known as The Place of the Wise and Powerful. "Anyone at the time wanting to return above, to the Chief of the Heavens' domain where our ancestors originated from, or visit there, would go and lie down at the foot of this particular cliff and go into a trance for ten days...Only then would the person seeking supernatural powers be rewarded" (AN I: 5).
Fig. 37. Community Center in New Aiyansh displays all four crests, representing the Common Bowl from which all Nisga'a are nourished. This building was designed by Eli Gosnell, Wiig Gadim Xsgaak, based on a petroglyph found on a cliff in the Nass River. The building is no longer in use.

On the several new structures, including Nisga'a Lisims Government Building, the Aiyansh Community Hall, and the Visitors' Center, unity between past and present, and among the four crests, is symbolized in poles, carvings, building elements. In this way, buildings continue the ancient tradition of recording memories and reinforcing cultural cohesion. New buildings, like their predecessors, also feature cedar as a construction material, using recent technologies to sustain the valued wood for many generations. The worldview that perceives buildings as living entities persists, particularly through exposed structural elements (ribs and limbs) and by blessing and naming architectural works. Importantly, seeing architecture as living beings may influence the care with which a building is detailed, since this worldview implies sensitivity as to how the living being will survive in extreme weather and over time.

Fig. 38. The stage at the New Aiyansh Hall resembles a chief's platform in a longhouse: opposite the entrance, beneath the peak of the rear gable, with a painted screen defining the space. The pole-and-beam connection is based on traditional joinery, with the top of the pole carved to make a saddle in which the horizontal beam rests securely, without the need for bolts, pins, or nails. Photograph by Robert Mackin-Lang
Buildings that celebrate the Common Bowl participate in reclaiming the ecological diversity for which the Nass Valley has been known since time before memory. Forestry, fisheries, and water management are some of the Lisims Government departments wherein traditional landscape knowledge is being used to ensure diversity for the future.

5.9 Gardens

Earliest oral histories also show great value for diversity, as in the adaawak of the Garden of Laxha (Heaven):

> There was also a large open field resplendent of fruit trees of all kinds and a bounteous garden boasting grasses, bushes, flowers, and whatever else one would find in any garden. As we know, the Chief of the Heavens had a garden that contained fruit and produce of every description, more varieties than we know of here on earth.

(AN I: 46).

In this adaawak, the greatest possible number of varieties of plant life was found in the ideal, heavenly garden. The story supports an important tenet of ecological wisdom and knowledge: that of maintaining—or enhancing—the diversity of plant species in their homelands.

Several Nisga'a historians remembered their parents' gardens as more productive than those of today's villages. One explanation, offered by elder Alice Azak (Mahlhaas) of Gitwinksihlkw, is that large construction machinery, used to build roads and structures, changes the once-fertile soil into "contractors' soil" that is difficult to cultivate. "My Mum used to make a big garden—carrots, and cabbages...it was kind of sand, their soil—it was black, and they grow good gardens. Now it's rocky. It's just since they started breaking up the soil with their modern machines, they ruined the ground. My garden used to be good here, but now we can't even grow potatoes" (Alice Azak interview 2003). Mildred Stevens (interview 2003) adds that growing one's own garden was essential before roads and ferries made store-bought fresh produce accessible to Nass Valley residents.

Site preparation methods used by longhouse builders were clearly easier on soil workability and fertility, so much so that the old longhouse sites often became vegetable gardens, some thirty years after the longhouses themselves were torn down. At least one missionary working in the region approved of this reuse of longhouse sites. "Reverend William Duncan led the Tsimshian from Fort Simpson back to Metlakatla in 1862 largely to Christianize them but also to save them from the smallpox that had reached Fort Simpson in May of that year. As part of the re-colonization effort, Duncan noted in his diary that all of the old village sites near Metlakatla were leveled to create vegetable gardens" (MacDonald and Cybulski 2001: 16). Optimum garden plots, the longhouse sites were enriched with ash from fires, and had long been shaded by structure thereby reducing growth of vegetable-competing plants. The land received ample sunlight, being well cleared of large vegetation, since volunteer plants growing around traditional villages were frequently trimmed back to keep women and children safe from bears and other large animals who may hide close to dwellings (Interview with Joe Gosnell 2003). Grade beams that defined the longhouse footprint made a neat...
garden edge. Longhouse sites were prepared for planting by first dismantling any remains, then using the planks and other remnants to fill the house pits, and finally planting potato and other food crops.

Using longhouse sites for gardens was a matter of survival as well as wise use of space. Nisga’a people had proven themselves good at both, after missionaries' arrival as before. Gardens provided food for people in most Nass Valley communities until after 1958, when transportation to stores began, marginally, to improve.

There was no such thing as cars until 1950's when the logging road first came in. But in Aiyansh they did, and this was in the thirties, during the war. My grandfather brought in a truck. It came in by steamboat from Aiyansh, and I don’t know how many speedboats they got to bring in the truck, up-river in the springtime. They buy the fuel down in Kincolith. There used to be canneries up above Gingolx. Across from there was another camp. They used it for the families to live while their husbands were out fishing. They had stores. These Indians were pretty smart, to live through the winter. We used to get our stuff from Gingolx, then once a year we would travel down to Prince Rupert to load up the boat for our winter supplies. A fifty-pound bag of flour would last us a month, so we got twelve bags. And the same way with sugar (Alice Azak Interview 2003).

Although non-perishable goods could be purchased from the cannery store, gardens ensured a steady supply of fresh vegetables and other perishables, explains Mildred Stephens of Laxgalts'ap. Mildred's mother had a large garden some distance from the village, where enough food could be grown to help feed her large family. Many gardens for Laxgalts'ap villagers were located on the old village site of Git’iks (Moses McKay pers. comm.). Eddie Nelson, Ni’islisyaa, from Gingolx tells about his family's gardens, which were also some distance from his home:

Later on [after a month of oolichan fishing and then a brief return to Kincolith] we moved to a place where we make our gardens. My father had a place where he usually goes, which is up Red Bluff. We had at least three huge gardens up there. We all worked very hard when we planted potatoes. We never had tools, we just kicked the soil.

After my mother plants all her potatoes we move back home; just in time to move to the canneries for the fishing season. We moved over to Naas Harbour...until fall, then we'd move back to the village again.

Just when we all settle down again, it's time to move back up to Red Bluff, to pick potatoes (AN IV: 96).

Gardens were one of the attributes that commissioners, such as Peter O'Reilly, acknowledged as "productive use" of space, and therefore could be eligible as "Indian reserve" land. Yet long before the commissioners arrived, Nisga'a peoples had been using the entire Nass Valley for food, as productive space. "Just like a garden" (Turner 2000) was how Nisga'a
peoples cared for their land. Berry picking resource lands were managed by the women, much as hunting and fishing ground stewards were officially the men. Still, women often hunted when they had to, according to stories in the adaawak. Similarly, husband and wife would work together gathering food plants, as in the story that follows:

*My mother has another "trapline" [i.e. ango'oskw] here on Laxgalts'ap. The trapline here is called Laxts'ineekhl. There is a blueberry patch there. They pick them, also pick k'ots (lily of the valley berries). These are all that grow on this little hill, they look for Indian bananas [spiny wood fern, *Dryopteris expansa*: Nancy Turner pers. comm.] there...In the middle of winter...My parents used to get ksuuw (shredded inner hemlock bark)...*(Christopher Calder, Laay, in AN IV: 78).*

Plants in the landscape were harvested for food directly, and indirectly to make implements for food gathering, preparation, and preservation. Inedible plants or parts of plants, including stinging nettle (*sdatx*), wild crabapple branches, and fireweed fibers (*Wahaas*), were all used for catching fish:

*[In oolichan fishing] the net is woven from the fireweed...the mesh of the net is bigger at the front end, about nine inches I think...and it goes down to 8 and smaller and smaller until it reaches here, and then it's a very small mesh. And it's got to be just right so the oolichans don't gill on it*(James Gosnell, Hleek, in AN IV: 151).

In addition to detailed knowledge of places and the ecosystems they supported, the Nisga'a people had to be able to use the knowledge to organize harvests and ensure survival. The complex social structure that was reflected in both houses and landscapes was also an integral part of Nass Valley resource management.

*The division of our land into ango'oskw and commons set the rule for who can harvest and where they can go. Beyond that, it was the chief's responsibility to manage the harvests: to start the hunt and, in some cases, to tell people where they could go and what they could harvest. Members of the wilp would take stock of the state of the resources on the ango'oskw and participate in the strategic organizational discussions. The precise knowledge of habitat distribution, animal behavior, and the state of the resources was used in many different ways to increase the efficiency [of] harvesting activities...people know about plant succession on particular types of ground and used this knowledge as an indicator of the presence of berries*(AN IV: 135).

The next chapter looks at the organization of the landscape into ango'oskw and the villages that were established within them. Through a series of maps and discussions, it looks at how the Nisga'a people came to see the landscape as a reflection of the overall social structure as well as a way to manage the diverse ecosystems of the Nass River Valley. In many cases the maps are twinned with structures that were built in specific locations, showing connections between architecture and place.
Fig. 39. Nisga'a Highway Signage denoting Fishery Bay, now restored to its original Nisga'a name.
CHAPTER SIX: Buildings in the landscape: maps and site plans

6.1 Introduction: Mapping the changing landscape

"Stories about what happens remind us of something in the landscape, and the landscape reminds of more stories" (Jacob McKay pers. comm.).

Nisga'a settled landscapes, like buildings in the Nass Valley, record histories of lineages, and are reminders of natural and supernatural events that were part of defining those lineages and their relationships to the land. Mapping, either as lines on paper or in a GIS database, is used here to depict Nass Valley places and landscapes at different times through pre-history and history. With the wisdom of elders as a guide, the maps attempt to make visible some of the values silently expressed by mapmakers whose works have depicted the Nass Valley.

Like architecture, the representation of landscapes through cartography is "a distinct mode of cultural representation" (Harley 1992: 233). Measured delineations of landscape features, villages, buildings, trade routes, food production areas, and meeting places offer clues to the social, political, ecological, and religious conditions that guided the formation of place. The goal here is to illuminate how social patterns and ecological conditions overlap and change together, and to better understand how architectural constructions can be seen as part of the social, economic, and ecological fabric of the Nisga'a homelands.

Three groups of Nass Valley maps follow. They are grouped roughly according to the time frame they convey. The first set of maps dates from the end of the Great Ice Age to the arrival of the missionaries. It reconstructs a few of the migrations and village sites that are described within adaawak, and that are further verified in petroglyphs, culturally modified trees, and other non-oral indicators. To show relationships between ecological and cultural change, migration/village maps are overlaid with map layers showing coinciding climate and other landscape changes.

The second set of maps considered here are those produced after the missionaries' arrival. Two distinct subsets can be identified: Western style maps produced in concert with the Nisga'a people to demonstrate ango'oskw uses and boundaries, and maps produced by "Joint Land Commissions" of the British Columbian and Canadian governments. The distinctions between subsets substantiate the view that cartography is anything but a value-free "scientific model of knowledge and cognition" (Harley 1992: 234). For the commissioners, spaces shown on maps reflected different ways of understanding land use and ownership than did the wilp-affiliated resource landscapes on Nisga'a-produced maps. The contrast indicates different things about the map-makers' societal preconceptions, and indeed about the society within which the maps were produced. Joint land commission maps were "reflections of the dominant values around them...the reserve map of British Columbia maps the mind and values of settler society" (Harris 2002: 323). Similarly, Nisga'a produced maps acknowledged common values of land use and ownership, summarized in Nisga'a as saytk'íihl wo'osihl Nisga'a.
The third set of maps portrays the Common Bowl as both a geographic region of Nisga'a homelands and a Nisga'a decision to minimize differences between Huwilp (lineage households) in favor of the shared landscape. Mapping was part of the affirmation of the Common Bowl decision. Along with legal action and oratory, the Nisga'a people used maps to challenge the image of landscape conveyed on commissioners' maps. Later, when the Ayuukhl Nisga'a volumes were being written down, stories accompanied the maps. Both became useful as a basis for land-use planning maps now used to implement the ratified treaty.

Maps produced within this research use GIS technology to locate in space some elders' histories, and then correlate mapped places with buildings known to be constructed there. Since many stories take place before remembered time, using present-day memories, the GIS maps bring together ancient and modern times. Because a GIS database superimposes themes of wildlife, ecosystems, and human use patterns, it is a symbolic reflection of the Nisga'a worldview, wherein animals, people, plants, and the spirit world are all a continuum, linked through the power of the wilp crests and adaawak (Guédon 1984).

Through comparisons of the three sets of maps, this section considers the meaning of landscape organization: not just an aesthetic, but also as an essential part of survival. The twinning of buildings with maps explains the connection between the way people earned a living (fishing, hunting, or trade, for example, engendered specific architectural responses). Comparing map-building combinations from the present day with those of times past also demonstrates how contemporary structures and practices can be used to give insights into earlier landscape practices.

6.2 Named places: maps and histories

MAP GROUP ONE: EARLY NASS VALLEY

The effort in this section is to begin mapping the earliest information available. The beginning of Nisga'a time is before memory, time immemorial: but once memory begins, there are places that can be mapped. But since landscapes are always changing, what landscape forms can we use to record very early memories?

It is possible to begin, as most Pacific Northwest Coast human histories have begun, with the shapes of landscapes that existed at the outset of the Holocene Era: that is, about ten or eleven thousand years ago when the last great Ice Age ended. Yet several scientists including Fladmark (1979: 2001); Fedje, McSporran, and Mason (1996); Heaton, Talbot, and Shields (1996); and Fedje (1997) have participated in modeling Northwest Pacific Coastal environments dating back as many as 13,000 years and found them to be rich prairie-like ecosystems that were often ice-free. "In concert with the results of a marine geological research, these data suggest the possibility of a much longer [than 10,000 year old] record, now drowned, on earlier shorelines. The palynological and geological records show that much of the continental shelf along the Northwest Coast [including the west coast shores of British Columbia] ...was suitable for human occupation by ca. 14,000 BP" (Fedje 1997: 47).
Importantly, as was outlined in Chapter three, the Holocene, sometimes called the Anthropogene or "Age of Man", is not necessarily the beginning of Nisga'a time, nor of other Northwest Coast peoples' histories (Fladmark 2001, Oberg 2003). Some paleo-environmental research, combined with the compendium of Native Peoples' oral histories, attest that the Anthropogene may have begun even earlier than 14,000 B.P.: "...along the coast, there may have been many ice-free areas 16,000 years ago. Analyses of ancient pollens and fossil plant debris along the Alaskan and Canadian coasts indicate the possibility of a rich ecosystem that would give people plentiful food and shelter at that time...When the Ice Age glaciers melted, water levels rose rapidly and land masses either heaved or disappeared" (Oberg 2003).

These early landscapes changed often and dramatically. Because of advancing and receding sheets of ice, sea levels rose and fell as much as three hundred feet in fifty years. "The places where people lived would not have been at all the same as where their grandparents had lived...and each generation would have to pull its canoes higher on the beach" (Fedje in Koppel 2003: 84). The rapidly changing lands and seas would have required people to move frequently and adapt often to new places, vegetation, and climatic conditions. Further, the dramatic scale of late Quaternary (Great Ice Age) glacial movements and sea level changes acted as a great eraser, burying possible human artifacts below the sea or mountains. Still, modeling of vegetation sequences and geological patterns, together with oral histories that describe pre-flood prairie-like environments, leads to the conclusion that "human habitation in the [Nass and Skeena River Valley] area dates back at least thirteen millennia" (Marsden, Anderson, and Nyce 2002: 268). Scientific analyses coupled with the observation that "Native memory goes back a long way" (Tennant 2003) determined the time for the first map of this research: about 13000 years ago, before the last major glacial epoch ended.

The map that follows (fig. 40) depicts the "Charlottes Refugium" (Fladmark 2001: 27), an area of eroding sea cliff on northeastern Haida Gwaii (Fladmark 2001). The map also shows how the refugium connected to the mainland, since at that time so much of the earth's water was frozen in glaciers that sea levels had dropped far below current levels. "Because sea level was at least 100-110 meters lower than present at ca. 13,700 years ago, most of [the three land banks between Haida Gwaii and the mainland] were then dry land" (ibid: 31).

The land bridge between Haida Gwaii and the Nass Valley existed when sea levels were about one hundred meters below those of the present. This is thousand of years before the huge floods of about 9500 B.P. that engulfed the Nass Valley, when sea levels rose rapidly to fifteen meters above present levels, then receded back to form a landscape much like that of the present (Fladmark 2001). In this pre-Holocene context, places can be shown from Nisga'a adaawak that occurred long before the Great Flood. Adaawak testify that K'amligiiuhlhaahl placed the Nisga'a people in the Nass Valley before light came to the earth.

**The world was dark and there was not anything to give light. The only light there was like moonlight or semi-darkness...When our Chief of Heavens sent people down to earth they were grouped in four clans. The Eagle clan was one of them, then there was the Wolf clan, the Raven clan, and the Killerwhale with the Owl...Our Chief of Heavens gave our people these crests when they were placed on Lisims, the Naas**
What did the landscape look like? The plant growth described in the early adaawak strongly resembles paleobotanists' descriptions of pre-Holocene "refugium" vegetation. "..around 16,000 to 13,000 years ago [there were] patches of tundra-like herbaceous grass-sedge meadow, set between exposed, wind-blown areas...Vegetation became more complex around Cape Ball [Haida Gwaii] at 12,000-13,000 B.P....implying a dwarf shrub tundra...Around 12,000 years ago there was a significant increase in pollen abundance, particularly of grasses, sedges, and lodgepole pine (Fladmark 2001: 36). The vegetation colonized other parts of the Northwest Coast, via the land banks between Haida Gwaii and Southeast Alaska/ Nass River area: "In...the Late-Glacial period of 10,000 to 1,000 B.P., the Alexander Archipelago was dominated by ferns, sedges, willows, and alder, with lodgepole pine the only conifer" (ibid). Adaawak told by Wi' Gidim Xsgaak describe early vegetation from Nisga'a memory:

In the beginning of Nisga'a existence...there were not many trees then...just a very few. It was not like it is today; the mountains are full of trees. The land on Lisims was nearly bare. There were just leaves and small shrubs (AN I: 88).

Fig. 40. Map showing the Haida Gwaii Refugium: a landscape that existed c. 13000 years B.P., before the Great Ice Age. The refugium is the area that connects Haida Gwaii with what is now the British Columbia Mainland. The refugium existed when sea levels were much lower than they are today. Map by N.Mackin with base layers from Nisga'a Lisims Government.
Also synchronizing with scientific evidence that life flourished in green coastal areas alongside glaciers, the adaawak tell of the Nisga'a people's competence at fleeing the rising waters:

*When the Great Flood occurred, our [Gitwinksihlkw] forefathers saved themselves by riding out the fierce onslaught of the turbulent, foaming water in their large canoes. To prevent being carried away by the winds and currents, they tied their canoes to the four highest mountain peaks within the territory, rode out the flood storms, and were in this way able to return to our Naas River homeland after the waters subsided. Those mountains were: Sgánism Xhlaawit near Gitwinksihlkw; Sgánism Xk'aat'aatgwit near X'annas (Gwinamaas) River; Sgánism Ansínmak'iksw (Kswan) in Hastings Arm; and Wii Sgánism Sim'oogit, at Lax Xk'alaa near Hyder, Alaska. As a consequence, each of these four mountains are major historic landmarks for us to this day (NTC n.d., 96).*

Migrations across the Pacific Northwest followed the Great Deluge or flood, as in "The Origin of the Killerwhale among the Nisga'a" told by Harold Wright in 1984:

*After the Great Deluge many Nisga'a found themselves on the coast, some as far as Digby Island. They settled there and stayed for many years...Now, there were two brothers at Pillsbury Cove on Digby Island...at Hays Creek on the eastern side there was a smokehouse (there is a mill there now at Prince Rupert)(AN II: 34-35).*

The Nisga'a people could not rest undisturbed, however, once the Great Deluge subsided. After the Great Ice Age were about three other lesser glacial events documented by geologists. The first was from sometime around 7000 BP, although of this age little knowledge has been written, since these ice movements were largely erased by subsequent movements of ice. Then, glaciers advanced and then receded along the Northwest Coast between 4500 and 2000 BP: this age is sometimes termed "Neoglacical". The most recent "Little Ice Age" began sometime between about 800 to 500 years ago, and ended about 300 years ago, or as late as the beginning of the twentieth century (Ames and Maschner 1999, Cruikshank 2001).

From the times of these other "Ice Ages", the Nisga'a and other Tsimshian speaking peoples made petroglyphs or rock art, thousands of which have been recorded in present-day written histories (MacDonald 1976). Dating back several thousand years at a minimum (ibid), the petroglyphs found throughout Nisga'a, Tsimshian, and Gitksan territories interrelate to form a "cognitive map... wherein myths, the rock art, economic territories, and possibly social organization" (ibid: 118) are simultaneously recorded. While carvings in stone are perhaps the most physically resilient and therefore oldest and most intact components of the cognitive map, carvings on trees also add information about landscape use.
Fig. 41. The four sacred mountains to which the Nisga'a people escaped during the great flood that engulfed the land at the close of the Great Ice Age. The oral record describing architecture of those days says: "The houses were not permanent houses, like our present-day village houses, so [moving from place to place] was quite easy to do" (AN I: 75).
Petroglyphs and carvings on trees (sometimes called "culturally modified trees" by present-day researchers) (Turner, Ignace, and Ignace 2000), identify named places on a map of pre-contact landscapes. Each place name, and the carving or other marker of place, had several purposes. One was to identify parameters of land use: "And [this is the reason] trees were marked on hunting grounds (ank'ihlho'odit) to identify the owners" (James Woods, Wiì Hildim Seegit, in AN IV: 44). Carvings in the landscape add visual evidence to the oral histories of Wilp (house) arrangements and the way landscapes are tied to the houses. "And the angò'oskw is mapped out in such a way: they have a name here, a name there, a name there, and that is the boundary of the angò'oskw, so they know where their boundary lines are" (Robert Moore, Niisxbakh, in AN IV: 44). Young children were taught to read the map that was made by carvings and markings on the landscape (ibid).

Together, these landscape records add to the history of how yuuwo'oskw—berry gathering places—and angò'oskw (sometimes called traplines)—the food gathering, hunting, fishing areas that are a part of the house territory—tile together across the Nass Valley landscape. Sim'oogit Hleek (James Gosnell) explained the concept of contiguous territories as it is understood in the Ayuuk: "The people didn't just live anywhere they pleased. No, you lived by your own water....One chief owns this part, in a line from here to the river. Another one there. The lands meet together. They join together, the lands of the chiefs. Within the five thousand square miles we are talking about there are no holes. They all join together, just like sections. This is so-and-so's land, this is so-and-so's mountain, say the people" (AN I: xxii).

Both buildings and landscapes are named according to their role within the adaawak and Ayuuk: the resulting compendium of place names defines a set of oral pegs that audibly map land use and ownership. "Each little place has a name. Every so far in distances there is a name for resting place, or where two properties meet; or this is where they turn around at the end of each day. So they know how far they had gone" (Nisga'a Tribal Council 1993: 50). The naming of places, including places built according to Nisga'a code, weaves the meaning of landscape with the sounds of the elders' voices as they pass on ancient wisdom. "In the Ayuukhl Nisga'a—our ancient oral code—there are many stories describing the river and its special places" (Calder 1993: 1).

Place names also mapped bio-geographic zones: ecosystems and their placement in the landscape. Oral or mental maps of the Nass Valley landscape were laid out according to watershed units. The watershed units in turn mapped out angò'oskw, so ecosystem and culture became overlapping and contiguous layers. "Our main streams are named and the mountains take their name from the major stream which flows from them. People were aware of who owned particular streams. The linking of the mountain name to the stream permitted people to understand the angò'oskw geography, who owns the mountain watershed" (AN IV). In the words of elder James Woods, Wiì Hildim Seegit: "The waters always come from the mountains. That is the reason the mountains are named [the way they are], so it will be known what place the water comes from, [and] who owns it" (AN IV: 44).

The cognitive map that overlaid Nass Valley landscapes also recalled events of great magnitude, events that influenced how people owned and used the land. The power of names in many aboriginal cultures is great (Cruikshank 1990)—and not very different from the power of names in Western Science, observes Walter J. Ong in his treatise comparing literary...
cultures with "oral cultures" (cultures without formal written languages which nonetheless had complex systems of visual communication). In all cultures, names organize the world so it can be remembered, and give people power over what they name. "Without learning a vast store of names, one is simply powerless to understand, for example, chemistry, and to practice chemical engineering. And so with all other intellectual knowledge" (Ong 1982: 33).

The names of places on the cognitive map discussed here, the post-Great Flood Nisga'a map, are power-infused with knowledge of land use, ownership, and life-changing events that are part of the wealth treasured by each lineage. The names on the map, when spoken aloud, become potent with recalled events. When reduced to silent words on the written page, their potency within oral cultures is lost, attests Ong. "Sound cannot be sounding without the use of power. A hunter can see a buffalo, smell, taste, and touch a buffalo when a buffalo is inert, even dead, but if he hears a buffalo he had better watch out, something is going on. In this sense all sound, and especially oral utterance, which comes from inside living organisms, is 'dynamic'" (Ong 1982: 32). The difference between sounded and written place names was experienced first-hand in this research when I brought Emma Nyce a copy of a map showing place names recorded by Barbeau in the 1920's Nass Valley and pasted into position by Marjorie Halpin (1972).

![Diagram of place names on Nisga'a map](image)

Fig. 42. Some places from the Ayuukhl Nisga'a. Every place has a name, and stories that accompany the name, the landscape, and the people of the place. Named places serve as a mental map spread across the cognitive landscape.
Three generations—Emma, grandmother, Deanna, daughter-in-law, and Allison, granddaughter, gathered around the map. When we first looked at the pasted-on names that nearly obscured the Nass River, it was hard to correlate the map with real space. Once we pinpointed the river and Gitwinksihlkw, the map began to make sense to Emma, but the complex English-derived spellings of Nass Valley places did not have meaning for her in their silent textual form. When Allison read aloud the Nisga'a place names, Emma immediately recalled stories from the places. Allison spoke each place name moving downriver from Gitwinksihlkw, and Emma added explanations.

Where you fix the cedar bark, where the hot springs are, that's part of ours too... Syoon is mountaintop. Along the river, that's where the otters are. You know they turned into man or woman or kids, I didn't believe that, I was telling my husband. He said to me, "Now we are going to see somebody. See! See!" He said. "There is a man standing there. It is the water, the otter." If you don't believe in it, it doesn't do anything. He put the engine down slow.
"Why are you slowing?" I said. I asked my Granny about that. "It might get you. If you come close to it, it might take you", my Granny told me.

Deanna: In the canneries they used to whistle.

Emma: A lot of people heard it whistling too, when you go by. Never go there in the dark. Don't ever camp in there. Everybody knows that. And always camp on the other side if you are too late. But what Granny said is nobody lives there, it is just a bunch of otters. But they always make sure that you see them. That is scary.

As Emma told her story, we all four could all feel the potency of the place of the otter people, the intensity of the story recalled by a word, a place. Allison continued to say the place names aloud, still moving downriver on the north side of Lisims, until she came to Hlgugilagdap. Emma then began to tell a history of the place:

Hlgugilagdap is the place where the biggest supernatural story begins. The mountain goes way down, and there is a creek running below. That is where the cloud took the young lady from here. The whole mountain split, right down to the ground, and there is another village inside the mountain. I didn't believe it in my heart at first, but that's what the adaawak said. And inside the mountain, they are the same people as we are. She was there for one full year, and she had a child with him. Now the Hobiiyee is going to happen, and part of that adaawak is about that same moon, that is going to appear in a few days. That is when they saw it.

There was a bunch of Gisk'aaast that used to sit here, outside here. One day the girl went down to the river, just down here by the sandbars, and she was looking out and saw a cloud just over the river. The cloud came towards her, and she couldn't move, she was so surprised and afraid. Then a young man came out of the cloud. He came
over to her, and she stood frozen. She was just frozen, she couldn't move at all. He took her with him into the cloud, and they traveled in the cloud to the village inside the mountain. After she stayed for a year, and had a baby. One year after she left, he took her and the baby back to her people in Gitwinksihlkw. Then she was to marry another young man, and go far up Observatory Inlet with him.

They took her from here, but they didn't want the baby, her child. The families were strict in those days: when you have a child you are not supposed to take it with you if you are married. You have to leave it behind. They just want their young woman. She screamed. She said, "No, I can't leave him behind, because where he came from is going to come and take him. Then you will never find him again." She knew that, because that's what the man told her when he took her. So the people agreed: they negotiated for one more day. And then the three of them left for Observatory Inlet.

Then the new couple went way up to Observatory Inlet. That is where those people lived, the Martins. When they got there, they moved across the land, over to Georgie Creek on Portland Canal, where the Killer Whales were. There was so much food there. That is where these two people were born, Sagaween and a daughter, K'amgisidiiyehl yeenhln hanak'. And that is where she raised her three children.

That's where the name came from, Chief Mountain, Sganisim Sim'oogit. He was born there: right inside the Mountain. And they became really big men, because they came from the supernatural. Just the two of them took the canoes: that is how strong they are. They traveled a lot in Alaska, where they grew up. And yet their mother was from here.

The map that follows (fig. 43) traces the places in Emma's story. Each place contained memories of great supernatural power or abundant resources that were vital to family history and to survival. The places are, like other named places in the Nass Valley, much more than points or lines or polygons on a map. Every place name contributes to a system of retaining and retrieving carefully articulated histories, ideas and knowledge (Ong 1982).

Places also recall times of year with special significance. Emma was thinking about the Hobiiyee planned for the weekend following.

Every time I heard about the moon that is coming up in a few days, my Granny would say, "Is it there now?" "No, it's cloudy today, we can't see". This is the time when the naxnok would come, every time. I always remember it. My husband took me to Observatory Inlet a few times. Herbie Morven showed me on a map where it is. It is where the line for Alaska is. It wasn't called by the family "Georgie River", we called it something else. I went up in the big boat. It is so beautiful. They have supernatural in there too, the island that comes up. You are not supposed to make any bad jokes or throw something overboard or anything like that. All of a sudden the canoe would start to go up. And then someone would start to speak softly, a chief or an old woman like me, and say "Please leave us alone". And then the canoe would start to go down slowly.
Landforms that appear from and return to the river remind the traveling Nisga'a of their ethic to respect the physical features and beings of the earth. As Emma continued, she also alluded to another ethic, that of persistence. The extended family groups arranged in phratries defined by crests continually worked to ensure the land was cared for. Sometimes families that had moved away had to be called back home to the Nass Valley, as was the case during Emma's granny's youth, some one hundred years ago, when epidemic after epidemic had devastated Nass Valley communities.

_There are lots of great stories, the adaawak. My Grandmother was raised around the Georgie River, but she came back here to raise her sons. That family here were dying off and they were old, and there were only two sisters: Annie, and Alice, my Granny. So they needed her to come back from the Georgie River. So she came back to here._

_And they used canoes. She knew all the names of all the places: where she picked plants, gathered things, all those kind of things, halibut._

As Emma's grandmother traveled, the places she encountered and the sound of their names were keys to resources that she and her family could use on their long canoe voyage. The place names known by the then-young Nisga'a woman had more than poetic or cultural significance: they were keys to survival, showing the way for people to return to their homeland. Moreover, the names of places passed as she traveled along the river became themselves rivers of memory, connections between place and buildings, story and lineage, politics and land ownership.

The time of Emma's story, about one hundred years ago, was the time the land question was of great concern to the Nisga'a people. The Common Bowl decision had been made: the people had decided to move forward as a unit towards justice, to reject subordination and confinement, to refuse to be ruled over by the Indian Act (Tully 2003). Young women like Emma's grandmother were part of the response to the land question. A politically charged field (ibid) had been laid across the towering mountains and story-filled rivers where Emma's grandmother, the mother of future leader Eli Gosnell, came home to care for and manage the lands at home. Policies about how indigenous people were thought about in British Columbia had changed. By the late 1800's in British Columbia "[Aboriginal] title was a dead letter. Now the province could exist on small reserves with a view to maximizing space for newcomers...and to civilizing Natives by forcing them into wage work" (Harris 2002: 164). The Nass Valley landscape had been re-represented on maps as "crown land" or tiny reserves. This was a mis-representation, and many Nass Valley people—even a young mother—participated in correcting injustices, such as confiscation of her family's lands.

At this point in her recollection, Emma recalled the architecture of the Georgie River, and its role in food preparation. In February 2004, architectural memories that had been conveyed from grandmother to Emma many years ago were given to granddaughter Allison, and to this research.
They had houses there, long wooden houses where they dried. There are no walls on them, just a roof. They picked seaweed there. They had long wooden houses. The reason they put the slope on the roof is because of the snow: it has to slide down. [Emma shows me how the roof is pitched in two directions.]

Open-walled roofed drying structures have been drawn here using photographs of Red Bluff, and of drying structures and seaweed drying racks used in Alaskan villages near the Georgie River. To reconstruct the way architectural ideas link to specific places, the structures are shown adjacent to the Georgie River on the map that follows.

Fig. 43. Places in the story told by Emma Nyce, alongside a photo-montage of wall-less buildings from Red Bluff (Canadian Museum of Civilization photo 69583) and a Georgie River landscape.

Long, open-sided pole and plank structures were part of Emma's recollection of place. "The inward eye of memory collaborates with images of landscape, and these names summon up layers of association", observes Julie Cruikshank (1990: 352) of her dialogues with Yukon elders. The power of a place name reaches beyond its immediate context in the landscape: if forgotten, the place name loses its power (ibid). Structures are a part of place that helps to
keep the name of a locale from disappearing. Because structures have physical presence that remains even if peoples' memories are obscured, they are a way to extend the power of place. Bringing buildings back to the surface of memory, through drawings and other reconstructions, enlivens a "layer of association" (ibid) that emerges from the sound of a place name. Similarly, recording the place name in a longstanding feature of the landscape, such as a rock formation, helps to reinforce memories of that place.

To illustrate how place names bring together a variety of associations, and "may provide a point of entry to the past" (ibid: 354)—here, to past architecture—the following map depicts places from Nisga'a elders' memories of the volcano, with a diagram of underground structures similar to those that facilitated survival. The volcanic eruption, as the adaawak tell, changed landscapes, rerouted watercourses, and erased villages. It altered Nass Valley life, geography, ecosystems—but not social structure, which remained not only intact but a source of strength in overcoming the devastation of the fiery rock. Despite the deaths of about half of the four thousand people in the main village of Lax Ksi Luux, the wilp system stayed strong. Four house chiefs—Baḵ'ap, Gwiixmaaw, Naaws, and Wiī Seeks—regrouped after the catastrophe. They sent their nephews to scout out the changed landscape, and particularly to find the Nass River that had moved across the valley (fig. 44).

This story traces histories of some of the earliest Nisga'a lineages, since the people from Lax Ksi Luux "have always lived on K'ālii Lisims... Lax Ksi Luux was the biggest village before the volcano...there were so many of them. Every time a bird flew over them they would all holler. When they did this [it] sounded like thunder" (Roy Azak, Baḵ'ap, in AN II: 204).

Lax Ksi Luux is place that links the Nisga'a people to their beginnings. The spaces of Lax Ksi Luux are linked with memories that can be heard, emblematic of architecture that is memorable because it sounds interesting. "The house sounds like a big drum beating in it" tells Sim'oogit Baḵ'ap (ibid). The same places are interwoven with landscapes that are memorable because of the unusual fauna found within. Large (four foot long) lizards and frogs populated the wetlands of the great village. Not only do the unusual creatures make the village unforgettable, but their presence in the history also reinforces correlations between ecosystems and constructed space. Ecological and cultural context are inseparable in Lax Ksi Luux stories.

Before the volcano eruption there was a big swamp where lizards and frogs lived at Gitwinksihlkw which is now called Canyon City. Ksi Luux and Ts'oohl Tsap—This is where the river ran before the volcano erupted. During the lava flow the river was pushed to where it runs now. When the fire hit towards the place called Gitwinksihlkw, it was dammed up and formed a lake. After a while the river tore through the lava rock and formed a canyon. That is why there is a canyon at Gitwinksihlkw (People of the [Place of the] Lizards). It wasn't there before the volcano erupted (ibid: 208).
Fig. 44. Before the volcano (carbon-dating of a tree buried in the lava place the volcanic eruption at 220 ± 130 years B.P.) (Fladmark 2001: 39), the Nass River ran a different course south of the present-day river. Important villages on the original alignment were engulfed by the molten lava. River alignment and village sites digitized by N. Mackin from information in School District 92, 1996. Base data courtesy Nisga’a Lisims Government. N. Mackin map.

A reader or listener to Baxk’ap’s story can imagine the human and animal voices calling from the settlement that stretched from Lax Ksi Luux to Ts’oolh Ts’ap. The place and the place names were powerful with sound. Even the architecture thundered with people calling out from within. (The Ayuukhl Nisga’a tells that when stories involving thunder were told in the longhouse on a long winter evening, the listeners were themselves to make thunderous noises, bringing the sounds of the story to life.)

The story of the volcano, and particularly the spaces associated with events of the time, connect people from times in the past. The words “Lax Ksi Luux to Ts’oolh Ts’ap” make the past present: when the storyteller says the places names, the listener is meant to hear the voices and be afraid for the even more tympanic thundering of the volcanic eruption soon to follow: "[After torturing the salmon] they expected the Great Spirit to use either fire (Lakw) or water to kill them all. All of a sudden they heard a rumbling noise in the upper part of the valley which sounded like the rumbling of a number of drums. The people did not expect or see the lava rock coming their way. About two thousand people were killed" (Roy Azak, Baxk’ap, in AN II: 207).
Baxk'ap's sound-filled recollections may be seen within a worldwide context wherein ethnomusicologists connect auditory memories with re-claiming and re-inscribing Aboriginal spatial identities (Kelly 1999, Gibson and Dunbar-Hall 2000). Cultural meaning, social responsibility, and physical features associated with landscapes are contained within the sounds of places and stories (Kelly 1999). Auditory memories become the surveyors' pegs within mental maps of places that now exist only in memory. The oral pegs mark the landowners' spaces as clearly as iron or lead plugs flagged in the earth (ibid). The spoken places on the mental map of the storyteller are rich with meaning: they are inextricable from the "conversations that support them and the floating mix of myth and human history...that underpin them" (Kelly 1999: 27). They are also inextricable from the architecture that saved them.

The Baxk'ap recollection enlists the ancient role of recalled sounds and place names as a way to preserve and disseminate knowledge about land and land ownership (Kelly 1999, Gibson and Dunbar-Hall 2000). Continuing the history of pre-volcano events, Baxk'ap tells the complex and dynamic, yet powerful, system of land titles and conveyances that are entwined with the names of places in the story. "He [Baxk'ap's ancestor, also named Baxk'ap, the leader of chiefs at Lax Ksi Luux] had a large ang'o'oskw that extended from Lax Ksi Luux to Ts'oohl Ts'ap which he split with the other chiefs...'We will still be a strong clan. It is just that we are separated into smaller groups so that the load will be easier for me. Wii Gadim Xsgaak will always be in the second house, Wiwoon in the third, and Naaya'ayt in the fourth. These are the sub-chiefs who will come under me. Malgakskw in second place, Oyee in third, Niik'ap in fourth and so on'" (AN II: 205).

The listing of houses in this adaawak ties memory of place to social structure—and very specifically to architecture. When the four chiefs relocated to Gitwinksihlkw on the newly relocated Nass River, they built houses according to the order of chiefs decided upon by Baxk'ap.

As the chiefs relocated Gitwinksihlkw houses, the arrangement formed a village-like entity that was not so much a village as a collection of family units: the real essence of the Nisga'a village (Bert McKay 2003). Houses were arranged in a line following the shape of the river, with a "road" or trail along the front of the houses, between house and river.

The houses on those days were built on one side of the road only, generally on a river front. That was the reason that when a tribe had a particularly large population—like the Oolichans and the Humpback Salmon in our story here—with the houses placed side by side it made the village quite long in length (AN I: 39).

The map that follows (fig. 45) has had much input: it was reconstructed by Marjorie Halpin (1973: 315) from information collected by Marius Barbeau (1929), reconfirmed and the Nisga'a corrected by School District 92 (1998: 100) and finally translated and further corrected by Emma Nyce (2004). The map has been strengthened with each retelling, a reverse of the often-held idea that memories are ideas that gradually fade away. Each time the names within this map were remembered, they returned with more clarity than before.
Fig. 45. Map showing houses in Gitwinksihlkw c. 1850, reconstructed using research from Halpin 1973: 315), School District 92 (1996: 100), with house affiliations corrected with the help of Allison and Emma Nyce (2004). Many of the houses in this map are mentioned or participating in this research. To name only a few: Oyee is a famous Nisga'a carver, architect, and builder whose work is recognized in the Museum of Anthropology Vancouver; the present Baxk'ap was an elder participating in this research; Wii Gadim Xsgaak was also the name of Eli Gosnell, whose stories and architecture are a Nisga'a cultural legacy. The houses are shown as rectangles of a range of sizes used in house construction at the time, but do not reflect actual house footprints—only the approximate location of houses as identified by memory, conveyed to Barbeau, interpreted by Halpin, corrected by School district 92—and finally re-examined by Emma Nyce. The importance of naming is indicated here: if the houses had not been named, there would not have been a way to recall who lived where.

Contrasting with the rows of longhouses (as shown above) was a very different, nearly unseen construction type that was used as a survival strategy during the volcano. Then, Nisga'a people used underground house technology to escape suffocation. "When the volcano first began to erupt it was only smoke, like a burning house. The lava then began to slide down the mountain side slowly. A poisonous gas drifted down ahead of the lava. As soon as the people smelled this gas, the people began to suffocate and their bodies grew stiff. The Gitwinksihlkw people on the far side of the river dug holes in the ground and buried themselves. The Gitlax't'aamiks people also dug themselves down into the ground. Many people were asphyxiated by the gas" (Peter Nisyok, Laxgibuu, told to William Beynon in 1927 and retold in School District 92 1996, 148).
How difficult it must have been for the Nisga’a people to make underground shelters in time to escape from the poisonous fumes! The task was doubtless facilitated by the ready availability of tools for, and knowledge of, underground structure construction, as well as by the people’s resourcefulness. Nisga’a techniques for underground house construction may also have been enhanced by working together with other peoples whose ancestral homes were mostly underground. The map also shows the migration path of the Ganada Tahltan who were famous for their underground houses.

Fig. 46. A map of the Tahltan migration from Portland Canal to hunting grounds at Meziadin, alongside a 1911 photograph by G.T. Emmons of a Tahltan underground dwelling (Emmons 1911: figure Vld) courtesy University of Pennsylvania Museum.

Underground dwellings were also used downriver, near Laxgalts'ap (Greenville) at a place where chieftains trained:

_Below Greenville was the training ground of many chieftains, called Gwilgeew. Originally it belonged to the Wolf clans. Then, through a death, it was given to the Ganadas. It was used as part of the Food basket—all seasons, all kinds of berries, all_
species of salmon, all bears—Grizzly, Kermode, all of them. This was a place where you learned how to hunt and gather foods. There was a lot of excitement in that area. We used to have shelters there; if the ground is soft enough we dug them into the ground. We know where each animal lived, and we still know. It takes about three days to go up the river, and a few hours to get down. Stories about what happens remind us of something in the landscape, and the landscape reminds of more stories (Jacob McKay, reconstructed from notes taken at meeting Oct. 17, 2003 in Prince Rupert).

The adaawak themselves may also have been a source of inspirations for Nisga'a builders. Once again, place names provide a clue to the source of architectural ideas: this story comes from Wil ukwst'aas Sgaw'o (Fig. 47).

Fig. 47. "The place where Sgaw'o sat" was at a high elevation, where her grandmother's calls could be heard by the Creator.
The place name links to memories of Sgawo. As Allison Nyce explains: "Wil ukwst'aas Sgawo is literally the place where Sgawo sat. It is an adaawak of the House of Wiiseeks; there was a feud between two families, Sgawo and her grandmother were the only survivors and fled their village. This place is where they ended up. It wasn't a village; more of a camp as the grandmother interviewed suitors to marry Sgawo. This is a story that we share from our House in Kitselas Canyon. They have placed it on the map above Gitlaxt'aamiks; although the exact location has not been confirmed" (e-mail correspondence March 15, 2004). Several structures used in the stories are described in Ayuukhl Nisga'a by Sim'oogit Minee'eskw (Titus Nisyok) as recorded by Harold Wright in 1976. The first is an underground dwelling, which saved Sgawo and her grandmother from a terrible battle.

The only survivors were an old woman and a young girl. The reason they survived is because during the battle they had been in an underground hut. It was the custom in those days for a girl to be kept in seclusion at the time she reached puberty. Her food and water were usually administered to her by her grandmother late at night. This routine was carried on for four days (AN II: 16).

When Sgawo and her grandmother emerge from seclusion, all their family had been killed off. The grandmother vows that Sgawo will have children who will avenge their people's slaughter. Minee'eskw continues the story:

The two women began their trek westward along the river bank. From where they started there were canyons on either side of them. They traveled on foot for many days. When they reached the highest point of the canyon they found themselves at the mouth of the Gwinhat'al River, a tributary of the Nass, Lisims. This river was swift and too wide for them to wade across and so it was here that they stopped. This place has ever since been known as Wil ukwst'aas Sgawo—where Sgawo sits by the shore...The current of the river was so strong that it made a very loud noise (AN II: 16-17).

The grandmother starts to sing as loud as she can, calling for a suitor for her granddaughter. Once again the place and its sound together form an oral surveyors' peg—although because river banks change and places grow over, and because stories tell of different locations for Sgawo's adventures, the pegs do not always remain exactly at the same geographic coordinates. Surveys had to be re-thought, then as now: landscapes change, as do patterns of use. Significantly to the story, however, the place where Sgawo sat is at the junction of two rivers, and is the highest point on Lisims (AN II: 22). This distinctive geography is crucial to the story. Because the landscape is so high it is right next to the heavens, so the Supernatural is disturbed by all the noise of the rivers and grandmother together. He comes down to quell the great noises made by the grandmother—and to marry Sgawo.

Places along the travelers' paths connect to stories, and represent peoples' spiritual identification with living and non-living things within the landscape. Place markers—sounded names, rock and tree drawings, landmarks from stories—delineated places as though on a great map of the region at a scale of one to one: that is, full size (MacDonald 1976, Blackstock 2001). Nisga'a elders often know how to read the land through these symbols,
and women in particular are taught to retain memories of Wilp holdings and their origins (Deanna Nyce, pers. comm.).

Named places in the landscape, other than buildings, also contributed to resource knowledge and monitoring. Some place names would signal the abundance of an important food resource. For example, Gana travelers made a settlement at Meziadin Lake called Lag'anmiigunt, or Place of Wild Strawberries (AN II: 151). The Ayuukhl Nisga'a also lists many animal-named places. The places that follow are from an adaawak from the beginning of Nisga'a time, when two young ancestors journey to find the beautiful daughters of the Chief of the Heavens. Along their travels, the young men encounter villages named to show respect for even small (or, in many cultures, under-appreciated) creatures. They visit the Village of the Gwiikw (groundhogs) "a highly appreciated little animal"(AN I: 39) (they were eaten and their fur was used to make soft blankets—AN IV: 9); Village of the Gen (skunks) "admired for its ability to stand up to any foes and under any adversity—and usually win"; Village of the Gewin (seagulls) "Our Nisga'a ancestors were especially thankful for the Gewin, as they thrived on them during the oolichan season when they became especially edible"; and even Villages of Snakes, Frogs, and Lizards (all unlabeled quotes this paragraph from Titus Minee'eskw, AN I: 39-40).

The village names also show how people communicate directly with animals. Birds were important communicators, helping hunters and fishers in diverse ways. The Village of the Sook (robins) was so named because "This little bird tells our people in the spring of the year what is happening on the river...and that the milit (steelhead) are running" (AN I: .39) The village of the Gwisgwoos (blue jays) honoured the birds' tell-tale nature: "If a person is out hunting and his wife is having an affair, this blue jay would try to tell him" (ibid). This was important information, since the Nisga'a believed that a hunter's success was jeopardized by a spouse's unfaithfulness (AN IV 63).

**Travel routes and architectural knowledge**

In the histories of named places, then, plants and animals are recognized, as is societal structure (huwilp and crests), geographic features, histories, and buildings. Landscape, ecology, and architecture were inseparable. This idea is implied here by attaching drawings of structures to a bio-geographic map showing places identified in family histories as being linked with that structure. The preceding drawings of wall-less drying structures, underground shelters, and history-representing longhouses represent diverse design ideas and architectural expressions, all connected to a given time, landscape, ecosystem, and geography. Such a wide-ranging repertoire of building types directly ties to the Nisga'a peoples' extensive travels, the adaawak show. The migrations and trading patterns of Northwest Coast peoples were a crucial component of architectural education. People learned to construct many types of buildings suited to each new location or situation.

Of the many travel routes used for the exchange of goods, knowledge, and people, the best documented within archeological research are the Grease Trails (Genim Sgeenix). The trails centered on Fishery Bay, the core of the oolichan grease manufacture on the Northwest Coast. "Grease" had great importance in Northwest Coast economies—and oftentimes in
survival itself, since the grease suffocated decomposing bacteria or fungus, thereby keeping food edible for long periods of time. The map that follows traces Genim Sgeenix from within Nass Valley boundaries to important centers beyond. From the Grease Trails, travelers could connect to north-south land routes stretching from Alaska to Mexico, and eastward across the continent (McDonald 1984, III).

Fig. 48. Digitized Map of Genim Sgeenix, Grease Trails, showing connections to and from Fishery Bay at the heart of the oolichan fishery. Trails and place names digitized by N. Mackin by referencing a drawing from MacDonald 1984b (75), superimposed over base data provided by data sharing agreements with the Nisga’a Lisims Government. Map by N. Mackin.
Genim Sgeenix were important for obtaining construction materials as well as exchanging architectural ideas. The trails linked architecturally renowned Tsimshian speaking communities (Nabokov and Easton 1989) with sources of very sharp obsidian, necessary for fine wood carving (MacDonald 1984b). The presence of obsidian in archeological sites along the Grease Trails has been used by archeologists to verify the adaawak evidence that the Grease Trails were indeed used for at least several thousand years (ibid).

One trail was of such great importance that it was known simply as "Genim Sgeenix—the Grease Trail". Linking the Skeena and Nass Fisheries, then extending to Meziadin Lake and on to the Stikine River, this route provided obsidian from the Stikine to regions south, and oolichan from Fishery Bay to communities north and south of the Nass River. A major intersection at the Stikine connected to an east-west trail linking the post-contact settlement of Fort Wrangell with the Yukon River.

Many trails are still in evidence, notes Emma Nyce, recalling a trail her family used on their ango'oskw:

[The trail] is not really gone, you could still see it you know, it's not really gone. We went up to Ts'oohl Ts'ap, me and my Dad, two years before he got sick. And he found the trail. We passed the little bridge that crosses the Ts'oohl Ts'ap Creek, we passed it, this was in the fall, and he said "Oh yeah, there is a trail here" and it leads right from Ts'oohl Ts'ap and it goes up to Ksiluux. This is how the people, their family, lived there. There is another longhouse right across from us here [at Gitwinksihlkw], it's called Laxaal winsoon. It didn't go when they were cleaning up [the longhouses]. When there is no snow you can see the trail, and the place where they used to sit and pick berries. It had all these stones there, and lava. You could see the trail. (February 2004).

Many pre-contact buildings were sited near the Grease Trails. The great variety of buildings found along the trade routes reaffirms that the experience of traveling enriched the diversity of architectural production. The extensively used trails contained bridges and fortresses constructed by chieftains of the lands traversed by the trails (MacDonald 1984b). Other buildings along the routes made travel comfortable and memorable.

Long journeys, by canoe and most often with women and children, were arduous. Alice Azak of Gitwinksihlkw recalls what it was like to travel in her childhood some sixty years ago:

I walked from Greenville to Aiyansh when I was about four or five years old. My grandfathers—they're gone now—they would take turns putting me on their back when I got too tired. My Mum said I would get too cold if I kept sitting on the sleigh. The snow was about eight feet deep. We traveled on the ice. We didn't have a horse—the guys were the horses! They used snowshoes. It took us maybe four days. I remember getting to Aiyansh. My grandfather was on his death-bed, that's why we had to come up. And there's no such thing as radios. We had to wait for somebody to come and tell us the news. We didn't come back until the ice broke up... My memories just keep flashing (interview 2003).
For travelers of all ages and through all seasons, resting places were essential. Sometimes large smokehouses sheltered travelers on their way home from Fishery Bay, after spring oolichan fishing and processing had ended. The value accorded to the travel—and the great pleasure obtained from traveling!—imbue the following story, told to me in February 2004 by Emma Nyce, of a large smokehouse her family would use:

They were there for getting oolichans, and they stopped there for the night. Lots of people used to open that place if they sleep there for the night, if they don't make it all the way to Aiyansh. That's a big camp, that's part of Íiï Gadim Ḵx̱sgaak... And they loved it, they loved it (interview 2004).

A sketches of a large smokehouse that follow are reconstructed from memories given by Emma Nyce and her brother Dr. Joseph Gosnell. The smokehouse memories are linked to places shown on the preceding map. Constructed along the well-traveled route from Fishery Bay to Aiyansh, the great interior space of the remembered smokehouse was hung with fish, and had a bench all the way around where people could sleep. Alice Azak (Joe and Emma's sister-in-law) tells about her experiences in the smokehouse, and the activities she enjoyed while staying there:

Another thing that I remember that was so nice, my grandmother even lived where they smoked salmon. They had a great big smokehouse that holds four families. It's all my grandmother's relatives and my grandfather's relatives. One family lives in each corner of the smokehouse. You stayed right in the smokehouse. I remember counting the fish when I'm supposed to be sleeping! That was just in the summer, until about this time...right now they'd be picking berries. This month they start picking berries, after they dried their salmon. That's another place I saw the canoes, each family had their own nets out for the fish, and that's when they used the canoes to attract them...That's way up above Old Aiyansh. It's on the other side of Nass Camp. It's through the canyon, you have to go around and then there is an opening that used takes you in to the place, and that's where the smokehouse used to be.

[Now the smokehouses] are all overgrown. I was pretty small [when we went there]. I don't know how come I remember...I remember the way we used to go. We used to walk up each day, after everything was done in the smokehouse, and start picking berries. We were still living in the smokehouse. They used to squish the berries, and they put them on skunk cabbage. They picked the skunk cabbage and they keep the back part off it and then they just squish it over the open fire, and it was so soft like silk, and then they spread it out. That's where they put the berries after they squished them. They keep pouring the juice on it until all the juice of the berries is gone, then they turn it over so the bottom side would get dried too. That's how they preserved it. When it's dry enough they put them in those grease boxes. I've got one right here (Alice Azak 2003).
When Alice thinks about finding the buildings, her memories of the route are tied in with memories of food preservation technologies, such as drying berries on a wooden rack: Travelers' buildings were outfitted for wayfarers' comfort, and those who used them followed protocols for closing up and preparing for the next visitor. Emma Nyce explains the practical details, and expresses some sadness for that the structure is no longer standing:

*I know there is a campstove right close to the door. But they always tell us not to use the campstove. There were sticks there in the ground where you hold the kettle or pot to warm your tea or coffee. They put the pot there, and before you go you put it way up there. They made sort of shelves, and you put it upside down. And they loved it,
they loved it. It is gone now. Somebody from here was telling me it's sort of still laying there. They saw it when they were fishing.

Emma asserts of this smokehouse that it "is part of Ṭ̱id Gātx̱'aak": the building is part of how people belong to the land and are part of the land, not just in the past but now too. Like the buildings, stories of place are owned and are not to be freely told by anyone. Emma describes the attachment to place that enables a story-teller to recall momentous events belonging to that place:

I can come here and speak here because I am from here. It's not because my mother brought me up here. We are part of here. Our grandfather went back and forth here, by canoe or walking in winter time, until he was very old.

Emma notes that her grandfather walked his land when the river was frozen, or paddled from end to end when the water ran freely. Much care and knowledge of the landscape and its ecosystems must have resulted from Emma's grandfather's and other chieftains' deep, daily perusal of space.

MAP GROUP TWO: POST-CONTACT MAPS

The way landscapes were perceived and cared for by a Nisga'a chieftain, with his daily back and forth evaluations, contrasts with the Canadian Land Commissioners' views of the same landscape, with their brief visits that rarely lasted more than a day. The maps in this section contrast two ways of seeing the landscape.

The two maps that follow depict maps from a similar time, near the turn of the twentieth century, when tiny reserves were being carved out of British Columbian landscape. The second map, showing several ang'ooskw holdings, was drawn in 1902 by Nisga'a chieftains Jacob Russ and Abbi of Gitwingak, with the help of Aiyansh Anglican Reverend J.B. McCullough (Russ and Abbi 1902). The scale is indicated as a line from A to B (near the bottom of the map, adjacent to "New Lake") determined to be "one day's journey". The distance a person can walk in a day was the standard by which owned space was represented first in mental maps, and then in European-style cartography. Daily reconnaissance and stewardship of the ecosystems in one's care, as was standard for Nisga'a chieftains, was a far more time-consuming act of ownership than signing a land titles document. Because Jacob Russ and Abbi of Gitwingak knew and cared for the ang'ooskw on a daily basis, they were able to produce, from memory, a map intricate with landmarks and shaped with sensitivity to landforms and spaces, evidencing the chieftain's knowledge of the land. In their minds was the geography of homeland, based on many generations of identifying places, and a lived experience of survival. Interestingly, the contoured hatching resembles that of Government surveyors of the time, even though the scale was chosen to match the Native perceptions of the land.

By contrast, Dominion Government Land Commissioner Peter O'Reilly, assigned the task of allocating "Indian reserves" in British Columbia, spent only three weeks perusing the entire Nass and Skeena River valley regions. Each reserve, "a tiny fraction of the land set aside for
Natives, the rest [was] available, in various tenures, for development" (Harris 2002, xviii), was decided upon in a portion of a day. The Commissioner did not give himself time to experience the land and people: "He had a job to do. He was an agent of the crown working quickly and efficiently, interpreting his instructions and the law as he understood them, making land decisions, and writing reports promptly" (ibid, 186). Unlike Russ and Abbi of Gitwingak who understood the landscape very gradually and thoroughly as a person walking each day understands the land, O'Reilly perceived the same areas of ground as surveyors' sites to be delineated as expeditiously as possible. He saw only the sites he had to see, where instant proof could be given of fishing or gardening or village. When inclement weather struck at the end of October 1881 he returned to Victoria, after laying out only fourteen reserves along the Nass River. The Nass and Skeena River peoples were outraged (Raunet 1996), so much so that O'Reilly agreed to return and lay out more reserves on the Nass River. The seventeen new reserves were, on average, even smaller than the first fourteen.

The maps that follow show the O'Reilly reserves on the Nass River, as set out in 1881, and added to in 1888. The meticulous hand of O'Reilly's draftsman, not O'Reilly himself (Doug Johnson Legal Surveys Division pers. comm. 2004), painted the bluffs and cliffs facing the river in delicate shades of sepia. Most likely, more time was spent drawing and painting the maps than on the ground itself. At each reserve, fine pen notes recall the type of soil. The terms used indicate suitability for agriculture: O'Reilly was attuned to finding garden sites, since this (for him, and in the predominant settler mentality of the time) was an indicator of productive use, the main criteria for setting aside reserves (Harris 2002) "Marshy", "peaty", or "good" were typical labels (see fig. 50 a through e).
Fig. 50a. O'Reilly map (1892) of reserves at or near Gitwinksihlkw and Aiyansh. DIAND Archives Vancouver
Fig. 50b. O'Reilly (1892) map of reserves at or near Angidaa. DIAND Archives Vancouver.

Fig. 50c. O'Reilly (1892) reserve map that includes Laxgalts'ap and Stoney Point. DIAND Archives Vancouver.
Fig. 50d O'Reilly Map (1892) that includes Gingolx and "Red Cliff". DIAND Archives Vancouver
Fig. 50 e. O'Reilly (1892) map that includes Laxgalts'ap. It is notable that not much of the landscape is amenable to construction due to swampy or steep ground conditions. Also notable in all five maps is that all of the land outside the reserves is shown as plain white paper, as though nothing exists there—as though to erase the ownership, named places, and rich ecosystems that filled the landscape. Maps 50 a to e available at DIAND Archives Vancouver.
O'Reilly's decisions were not acceptable to the Nisga'a. Chieftain David McKay was among those who eloquently decried the reserves. In 1897 McKay argued that much time is needed to secure property rights in a homeland. He compared his peoples' forefathers' tenure of "generations and generations past" to the "four or five years" that seemed to be the maximum time spent by non-Native "settlers" in the valley:

What we don't like about the government is their saying this: "We will give you this much land." How can they give it when it is our own? We cannot understand it. They have never bought it from our forefathers. They have never fought and conquered our people and taken the land in that way, and yet they say now that they will give us so much land—our own land. These chiefs do not talk foolishly, they know the land is their own; our forefathers for generations and generations past had their land here all around us, chiefs have had their own hunting grounds, their salmon streams, and places where they got their berries; it has always been so. It is not only within the last four or five years that we have seen the land; we have always seen and owned it, it is no new thing, it has been ours for generations. If we had only seen it for twenty years and claimed it as our own, it would have been foolish, but it has been ours for thousands of years (AN I: xx).

The Nisga'a and other First Peoples' comprehensive use and ownership of the landscape were not, however, acknowledged on maps produced by European cartographers arriving on "New World" shores. Ango'oskw were acknowledged to some extent in the Nisga'a treaty, although Nisga'a Lisims Government President Joe Gosnell explains that some traditional territories still remain in crown ownership.

Yes, the ango'oskw. And today, you see, because of our treaty—prior to the treaty—the province took over our land, and said, "This is crown land", and even the federal government said it is crown land as well. While we have access to traditional territory, we don't own it, but we can hunt there, under the treaty (Interview 2003).
Fig. 51. "Map prepared by Jacob Russ...showing the location of his Ancestral Hunting Grounds, also claimed by Abbi of Gitwingak" is the title on the bottom of the map, prepared
in 1902, and according to UBC Special Collections co-authored by Rev. McCullough. Several ang'ooskw near Aiyansh are indicated, using a scale that reads "line drawn from A to B is one day's journey"—daily walking of the ang'ooskw being one of the responsibilities of a chieftain. The boundaries between ang'ooskw are not hard lines, but rather are defined by landforms such as rivers and lava plains. Overlapping ownership is implied by the co-authorship, and contestation of boundaries alluded to in the map text. Map courtesy UBC Special Collections.

MAP GROUP THREE: RE-MAPPING THE COMMON BOWL

"When the Creator gave us this land, we knew its value. We were not confined to one place, as we were after our lands were cut off. At the beginning of colonization we were told this is where you will live, because you are not allowed to own the land. But we remembered, we remembered" (Jacob McKay Interview Oct. 2003).

To replace commissioners' maps, the Nisga'a people first used the technical rules of European cartography, and then improved upon them using GIS technology. Elders' memories of landscape use were documented in the Ayuukhl Nisga'a project, and are now gradually being translated into a GIS database that integrates ang'ooskw systems of land ownership with changing political structures of the post-treaty Nass Valley. The advantages of GIS in resolving First Nations land claims issues has been researched and tested in British Columbia and elsewhere (Mensah 1986, Lewis 1998). The ability to superimpose many layers within a database enables the mapmaker to show dynamic conditions. For example, changes in land interests (cadastral changes) and ecological variability over time can be recorded separately, yet viewed simultaneously. Similarly, many diverse themes and landscape characteristics can be shown in a GIS, compared to static analogue maps which are limited by the area of the paper and the legibility of the final result.

When social structure and ranking is unusually elaborate and complex, as among the Nisga'a and other Tsimshian-speaking peoples (Halpin 1973), mapping the changing patterns of past dwellings is problematic in a number of ways. Firstly, the dwelling patterns reflected the intricacies of the crest system itself. "There are several hundred distinct crests in the Tsimshian [including Nisga'a] system, which is considerably more elaborate than the crest systems of their neighbours, the Haida and Tlingit...This complexity of forms is related...to a parallel elaboration and complexity in social structure" (Halpin 1973: i-ii). Villages, mirrors of a crest system that is itself an iconography of social, political, and economic distinctions, are seen here as similar to ayukws: ways of remembering adaawak and the landholding rights described within them.

The second difficulty raised during re-mapping of traditional territories arises from changes within individual families living within any ang'ooskw. Although Barbeau, Beynon, and other ethnographers recorded lists of chieftain's lineages (these are listed in Halpin 1973 appendices), several families recorded as living in a given village were actually people who married into ang'ooskw families (Deanna Nyce, pers. comm.). Moreover, the Wilp itself may change, and with it dwelling patterns. Sometimes a Wilp would divide in two: ample resources to support two chieftainships, a dispute within a wilp, or a split during traveling
could lead to the formation of new huwilp. At other times, two huwilp would be combined (School District 92 1996). Drawing the villages means diagramming relationships and alliances that change with each generation, and changes within Wilp structure. This dynamism makes mapping less a matter of drawing lines on paper or in a database, and more a succession of sketches reflecting a given time and place.

Labels on maps become a third complexity. Because family patterns change, names of places and lines of ownership become contentious, even within landscapes where the actual uses of the land were clearly understood and not in dispute. The pattern of ang'ooskw that defined most of the Nisg'a'a landscape was based on landforms that changed over the seasons and years; overlaps naturally occurred (Deanna Nyce pers. comm.). Patterns of use were also complex and sometimes overlapping depending on marriage and hereditary ties. Berry-picking patches owned by a Wilp might cross over into hunting grounds claimed by another Wilp, in harmonious agreement. Other areas were communally owner: Fishery Bay, for example, was not owned by any one ang'ooskw but rather was shared by the Nisg'a'a peoples. At Fishery Bay, huwilp (household lineages) built their houses in lines, with the most prominent chieftain at one end, usually nearest the water (Deanna Nyce pers. comm.). Once the lines on a map are drawn, however, arrangement may become less acceptable to participating huwilp (Allison Nyce, pers. comm.). To avoid disputes arising primarily out of non-traditional mapping conventions, the Lisims government has chosen to keep detailed ang'ooskw maps confidential until all huwilp agree that the lines on the map accurately reflect inherited patterns of land use (ibid.).

Even within a GIS the lines on the map appear absolute, and therefore are often at odds with territorial boundaries that, in practice, may overlap with other boundaries or change along with alterations in Wilp structure, boundary-defining watercourses, and other social and ecological conditions. The result, in the Nass Valley as elsewhere, is that ang'ooskw boundaries are constantly under review, and are not distributed outside of the Nisg'a'a Nation (Alison Nyce, pers. comm.).

Place names, however, have been agreed upon as part of the treaty. Thirty-four place names were adopted in the treaty, and many are now indicated with signage in the Nass Valley lands. Names that were once powerful by their sound alone now retain the power of sound when spoken aloud, but also are visibly evident. "Geographical names are more than labels on maps and road signs. They can reveal patterns of settlement, exploration and migration, and mirror outside influences to our history—aspects of the heritage and promise of an area that might otherwise be overlooked or forgotten by visitors and later generations" (Ministry of Sustainable Resources 2004).
Fig. 52. Maps from Ministry of Sustainable Resource Management website, showing Nisga’a place names that were agreed, under the Nisga’a Treaty, to be restored to the map of British Columbia.
The arrangement of places in the landscape, like a housefront painting or carving, brings back and activates memories (Jacob McKay 2003). Both architecturally displayed crests, and named locations in the landscape, also are also keys to "tangible and intangible property" (McNeary 1994: 142), and are characterized by ever-changing ownership..."it is not really feasible to view Niska (sic.) society as a neat arrangement of Houses, clans, and phratries. Rather, these units are continuously in flux, subject to the uncertainties of demography, political manoeuvering, and functional interests" (ibid, 155). However, the dynamic nature of land and crest ownership is rarely conveyed on maps or in museum displays.

The Rainbow Pole provides a present day example of how crest poles, as well ango'oskw ownership and phratries represented on the poles, are dynamic, often relocated, with their significance altered. Today, two nearly identical Rainbow Poles stand on two sites. The Museum of Civilization in Ottawa contains the original pole, and a recently carved rainbow pole stands as one of the four poles marking the corners of the Gitwinksihlkw Bridge. Much earlier, the original Rainbow pole, perhaps the first of its design to be carved (or perhaps an evocation of another pole of a still earlier time) was raised at Gwinahaa, the village that was built in 1885 near Gitwinksihlkw (School District 92 1996: 76). The Museum of Civilization tag adjacent to the pole displayed within reads, "It belonged to the Gwaneks and 'Weelarhae of Fireweed clan. The pole was raised to commemorate a person who had held the name Gwaneks in an earlier generation". As poles moved from place to place, so did the people who used the poles to remember ecology and history.

6.3 The Village as longhouse: the history of modern villages

In a short period of about fifty years, the Nass Valley changed from a myriad of villages to a region of four villages recognized in the May 2000 treaty: Dr. Joe Gosnell, president of the Nisga'a Lisims Government, explains the geographic and social changes that precipitated the coagulation of many dispersed villages—collections of extended family homes on an ango'oskw—into four modern municipalities:

Every family right from the coastal region to the headwaters of the Nass had certain areas which were their traditional family hunting areas. It was just recently, in the nineteen hundreds when the missionaries came, that people began to come together into the four communities. Before that there were many many communities that our people lived in, scattered all the way through our territories. When the Europeans arrived and the fur trading took place people began to gradually come together in the communities we know today (Dr. Joe Gosnell, interview 2003).

Deanna Nyce adds that the modern villages still retain the essence of the traditional huwilp and ango'oskw:

...the modern village is like the traditional longhouse. All the families are grouped around community facilities (health clinic, village government, church, and school) and extended
families live near to one another. The individual houses are like areas in a longhouse, with the chieftains' houses in prominent places (remembered interview with Deanna Nyce, 2003).

Deanna went on to explain that even as village patterns change, families try to build their houses close together. This not only fulfills the cultural purpose of communicating wisdom and stories through generations, but also has practical advantages such as multi-generation care of the very young or within-family assistance for the elderly. For example, Emma Nyce had a gulley filled in to make room for a house near her family in Gitwinksihlkw. However, other family members live further away because there are no more house sites in the immediate vicinity. So the system adapts to the realities of modern life, guiding decision-making where practicable.

As explained in Chapter three, the formation of four villages did not make land ownership patterns incongruent with the ang'ooskw. The cognitive map of lineage landholdings remains in place over the Nass Valley. As the mapping chapter illustrates, a complexity of government decisions that responded to a then-predominant settler mentality led to the Indian Reserve Boundaries: lines that seem, on the surface, to sever the vast ecological/cultural landscape of ang'ooskw into fractions of land allocated in the reservation system. Through the history of the four villages this section will look at how ang'ooskw, church, and state delineated patterns in the landscape, and how the Nisga'a people were able to retain their clear sense of traditional land ownership despite changes imposed by the reservation system. In particular this section asks about church land ownership, the intersection of contrasting ideas of territoriality, and whether the church altered village layouts and land ownership.

Gingolx

Elder and musician George Nelson tells the story of the first European-styled structures in the Gingolx area, built by the Hudson's Bay Company on a wet ocean-fronting site that is now the old graveyard. The tides and winds proved too intense for the HBC personnel, who after just three years moved to Fort Simpson. The submerged poles remain intact in a graveyard near the present village site.

About five or six years ago, a few of us went up to the graveyard at the time Dr. Richard Garvin, an archeologist, was doing some work on the site, that is locating, identifying, and mapping the various locations of our ancestors and other monuments: monuments that have been buried there as early as 1883. Dr. Garvin, in his work, he located an old site where the Hudson Bay Company first established their fort. They were expanding their fur trade business westward. It was around 1860 [sic 1831], and under the command of Captain Simpson. They built a fort at Fort Nass, as it was called then. This is where our ancestors were first buried. As Dr. Garvin tells it, there was a high-walled fort at the site. In it, he showed us where the main building was located, as well as the well for cooking and drinking, the walkway, and the location of the kitchen. Today you can still see the original posts. These same semi-decayed posts are in a fresh-water pond.
You can actually see these posts. This is what he told us about. Fort Nass was right above us here, at the graveyard site, the original graveyard for Gingolx. According to what he told us, they built a high-walled fort similar to this. There was nobody here then: there was no such thing as Kincolith location, just sporadic people, hunters and what-not. They were expanding the fur trade and that's where they located, Fort Nass. Today it is called Graveyard Point. This is first original graveyard site for Kincolith. They established a fort there. This is the kitchen, this is the walkway, and this is the well—you can actually see it in the ground. This is the semi-decayed posts you see. Four or five of them are still there today. They are blackened. They are still in the water, because the water flows out of the creek, and creates a pond near the shore. These posts have been there for one hundred and forty years! They are still there today, proof that that fort was there in 1860 [sic 1831].

Fig. 53a. Poles from the 1931 Hudson's Bay Fort preserved in the water at the old cemetery near Gingolx. Photograph by Robert Mackin-Lang.

After about three years there were problems with the strong north winds, the ebb tide, and the sand bars were sticking out, and the strong current of the Nass River water. It was not an ideal place for their schooners. Captain Simpson abandoned this site in 1863 [sic 1834], and moved down the coast to the present site of Port Simpson, or Fort Simpson as it was later called. Captain Simpson had one of his babies, a baby son, born at Fort Nass, but relocated at Fort Simpson at that time. As year went by, the village of Kincolith was incorporated in 1867, and the original graveyard site expanded westward to its present location today.
This is just a rough sketch; if you really dug into it, you would see the same sketch from Dr. Garvin. He works for [UC of C, now part of] UBC, but he has his own firm as a consultant. It was a long walk until they put in the road last year, but he showed it where this walkway was. It was a really large building. This is the road today, but there was no road there 140 years ago. The only way of getting in and out of there by boat, but they couldn't get in and out because of the low tide, they could only get in and out at high tide. The sandbars are sticking way out at low tide, and not only that but the ebb tide is really strong.

That's my little story about the early dwellings. This was an old graveyard from when the Hudson Bay Company first established their fort there. There was no missionary there [at that time]. When the missionaries came they decided to use this site to bury our people. There's the original graveyard. They found a lot of beautiful monuments down there—marble, granite, carved animals, bears—beautiful.

According to my grandfather, R. V. Nelson, Rufus Watts, there was a lot of warfare at the mouth of the river as early as the 1850's. At that time the various people would be the Tsimshians, the Haidas, the Gitaguns, the Gitanyows. They would sneak up, according to my grandfather. There were a few people guarding the territory. This is one of them.

At one time, the Haidas were at war all the time with various nations. They came up the river here. The people of the Nass, the Nisga'a from Gingolx here at that time, were ready for them, they heard them coming with their oars when they were way down below Samarim Point at Aarondale, Schoo, schoo, they heard it with their ears. So they were prepared for them. This wasn't the only time that these warring canoes invaded Gingolx—it was numerous times. Gingolx was prepared for them, and ambushed the canoe when it reached Samarim Rock at Aarondale. They brought them to the place here, before the village was established as a village, and they planted three posts like this in the ground, cut these warring peoples heads off, scalped them of course, and impaled them on these posts. This was to forewarn any other warring people not to come to Gingolx any more, not to invade. So this place was called the Place of Scalps. When you scalp someone it's called Golx, but the Europeans couldn't pronounce Gingolx, so they pronounced it Kincolith then. So these people, when they came down, they called it Kincolith.

As Sim'oogit Nelson explains, the Hudson's Bay stayed only a short time along the tidal shores of the Nass Valley. Because the European traders left the Gingolx area after only a few years, Hudson's Bay influences on the Nass Valley were less direct than on Port Simpson (Nancy Turner pers. comm.). Instead of being founded as a Hudson's Bay Fort that would be continuously involved with European trade, the village of Gingolx began as many Nisga'a settlements had begun for millennia: as a group of lineages living close together on land they knew was both spiritually and practically the right place to build and to live. Numerous Nisga'a families had ango'oskw in the Gingolx area since earliest times (Stephen Doolan pers. comm.).
Despite the violent origins of its name, the present-day village of Gingolx (Kincolith) near the mouth of Lisims (Nass River) had a particularly spiritual beginning. About forty years after the HBC departure, Anglican Reverend R. Doolan and a group of early Christian Nisga'a set out from Ant'aahl ayukws (across the river from Laxgalts'ap) on a large raft to establish a new mission community on Iceberg Bay at the mouth of Lisims. "As they neared the coast a strong wind blew up and pushed their raft north till it grounded at a place called Gingolx. The villagers took this wind as a sign from God and decided to found their village on that site" (School District 92 1996: 61).

Early Gingolx houses were of "European" design, but were sited parallel with the riverfront in the traditional pattern of longhouses (Patterson 1992). A painting of the village in 1868, a year after its inception, indicates a housing pattern not unlike the layout of traditional houses in a line along the water—but the mission village has roof ridges reoriented to be parallel with the beach. Irish medical-missionary Robert Tomlinson, who within a year assumed Reverend Doolan's post, wrote that he liked the orderly, straight-line pattern of Gingolx' first houses because it seemed "Christian" in its neatness (Patterson 1992). The pattern was, of course, the traditional form of Nisga'a villages. Because Kamligihahlhaahl—the Nisga'a Great Spirit—is in essence the Christian God (Joe Gosnell pers. comm.), the spirituality of the architectural arrangements were, not unexpectedly, simultaneously Nisga'a and Christian. Attribution of the early village pattern is often attributed to "mission-style—for example, architect Barry Downs (1980) attests that Gingolx was modeled on the nearby mission at Metlakatla. Downs' explanation is likely incomplete, however: the arrangement of dwellings in mission villages most likely derived largely from the much older form of Pacific Northwest Coast Native villages wherein large gable-roofed houses were organized in a line along the shore. By the time Gingolx was founded, windows and doors were used in most dwellings, and milled lumber fastened with nails was favored in new Nass Valley structures. Nisga'a builders had always been skillful at adapting new technologies and designs to suit their vision and needs (Jacob Nyce pers. comm.). Some types of buildings constructed in early Gingolx did, however, resemble those at Metlakatla. Tomlinson and his Nisga'a supporters constructed a log church/mission house, a store, and an eleven-bed hospital. The log church seems to indicate that European systems of measurement had been adopted by the people, as the dimensions were forty-eight feet by twenty-four feet—even multiples of twelve, like the Imperial System of measurement. The log building system was used by the Nisga'a people before European arrival, often for caches (School District 92 1996) or houses in the mountains (Horace Stevens pers. comm.). (Indistinguishable from European log structures, Native people stacked logs with interlocking corners, then filled the spaces with moss) (see fig. 31b). The church building therefore continued both Native and European traditions.

A sawmill, completed in 1876, facilitated the construction of more houses and a boardwalk between the houses and the beach (Patterson 1982). Importantly, water power was used for the sawmill: Gingolx already had a sustainable power source. Again water power had a long providence in the Nass Valley, with fish weirs and transportation both dependent on harvesting the power of moving tides and currents. Reverend Tomlinson trained the villagers in sawmill operations, so they were independent of distant industry and could build their village with their own labour.
In 1883 Reverend Collison and his Nisga'a followers constructed a larger church, seventy-eight by thirty-seven feet, in the middle of the row of houses (Downs 1980). Construction started early in 1888, and nearly all the work was done by the Nisga'a people, with Nisga'a superintendents (George Nelson Interview 2003). The sawmill produced much smaller wood members than the split planks of longhouses or the large stacked logs of the earlier church. Unfortunately the milled lumber was also much more flammable than the nearly incombustible heavy timber structures of the past: ten years later, a fire destroyed the church and half the village. George Nelson explained:

A severe blow was dealt to the community when, in September 3, 1893, only two years after the completion of the church, a fire broke out during the evening service. When it was finally brought under control almost half of the village had been burned out, and with it the new church. Firefighting operations were severely limited due to the shortage of well water and extreme low tide and strong westerly wind. Only a few of the church furnishings were saved, among them a stained glass memorial window awaiting erection, which was later erected in the present church and today adorns the sanctuary. It is interesting to note that the Victorian Colonist of Sept. 15, 1893 recorded that Bishop Ridley had immediately chartered the Steamer Boskovich and sent her north with clothing, medical supplies, and lumber so that the homeless could be provided for before the onset of winter. As soon as the immediate housing needs of the community had been provided for, considerations began towards the re-building of the church, services being held in the old dilapidated log church in the interim. Immediately following the fire, a fund was started to finance the building of the new church was started. The building fund that had been raised in approximately equal amount of local subscriptions and from friends in Britain was insufficient, but this did not hinder the project appreciably. When the funds were exhausted, the Indians continued with voluntary labour and completed the building in the fall of 1900 (Interview 2003).

The rebuilding of Christ Church after the Gingolx fire was an event that demonstrates several ideas about buildings, missionaries, and the people of Gingolx. Firstly, the people were undefeated by the terrible losses incurred during the fire: their cohesion was actually reinforced during the reconstruction of the church that is still today a source of village pride. Secondly, the missionary community proved to be compassionate: oftentimes, negative stories about missionaries that came from tragedies of the residential school system have overshadowed the support missionaries gave to Native people in times of need. (Archdeacon Collison stayed in Gingolx for thirty-three years, and continues to be highly regarded in villagers' histories). Thirdly, the church re-construction exemplifies the public works system that not only continues to accomplish so many construction projects in Nisga'a villages, but also serves as a way to pass architectural and construction knowledge from generation to generation (Horace Stevens pers. comm.). Lastly, Gingolx citizens' contributions of time and materials, and on-going pride in the church structure, provide evidence that religion—Christian and Native combined, or one and the same—is central and vital to community life. The church is very much owned by the Nisga'a people themselves and not by the Anglican Church at all (Horace Stevens pers. comm.). Further, the mixture of Nisga'a and Anglican
theological practice is a natural one. Non-native church leaders living in Nisga'a communities found themselves learning spirituality from the Nass River people, not the other way around (Bishop John Hannen pers. comm., Reverend David Ritter pers. comm.).

Fig. 53b. This painting of Kincolith from 1868 shows a row of houses designed in European style, but sited in a manner not unlike longhouses (see fig. 53b). The painter is unknown. British Columbia Archives photo PDP00001.
Fig. 53c. Village near Laxgalts'ap "Lax anhlo'o" painted by Pym Nevins in the mid-eighteen hundreds is one of the earliest visual records available of Nass Valley villages. (The house near the center is also shown in fig. 21.) The alignment of houses along the waterfront is like that in the photograph of Gingolx, but the mission village of Gingolx orients most roof pitches the other way. The gable end of houses at Lax anhlo'o, like nearly all longhouses, contains the main entrance and faces the water. The gable end also forms a surface upon which crest images may appear. The Gingolx houses, by contrast, have the gable end on the side of the houses, and crest paintings are absent in the mission village. B.C. Archives photo 05321.
Christ Church is near the center of the Gingolx riverfront and remains a focal point of village life, along with the Community Hall, Village Government Offices, Elder Center, and school. The collection of community-owned buildings suggests a balance between native traditional practices and Christian theology. The church is shown here being rebuilt after the fire of 1893.

Christ Church, with its Christian stylistic elements including intricate tracery and Gothic arches, is nonetheless a Nisga'a building: built by the community, and with an essential spirituality deriving from ancient practice. Yellow-cedar inlay celebrates the appreciation of the straight-grained self-preserving wood, which is rare in many parts of the valley but is particularly abundant near the estuary and wetlands of the Gingolx area. Accomplished Nisga'a artists painted the angels who represent Prayer and Praise, the two components of wisdom (George Nelson interview 2003). Traditional knowledge of the Nisga'a people also found wisdom in the reverence for the Creator and in celebratory feasts that acknowledge spiritual powers: much architectural art (expressive artworks that are part of buildings) represented spirit power in both pre-Christian and Christian days.

For George Nelson, who ended his village/church history with "That's the beautiful story of Gingolx", spiritual buildings are a key to understanding the region. Further, the spirituality he defines is both fervently Nisga'a and devoutly Christian, without distinguishing between them. For example, when the new church building was completed, it was strewn with eagle feathers, the sign of peace, and sprinkled with holy water blessed by the bishop mixed with cedar bark symbolizing life.

Christianity was, in most analyses of Gingolx history, a voluntarily accepted practice. By contrast, the land-use changes imposed by the Federal Indian agency, which became active in 1887 with the arrival of the Royal Commissioners, were imposed upon the villagers. As mentioned in an earlier chapter, the commissioners did not have the time or patience to witness seasonal changes in residency essential to Gingolx life. Gingolx villagers spent only
a portion of their time in the village, with fishing, gardening, berry-picking, hunting, and in later years canning all taking them away from the village during large portions of the year. The people looked forward to times spent away from the winter village. For example, elders Katherine Clayton and Grace Nelson told many happy stories of their spring and summer days in the cannery village of Aarondale, across the Nass River estuary from Gingolx. Being a child at Aarondale, recalled Sigidimnak Nelson, was like being at summer camp. Returning to Gingolx was also a treat. Stephen Doolan also spoke of his family's travels to fishing and hunting places far north along Observatory Inlet (pers. comm. 2003). The Federal administration did not recognize the extent of the peoples' landscape use when the reservations were laid out. In fact, the reserves were shockingly small relative to the amount of land the people used, to the space needed for survival (Patterson 1982), and to reserve sizes elsewhere in North America (Harris 2002).

The history of Gingolx, as told by the villagers and by historic events, demonstrates that the land needs of the church were voluntarily met by the community, but the land demands of the Federal Government (responsible for reserves and treaties) and the Provincial Government (who gained ownership of all public lands not in reservations) were emphatically not voluntarily agreed to by the people of Gingolx.

Git'iks, Ank'idaa, Fishery Bay, and Laxgalts'ap (Village on Village)

Laxgalts'ap, village on village, had an ancient beginning. Villages have been built on the site for at least five thousand years (School District 92 1996). To discover more about the Laxgalts'ap cultural heritage, Jerome Cybulski and a team of anthropologists began archeological excavations in 1982, when an excavator uncovered remains of an ancient graveyard. Welcomed by then-Laxgalts'ap Band Council (now the Village Government) and the villagers, the archeologists discovered human and faunal (animal) remains carbon-dated to about 1500 years BP., with evidence of food storage boxes much like those used today in the Nass Valley. The tradition of fine woodworking was in evidence in early Laxgalts'ap.

When the new mission began on the ancient site, the houses were formed in a line along the riverfront, much as they had been in ancient times. People moved to Laxgalts'ap from nearby villages of Ank'idaa and Git'iks, both of which were replete with many great poles expressing the crests of the families. When, in 1929 Marius Barbeau photographed the poles at Ank'idaa and Git'iks, they were being systematically chopped down and towed down the Nass River to be sent to distant museums. By then nobody lived in the villages, although several families had large gardens in the old village site of Git'iks (Moses McKay pers. comm.) Families who had moved to Laxgalts'ap or Gingolx retained ownership of the old village sites, although this pattern of ownership was not reflected in the reservation system, which allotted much of the original area to the Crown.

Similarly, the mountain hunting areas, fishing streams, and oolichan areas of nearby Fishery Bay were a common resource that was carefully managed by the most knowledgeable of Nisga'a people. Sim'oogit Tat-ca-kaks of Laxgalts'ap explained in 1888: "I wish to say that every mountain and every stream has its name in our language...God gave this land to our fathers a long time ago, and they made gardens and made homes, and when they died they
gave them to us. And strange Indians of other tribes who came here, wanting to fish the oolichans, always asked our fathers for the privilege to come and fish here and always paid something for it. So this shows that all recognize that this belonged to us, and we have never been willing that our land should be surveyed" (in Rose 2000: 75-76).

The collision between Canadian and British Columbian views of land ownership, and Nisga'a views, was evident. Between the church and the village, however, there was a clear understanding. The church and its lands belonged to the people. Like its neighbour down-river, church and community buildings of Laxgalts'ap were constructed largely through work parties. The tradition continues through to the present. St. Andrew's Church, the largest Anglican Church on the BC mainland outside of Vancouver (St. Andrew's Parish website 2003), was constructed in 1989 from "Public Works". One family would contribute food for a week, while workers volunteered construction time and materials. Through this community-led process, the villagers added their personal commitment to the church construction, and demonstrated the significance of the church in their individual and community lives.

Fig. 55. Churches, like this one in Laxgalts'ap (no longer standing), were built largely by community work parties and funds known as "Public Works". The school is on the right. Photograph from 191? In B.C. Archives collection.
"Greenville on the Nass River" shows the large houses facing the water that were built early in the history of the present village. (The housing layout has since changed: the present layout is a sub-division pattern with each house oriented towards a roadway, responding to servicing and transportation needs of a modern community). Edward Dosseter photograph 1881 courtesy B.C. Archives.

Gitwinksihlkw (People of the Place of the Lizards) and Hlaxwhl y'ans (Under Leaf)

*Gitwinksihlkw was where my ancestors really come from, and that's why they got me to get married into Gitwinksihlkw, to bring up the family again. It used to be across the river, way before the volcano. It started from before Vetter Falls, and went right around to the old landing, around here. That's where everybody lived—the whole Nass Valley.*

(Interview with Alice Azak Aug 2003).

Sigidimnak' Azak's story of the large village that pre-dated the volcano has numerous retellings by archeologists interested in Nass Valley life (Sapir 1915, Barbeau 1955), although Bert McKay clarified that the pre-volcano village was really a series of ango'oskw, with winter houses built upon them (Bert McKay pers. comm.). All the up-river people were then called Git'anwiliks, which means "people moving back and forth" (Sapir 1915: 3), probably in reference to the peoples' custom of traveling downriver in spring to fish for and process oolichans, then returning to upriver sites for summer, fall, and winter harvests. After the volcano the up-river people split into two groups: the Gitwinksihlkw, who lived further downriver on a site of the same name, and Git'anwiliks (McNeary 1994).

The origins of Gitwinksihlkw are interwoven with memories of the volcano that devastated the Nass Valley some three centuries ago. Before Gitwinksihlkw, many people of the Nass lived at Lax Ksi Luux, a village so populous that the voices of the people sounded like thunder when raised in unison (AN II: 204).
The volcano altered the landscape formations, and with them the ecosystems that provided resources for sustenance and shelter. The once-familiar homeland "was like a wilderness," and even the river that named "People of the Nass" moved to a new location further downriver, called Lax Sikw'ihlgest. The new village site was too close to the river, so Ts'oohl Ts'ap—"behind the village" was founded. Finally, the people moved to the present site of Gitwinksihlkw, people of the Place of the Lizards (summary of Mansell Griffin historic account). Moving a village three times in less than two hundred years is an arduous task. The social system, based on the Huwilp or house lineages, provided both the cohesion and the flexibility needed to rebuild over and over after the catastrophe of the volcano and repositioned river. The close relationship between chieftains and their extended family ensured an aggregation of people who could explore for new village sites within a reconfigured landscape. The flexible inter-relationships between Huwilp meant that people could disperse and regroup after environmental catastrophe.

The people's days of moving were not over, however. In 1885 a fire destroyed much of Gitwinksihlkw although a stained glass window from the original church was saved (Mansell Griffin account). The 1885 fire was at about the same time that many totem poles were being burned at the missionaries' request. Joe Gosnell explains the story from his own family history:

The unfortunate aspect of our encounters with the Europeans is that in order to accept Christianity in those days they told us to burn our totem poles, the things that represented us as nations. I always recall my grandfather's house, and we would play under the house, these strange figures that stood all around us. I was sent away to residential school and did not get back until I was fifteen years old. It never occurred to us what we were looking at, at the time in my early childhood, but when I got back to my grandfather's house from residential school I began to understand what they meant, that rather than burning his totem poles he cut them up and used them under his European style house. They were the remains of the totem poles. Unfortunately his house burned, and with them the remnants of the poles.

Johnny Moore, Baxk'ap (Joe Gosnell's grandfather) knew the great importance of the poles, and had the foresight to use the poles as structural supports under his house so that no-one could remove the poles—the house might come down on top of them if they tried! A long Nisga'a tradition, of using elaborately carved poles as the main supports for longhouse roof beams weighing over a tonne, found its way into Sim'ooogit Gosnell's resistance against Christianity's demands.

Displacing—burning—great artworks and carvings: why did the Christian ministers make such a demand? Dr. Joe Gosnell explains that the ministers did not understand that the essence of Nisga'a people's religion matched the principles of Christianity (2003, pers. comm.) Nor did the ministers understand the meaning of carvings and paintings: that they were not "idols" of worship but rather were keepers of history, communicators of knowledge, and registers of land title.
After the fire at Gitwinksihlkw the people moved across the Nass River to Gwihahaa. Some renowned poles were raised at Gwihahaa, including the famous Rainbow Pole that is now in the Museum of Civilization in Ottawa. After a flood the village site was abandoned, and the poles were taken to distant museums. A new village was built at Hlaxwl̓ Y̓ ans (Underleaf) across from the present site of Gitwinksihlkw. Another flood devastated Hlaxwl̓ Y̓ ans in 1917, and the people moved to the present village site—this time moving the church with them (School District 92 1996, Deanna Nyce pers. comm.).

In the new village, there were no restrictions on where houses could be built, other than the knowledge of Wilp ownership that was well understood. The Salvation Army (with whom the local church is affiliated) Church did not actually own land, but was invited to come to the people's own building to give services and be part of the community. If a church representative made a grievous error that person would be sent from the village, but the institution itself was neither removed nor faulted because it is part of the people. As two elders explain:

*The land belonged to the people. There was no council in those days. Just lately we started village council. We live in Canyon City here and there is a whole bunch of us, so we decide we’ll build a house here and put it there. You walk around, and say oh I think I’ll build a house here. Some people owned land after a while because they claimed it, they make gardens so it is theirs. All our villages made churches they liked the place, and they said okay this is a good place for the church and they built it there (Horace Stevens at the charrettes April 3, 2004).*
We never sold them [the Salvation Army] that site, it was just given to them. When our church went up, you know where the church is now, the people said put it here. The church belongs to the people as far as we are concerned. It doesn’t belong to the [Salvation] army, even though they are there. You didn’t have to ask anybody to build something. Not like now, when you have to get a permit and you have to pay to build anything. It is too much change for our people. It is too hard for our kids, because now there is a stumbling block here and there is a stumbling block there (Peggy Nyce at Gitwinksihlkw charrettes April 3, 2004).

Gitwinksihlkw has no remaining houses that tell histories through lineage-owned poles housefront paintings, although parts of poles may remain in the basement of the old church (Emma Nyce pers. comm.), and a lineage pole-raising is planned for the future (Emma Nyce pers. comm.). Still, six village-owned poles explain histories of "the People of the Place of the Lizards", or Gitwinksihlkw. All six display sensitivity to the properties of cedar, particularly its tendency to weaken after many years of being directly in contact with moist or wet ground. Pole bases are protected in steel brackets, a non-traditional detail that nonetheless honours the material, and by implication the crests and stories the poles express. Stewardship of materials is important to Nisga'a spirituality, as stated in the Nation's constitution: "Nisga'a revere K'amliiighahlaahl who created this land, placed us in it as stewards, and endowed each person in it with a unique spirit" (Constitution of the Nisga’a Nation 1998: 6).

Fig. 57b. Steel pole bases at Gitwinksihlkw are raised above the snow line, ensuring that the carved stories will last a long time. Photograph by the author.
Similarly, Gitwinksihlkw Elementary School honours the tradition of ancestors and the building lessons of K'amligiihahlhlaahl as told in the Ayuuk. With scholar and anthropologist Allison Nyce guiding the design of the school based on her research of traditional houses, the school's form, structure, and materiality are founded in ancient values. Even the porch seems to recall building lessons from the Ayuukhl Nisga'a: "The other use for red-cedar is making of the porch-like entrance. They put the skinny logs there, then put the bark on top from the red-cedar" (Henry McKay (Xaasigwidaaks) quoted in AN IV: 83).

**Gitlaxťaamiks, Old and New Aiyansh**

Gitlaxťaamiks is featured in a much-published photograph of the painted longhouse owned by Minee'eskw. The present-day owner of the name Minee'eskw, Sim'oogit Rod Robinson, tells of the defensive advantages of the old village site:

> If you look across from Aiyansh you can see the cliff. It was a great vantage point where you could see whoever is approaching the river.

![Photograph of Sim'oogit Minee'eskw house, Gitlaxťaamiks](image)

Fig. 57. 1903 photograph of Sim'oogit Minee'eskw house, Gitlaxťaamiks. The present Minee'eskw has this picture in his collection; it is also held at the B.C. Provincial Museum PN 4110. The crest tells a story in the family history.

Gitlaxťaamiks has now changed from a village of many great houses and poles, to a site with a few building remains and few visible signs of human occupation (though a prevalence of
The church was largely responsible for moving the poles—and for many other changes in the village. "Anglican missionary James McCullough, who arrived in the late 1880's, saw his job as taking cognizance of one's parishioners—their domestic life, their dwellings, their sanitary arrangements, their laws, government, etc.—as well as their souls" (McCullough quoted in Rose 2000: 60). Elder and Anglican Bishop Charles Swanson (Sim'oogit Haymaas) agrees that McCullough's demands, including sending so many poles away to museums, were unreasonable. Himself a devout Anglican, Sim'oogit Haymaas expressed his dismay at the errors of the man McCullough, not at the institution of the church itself.

Further, the descendents of Old Aiyansh villagers do not believe that McCullough was successful at changing their dwellings. The people themselves decided how to build, and with tremendous skill copied buildings they saw in their travels or in books (Sim'oogit Mine'eeskw interview 2003). The great skill of Nisga'a artisans adapted Russian-style domes and intricate Victorian detailing to large two-story dwellings that are crafted to the finest standard—and often without floor plans! The houses were also built on posts, as many buildings had been from long before contact; but the changes in water levels necessitated a move first back to the original Gitlakdamix site, and then across the river to New Aiyansh, the present site (School district 92 1996). Alice Azak remembers:

I come from Old Aiyansh, and I was raised in Greenville. My Mum married someone from Greenville. The houses in Old Aiyansh were starting to be modern, but they were all built on posts. The flood didn't reach the top until after I lived here. That's when they had a big flood, and all the homes in the bottom part of Aiyansh were washed away. That's when they moved to New Aiyansh. They lost all their belongings. The higher up houses didn't get flooded, but everybody moved. I think there was about one family that stayed behind (Alice Azak, interview 2003).

Present-day New Aiyansh contains many institutional buildings. Houses are organized along streets named after families, often (but not always) those whose huwilp are in the area. As Deanna Nyce explained, the families are arranged much as they would have been in a longhouse, but in individual residences. Some houses in New Aiyansh were barged across the river from Old Aiyansh to the new site, and retain their Victorian finery and detailing (Caroline Hayduk pers. comm.).
Fig. 58. The large houses were built by Nisga'a people, sometimes with minimal or no floorplans, indicating the peoples' skill, resourcefulness, and exceptional architectural understanding and craftsmanship. Photograph from 189?, photographer undetermined. B.C. Archives photograph. It is interesting that this photograph is taken more than ten years before the preceding photograph. Longhouse architecture co-existed with other styles of housing, just as cultural systems braid together to form a strong and resilient combination that adapts to change (Turner, Berkes, and Davidson 2001).

The four Nisga'a villages, then, were built in the form the people wanted them to be—hampered, however, by the restricted land base that was imposed by the reservation system. (The resettlement of many villages into four was also impelled, in part, by the tragic depopulation of the entire region during the eighteenth and nineteenth centuries as a result of introduced diseases) (Margaret Seguin Anderson pers. comm.). Since the Nisga'a Treaty of 2000, the land base of villages is able to expand, and new subdivisions are underway to make room for a growing population. The way land is now held—by the villages, with entitlements to individual citizens—is explained in the Nisga'a Final Agreement Annual Report (2001): "The Nisga'a Nation has its own land-holding system and its own equivalent of a Crown Land Registry, known as the Lisims Land Registry. Based on the provincial model, they mirror British Columbia' systems in structure, rigour, and legal underpinnings, but are slightly modified to reflect different tenures. The Nisga'a Nation granted land to the villages.
The villages, in turn, offered a 'village entitlement' to Nisga'a citizens" (14). Beyond the villages is Common Bowl land which is also overlaid with an understood pattern of angoloskw. Public and private are both expressed simultaneously on the same landscape. This is a different conception of land than that of British Columbia—but the Nisga'a landholding system is as rigorous and structured as any other. The mental map that overlays the legal surveys lives on in practice, in stories, and in buildings.
CHAPTER VII: Learning from Nisga'a Spatial Histories

The memories of Nisga'a people offer ten thousand or more years of experience in making buildings that are part of the land. Many times, Nisga'a elders tell of how amazed they are their forefathers' knowledge about how to build—with minimal floor plans (though detailed mental maps and plans), with great craftsmanship, in response to unique landscapes and climatic conditions. This final chapter looks at what we can learn, in the modern context, from early and recent Nisga'a builders.

Near the beginning of this work, architectural projects undertaken recently in Laxgalts'ap raised some questions about architecture's role in the larger project of correcting displacements common to many peoples worldwide. Displacements of cultural/ecological systems, displacements of inter-generational communications, and displacement of cultural property and narratives have been largely addressed in many communities. Corrective measures include building new structures to express culture, to manage resources carefully, to educate all generations in lifetime learning, and to restore narrative to the built environment.

This chapter looks at how architecture and landscape decision-making addresses displacements of the recent past, while expressing thousands of years of wisdom. It also summarizes the ideas shown in earlier chapters—that architecture reveals ancient wisdom, but a wisdom that adapts to change, including changes of the present day. The summary of ideas is grouped into three sections. Firstly, re-placing, or giving meaning and place back to cultural/ecological systems, is addressed in the section "Bridging Architecture and Landscape: Traditional Ecological Wisdom and Knowledge". Secondly, re-placing inter-generational communications traces the charrettes held in the Nass Valley as part of this research, as a case study in community-led design, and advocates community-led design wherever possible. Thirdly, re-placing narrative—restoring architecture's role as narrative—explores the interface between story-telling and building design.

7.1 Architecture and Landscape: Inseparable Disciplines

The lava plains of the Nass Valley are a microcosm of diversity. Although much life was extinguished in the wake of the molten lava, three hundred years later the plain now supports low-growing vegetation surviving in the thin soil made by the silvery-white, red-flowered lichen (*Sphaerophorus globosus*) thriving on many lava rock surfaces. Wild strawberry (*Fragaria virginiana, miigunt* in Nisga’a) and the early fruiting lava berries (*t'ip yees* in Nisga’a) provide sweet spring delicacies. Later in spring, fireweed (*Epilobium angustifolium, haas* in Nisga’a) bloom alongside Maidenhair spleenwort (*Asplenium capill?*), Lady fern (*Athyrium flix-femina*), and Rock fern (*Cryptograma*), some hanging from deep fissures in the lava rock. The diversity of plants increases towards the Nass River: gnarly Lodgepole pine (*Pinus contorta, skinist* in Nisga’a), Western red-cedar (*Thuja plicata, Simgan* in Nisga’a) and wild crabapple grow together with firs, white maple, cottonwood, birch, kinnikinnik (*Arctostaphylos uva-ursi, t'imi'yt* in Nisga’a), spruce (*Picea sitchensis* or *P. glauca, seeks* in Nisga’a) (Latin names and plant identification assistance from Nancy Turner pers. comm., Nisga'a corrections by Allison Nyce pers. comm.). A microcosm of the plants...
used by early Nisga’a people for shelters, for implements, and for food grows in the lichen-crusted crevices and mounds of lava. Cylindrical cores many feet in diameter, made by the movement of large spruce or cedar pulled down into the lava and carried along by the flowing lava, are visible memories recalling the immensity of trees growing three hundred years ago in what is now a lava plain.

Nass Valley landscapes change, and buildings change with them, although the great diversity of plants, forms, and materials continues to characterize both the landscape and the architectural legacy of the Nass Valley. Buildings in Nisga’a—and other peoples’—histories reflect changes in the landscape, and in the peoples’ lives that change as the landscape changes. Nisga’a landscape and buildings also retain memories of the distant past, and continue to recall those memories. The land and buildings are not separate in memories, which are always place-specific: a building is part of place, and place is reflected in the building. Since the integration of architecture and landscapes in the Nass Valley derives from ancient wisdom, the land/building interface is explored here as an expression of Traditional Ecological Knowledge and Wisdom, or TEKW.

**Bridging Architecture and Landscape: Traditional Ecological Knowledge and Wisdom**

Connections between architecture and landscape are implied within the definitions of ethno-ecology, an interdisciplinary field which seeks "to understand how we as humans have interacted with the environment and how these intricate relationships have been sustained over time" (Turner 2003). Although Architecture—the art and science of constructing space—plays multiple roles within human-environmental interactions, its specific context within the field of ethnoecology seems undefined within the academic context, perhaps because architecture has not made explicit its connection to landscape and ecosystems. For example, the University of Victoria Ethnoecology program integrates Ecology and Botany, Education, Geography, History, Resource Management and Policy, Anthropology and Archaeology, Medicine and Nutrition—but not Architecture. Nisga’a architectural history affords an opportunity to look at how constructed space can participate within ethno-ecology: that is, how Nass Valley architectural works help to sustain, over long periods of time, the complex relationships between people and their environment. In turn, Traditional Ecological Knowledge and Wisdom can thereby be seen as a bridge between knowledge of buildings and knowledge of landscapes.

Following research by Turner, Ignace, and Ignace (2000) on Traditional Ecological Knowledge and Wisdom (TEKW), the relationship between ethnoecology and Architecture is examined here from three viewpoints. Firstly, traditional and present-day Nisga’a architectural designs are viewed as practical solutions to sustainable living. Secondly, traditional Nisga’a architecture is contemplated as a contributor to the communication and exchange of knowledge over many generations, and through times of landscape, climate, and cultural change. Thirdly, philosophies and worldviews are explored, specifically as they relate to spirituality within Nass Valley buildings, and as they contribute to the evolution and communication of ecological wisdom. Then, after confirming that traditional wisdom is still evident in present-day Nisga’a architecture, this chapter looks at how building history forms a bridge between Traditional Ecological and Western Scientific Knowledges.
The oral history about how cedar trees first arrived in the Nass Valley begins this exploration of how architectural wisdom contributes tradition-based and sustainable interactions with the landscape. Briefly recollecting the story of red-cedar, or Simgan (also told here in Chapter three, following a telling by Sim'oogit Wii Gadim Xsgaak (Eli Gosnell)):

*The first tree that the 'Wahlingigat (Nisga'a ancestors) saw within Lisims was the Simgan (red-cedar). They called it Simgan when it started to grow. This was why they called it Simgan, Didilsim Simgan (literally, living real tree or tree of life (AN I: 88).*

Simgan, the real tree or tree of life, is renowned for its qualities as a medicine as well as a building material, as described as the story continues:

*The Supernatural Being put this tree down in the midst of the Nisga'a. They were to use it in order to survive from almost fatal wounds and the roots were used in the making of k'okhl, a hand-woven rope [...] The outer bark of the Simgan was used for roofing [...] The red-cedar timber was used for the frames and walls of houses [...] (ibid, 90-92)*

After cedar arrived in the Nass Valley, in the beginning of Nisga'a time, great longhouses appeared. The story is re-told here in a different way by anthropologist Allison Nyce, great grand-daughter of Eli Gosnell. The stories continue through the generations:

*...[Sgawo is] a girl who marries a supernatural who has come down from the sun, and takes her back with him. When they have children, the children are returned to the earth...and they build houses on earth, across the river from another village. Because of the great dense fog, the villagers can't see these people [on the other side]; they can only hear the construction going on across the river. Within a number of days the fog clears, and there are four houses standing across the river from them (Allison Nyce, granddaughter of Eli Gosnell, 2003).*

Allison goes on to tell how the cedar houses were painted to show connections with the universe.

In the two oral histories, cedar arrives in the Nass Valley before remembered time, and is soon used to make the great longhouses of Northwest Coast peoples. The retelling of Simgan and longhouse origins by Eli Gosnell and his great grand-daughter invites comparison with a scientific paper written by British Columbian scientists Richard Hebda and Rolf Mathewes (1984). Correlating the arrival and abundance of red-cedar in post-ice age (Holocene) history with archeological discoveries of tools used for large-scale woodworking, Hebda and Mathewes conclude that *Thuja plicata* availability on the Northwest coast coincided with the beginnings of longhouse construction.

The similarities between the oral and "scientific" histories are striking. Both identify the relationship between a cultural achievement—the longhouse—and an ecological event—the arrival of cedar. Processes and timelines of analyses are also similar: both view ecological changes and cultural context over thirteen millennia. The specific methods of analysis are
different, however. Elder Eli Gosnell uses oral history and cultural memory for his analysis, whereas pollen calculations, radio-carbon dating, and graphs are employed by Hebda and Mathewes.

The co-dependence of cedar trees and longhouses connects and relates Western Scientific and Traditional Ecological knowledge. The cedar tree, according to both views, is not just any building material; it is also a link between ecological and cultural advances. To the Nisga'a, cedar is still more: it is the material: the tree of life, the reminder of the beginning of time immemorial, and a gift from the Creator. It is not surprising, then, that cedar was a carefully managed resource within most of Nass Valley history. In pre-missionary times, each tree to be cut down was selected carefully, and only taken down when it was to be used in its entirety for poles, planks, and many other uses (Bert McKay 2003). Construction applications included applying cedar bark as siding, blankets, and fire starter; adzing or splitting the wood for walls, roofs, posts, beams, and pts'aan (totem poles); and twisting roots to make rope. Other parts of the tree were used for non-construction purposes including the fronds for tonic, balm, and medicine; the bark for rain gear; and the roots woven for fishing nets and baskets.

Architecture participates in practices and strategies for sustainable living

The Simgan story introduces practices for using cedar that involve all parts of the tree. The oral history identifies with a crucial aspect of ecological wisdom and knowledge: how to utilize plants without actually removing them from the ecosystem (Turner, Ignace, and Ignace 2000). An example of this principle is found in rope-making, one of several construction applications of cedar that could be carried out using live trees. Since many if not all pre-missionary Nisga'a structures used tied connections to resist wind- and snow-loads, rope was perhaps as important for construction as the cedar wood itself. The quality of Nisga'a rope was legendary: fibers from the inner bark of the Simgan, braided together and sometimes interlaced with spruce root, was reputed to be as strong as nylon (Charles Alexander Interview with the author 2004). Rope also enabled cedar wood to be reused. Planks that were slotted into the front of longhouses could be taken off during the spring and moved to fishing villages, where they were tied onto the front of semi-permanent spring dwellings or onto smokehouses. Using rope connections, the Nisga'a people were able to maximize the use of valued cedar planks. Sustainability was built into this architectural tradition of transporting planks from dwelling to dwelling during seasonal migrations.

Manufacturing rope was undertaken with great care and with a view to keeping the rope-providing resources abundant. Exposed roots were pulled from the ground, taking only a few roots at a time and without damaging the tree's chances of survival (Turner 1998). Similarly, cedar bark was carefully removed from live trees, and was managed as a crop. The Ayuukhl Nisga'a records the strategy of harvesting tree bark, used for making ha'tal. "They only take the bark off one side of the tree...They do not take the bark off the other side of the tree. It would grow back by itself. That is why they don't take off all the [bark]. They only rip off two strips of bark (Mildred Stephens, Saytgibuu, Killerwhale, Wilp: Niisyuus, in AN IV: 241). Harvesting of cedar roots and inner bark, both used to manufacture rope, is a practical strategy that also reflects a worldview honoring trees as great gifts, spiritual partners, and
powerful allies (Turner, Ignace, and Ignace 2000). Fireweed strands used to make fine twine were harvested without uprooting any other plants: the harvesting was like pruning, re-invigorating each plant by making more room for the plants to grow.

Other plants used in construction were managed with similar care. Each tree species was valued for its particular properties, of which the Nisga'a people had in-depth knowledge (AN IV; 85). Yellow-cedar is rot-resistant, easy to split and shape, and hard enough to use for shovels, poles, planks, and boats. Crabapple made wedges, for splitting planks from larger trees (AN IV). White maple made dowels and other connections (Bert McKay interview 2003). Cottonwood was used within smokehouses, for the delicate flavor it gave smoked fish (ibid). Spruce was used to produce planks and shingles for less permanent structures, and the roots contributed to the strength of woven spruce-cedar rope (Charles Alexander interview 2004).

In Nisga'a buildings, then, all different woods served interconnected purposes. In a parallel situation, ecologists are now beginning to unravel the complex interconnections among forest species that influence both biodiversity and productivity (Blackstock 2001, Goward and Arsenault 2000). The cottonwood, for example, is now being recognized as beneficial to conifers: "conifer bark is enriched by the rainwater that drips off the leaves of the Populus species from the canopy above. The bark enrichment process creates a substrate on the conifer bark for the cyanolichen to grow. Cyanolichen, which are nitrogen fixers, indirectly enrich the soil. Rainwater is the intermediary for this connection" (Blackstock 2001: 162). The Nisga'a way of selectively harvesting a diversity of woods to be strategically combined within buildings anticipates cutting-edge Western Science forest practices: both work to optimize the use and habitat availability of many species, including those without the highest commercial value.

For the Nisga'a, there was no separation between Architectural and Landscape education. Learning about different trees and their interactions was part of learning about longhouse construction itself:

*It's really amazing, the knowledge that evolved, and how they were able to find the best natural plant. Now that was a learning process, again taught by the senior uncles. There were hunters, there were fishers, there were carvers, there were canoe makers, and of course there were the ceremonial participants, the actors. Those were all part of the longhouse* (Bert McKay 2003).

Technologies for construction also evolved in parallel with knowledge about construction materials. The evolution of the Nisga'a ala/ fireplace system is a case study of how complex ecological and physical principles were understood, and used to develop a technology that enabled the people to live sustainably and comfortably within changing climates and environments. Research into traditional knowledge and wisdom of aboriginal peoples often demonstrates that such technological advances evolved gradually over many generations of observation and experimentation (Berkes 1999; Turner, Ignace, and Ignace 2000). The ala and its successors, the fixed roof vents, demonstrate both technological advances, and the adaptability of the Nisga'a builders to new, introduced technologies.
Architecture contributes to resource monitoring and conservation

Knowledge of materials used in construction was only one aspect of practical ecological knowledge evoked in Nisga'a architecture. Some structures also directly contribute to monitoring resource abundance; others store resources so they last over many seasons, ensuring little waste and less overall resource use.

The longhouse itself was sometimes used to monitor resources. The chieftain would sit upon the roof at certain times of the year, and study the river or stream that fronted his house (Bert McKay 2003). From this vantage point, he could keep track of specific river-based resources, and direct the harvest of those resources. An adaawak describes the process:

*Up to the time of the volcanic eruption, Ksdiyaawak's village was beside a stream called Gimluu'dzerh. The sand of this river, like the salmon that were caught there, was very white. The grandfather of Ksdiyaawak, Ksidi'ul, used to sit on top of his house watching the salmon swim up to the deeper ponds of the river. Each season, once Ksidi'ul thought there were enough salmon in his pond, he would summon his family to begin the catch* (told to Marius Barbeau by Andrew Nass, from AN II: 200).

The design of the longhouse roof permitted comfortable seating. The rock-secured logs that spanned from gable end to gable end were used not only to secure roof-planks: they also provided a place for the chieftain to watch for signs that resources were ready for sustainable harvesting. Ensuring resource abundance, by timing the harvest and watching for species declines or imbalances, was the responsibility of the chieftain, or in his absence the acting head of the wilp, in the territory bearing the resource. The chieftain continued his ancestors' practice of gaining "an intimate knowledge of plant and animal habitat, and a detailed knowledge of the variations in the timing of movements of sub-populations and the different sexes of migratory species. This is the kind of knowledge gained through countless of our generations living in place" (AN IV: 133).

Large smokehouses that doubled as summer cabins were also part of resource monitoring, sometimes even by very young children who, like Gitwinksihlkw elder Alice Azak, would keep track of how many fish had been prepared.

*Another thing that I remember that was so nice, my grandmother even lived where they smoked salmon. They had a great big smokehouse that holds four families. It's all my grandmother's relatives and my grandfather's relatives. One family lives in each corner of the smokehouse. You stayed right in the smokehouse. I remember counting the fish when I'm supposed to be sleeping!* (Alice Azak 2003).

Another traditional structure, the ganee'e or oolichan drying rack, was "powered" by a combination of wind and sun. The three poled cedar structures were perfectly designed so the fish that would be strung across between the poles would be accessible to drying winds. Ganee'e were used mostly for drying oolichan, called the "savior fish" of the Northwest Coast because of their exceptionally rich food value and because they were the first fish to
arrive in the frozen river after a long winter. Their design and use was both practical and spiritual, as Deanna and Harry Nyce explain:

Deanna: *The way you string them, the oolichans end up going the same way.*

Harry: *Traditionalists would have all the heads face upriver. When you put the oolichan in through the gill, one head is facing one, and the other one is facing the other way: the one that is coming through has to face the river. The whole purpose of that of course is the spiritual nature: you respect the resources so they will continuously return.*

Nancy: *In the pictures I have seen, the fish are so perfectly organized that they almost seem to be part of the architecture.*

Harry: *It was quite an art; it still is quite an art actually. The communities close to Fishery Bay, those living in Greenville in particular, are known for their skill of putting up the oolichan: it is part of their niche, what they do with the resource.*

(Harry and Deanna Nyce 2003)

The philosophy of use of the ganee'e stipulated respect for the spirit of the oolichan. The practical tenets of use ensured that the resource would continue to be available for future generations, as it had been for countless generations of the past. Indeed, the sustainability of Nisga'a oolichan harvesting strategies is evidenced by the consistent harvest maintained since before remembered time. By contrast, over the past twenty-five years oolichan stocks, under the management of Fisheries and Oceans Canada, have experienced dramatic declines in many British Columbian rivers. The rarity, and possible endangerment, of oolichan stocks in the Fraser and Skeena Rivers, has determined a blue-listing for oolichan—that is, oolichan are expected to become extinct or nearly so unless management practices are changed (Oolichan conservation society 2004).

While Fisheries and Oceans Canada decries the lack of information about biology and ecology of the oolichan as a reason for their difficulty in reversing stock declines, traditional knowledge and wisdom about oolichan is one of the on-going strengths of the Nisga'a people. This philosophy of respect is apparently not shared by non-Native commercial shrimp and ground fishing industries, whose practices include destruction of countless numbers of oolichan caught as "byproducts" in their nets.

The Nisga'a fishing structures make visible the respect held for resources, and are a part of the practical systems within which oolichan and other prized fish species have been sustainably harvested for millennia. Ganee'e and smokehouses, along with the more recent fishwheels, continue to be an integral part of resource management in Nisga'a villages, monitoring abundance and ensuring that no resource is wasted.
Buildings as communicators and as facilitators of knowledge exchange

Not only did Nisga'a buildings tell about materials, and function as part of resource monitoring and conservation: the buildings themselves also served as story-telling places, further reinforcing their importance within the centuries-long dialogue of traditional landscape knowledge and wisdom. The way of communicating knowledge through telling and retelling narratives centered on the longhouse, where, during long winter nights and ceremonies, wisdom was passed along. Knowledge, such as the use of each plant and how it should be harvested, was shared around the longhouse fire. Nisga'a elders attest that "such knowledge would be useless to us if it couldn't be communicated, discussed, and passed on" (AN IV: 133).

As places for teaching, or "Houses of Learning" (Bert McKay 2003), Nisga'a longhouses "keep the stories alive" (Emma Nyce 2003). Painted housefronts and carved poles were a vital part of communicating wisdom and knowledge across generations, and also over long distances as people viewed them in their travels across Northwest Pacific landscapes. Storytellers would recall events by referring to images on the painted skin or carved poles of buildings. Using rhythmic designs and codes of representation, the designs recorded on and within buildings became a kind of "intellectual framework" (McLennan and Duffek 2000, 109) used for storing and recollecting knowledge. The forms and styles that were used to retell stories were often repeated, as in an alphabet. Unlike an alphabet, however, the interpretation of forms recorded on buildings required "the wider context of narrative and human relations" (ibid) to be understood, along with an interdisciplinary process of recreating stories through songs, ceremonies, dancing, painting, and sculpture.

Nisga'a Architecture Evokes Philosophy and Worldview

The environment is perceived as a unified whole within Nisga'a adaawak; buildings, as part of the environment, are emblematic of the unification. Many stories that are part of each longhouse tell of the integration of animals, plants, rocks and mountains, people, and the spirit world, all interacting as part of the same world and often transforming from one form to another. "Because of the integration of the secular with the spiritual, of the past with the present, and of all parts of the living universe, people have a sense of spiritual and practical respect for their lands, waters, and all environmental components that they recognize" (Turner, Ignace, and Ignace 2000: 1279). The worldview that sees ecosystems, people, and the spirit world as interactive also recognizes that respect for the unity of all things oftentimes made it possible to survive in times of great danger.

During their very long and largely remembered history, the Nisga'a people sometimes found themselves faced with cataclysmic events: changing sea levels and floods, moving fields of ice, and volcanoes. Enormous mental and physical power, capable of supplementing human strength in times of great need, was available in the form of naxnok (Guédon 1984). "The term naxnok applies to any being, event, or ability which appears to exhibit or express some form of "power" (ibid: 139); an expression of supernatural strength. The adaawak that follows demonstrates the concept of naxnok, and begins to articulate how the non-human power ties with respect for the environment, and forms a key to practical strategies for
The buildings that convey naxnok stories reinforce the idea that respect is crucial to survival. They remind people of the sanctions that occur if the code of respect is not followed. (This story is re-told here by another elder, to emphasize the idea of connectedness).

The volcano occurred just before the white traders came to this land. The leader of the young boys responsible for the eruption of the volcano is said to have been a member of Wii Gadim Xsgaak's family. These boys from Lax Ksi Luux humiliated the spawning pink salmon and this is forbidden.

Now Klaaxs Gaaxs had an innovation to amuse the children. He would catch a male humpback, the males of course were very broad, slit it at its broadest part and place a piece of shale there. The children thought this was very comical because the pink salmon was unable to swim on an even keel, as it was too heavy. This kept on every day.

One day the ground began to vibrate and tremble; this began to increase. When the people went to bed, the rumbling noise was right in their ears. The vibration of the ground increased. No-one knew the cause of this startling movement. When morning came it ceased.

While this was going on the vibrating and trembling increased. Scouts were dispatched to Laxtaxsgenuaxwt to see what the cause of the noise was. When the scout got on top of the mountain he saw smoke coming up from the east of Genuu'axwt.

Immediately when the scout saw the smoke and flame of fire coming from the volcanic eruption, he screamed as he ran homeward bound.

When he arrived home at the village he related what he had seen. "That flame was like rolling water", he said to them (Wii Gadim Xsgaak, Eli Gosnell, in AN II: 209-210).

The very heavy sanction for showing disrespect to the salmon was a volcano that killed many people. The story emphasizes the reciprocal relationship between peoples' treatment of the environment, and the environmental response. However, as the story continues, the spirit world intervenes to help. This part of the story shows the distinct difference between contemporary environmental views of the world, which advocates general "guardianship of 'Mother Earth'" (Turner, Ignace, and Ignace 2000: 1280), and First Nations worldviews. For the Nisga'a, individual groups of people had specific guardian relationships and rights to identified parts of the land, each of which was composed of many ecosystems (McNeary 1994) and which fit together without spaces between them. These powers of use and land ownership were a key to survival. Further, the ideological bond to the land depended, in part, on supernatural or Naxnok powers that protected Nisga'a over millennia. The volcano itself is modified by these protective powers, as in the story of Gwaxts'agat, told by Wii Gadim Xsgaak whose family was responsible for misusing the salmon:
The people were saved by the sbi naxnok Gwaxts'agat. He lived in a rock bluff near what is now Canyon City. As the molten lava roared downriver, the sbi naxnok K'aawam-lo'op' mocked Gwaxts'agat—Ja-ii-i-i-i-1, while you are sitting there, the lava flow will cover you over and you will die”. Gwaxts'agat kept his ground at his abode. He stuck his broad nose out to the approaching sea of fire and his supernatural powers challenged this lava.

"One day there was no movement of the lava flow, the smoke had ceased. After all these happenings, Gwaxts'agat eventually pulled his nose out and went into the mountain again.

This was the story of our ancestors, regarding the volcanic eruption. If it were not for Gwaxts'agat no telling how far it would flow, probably all the way to Gitxat'in (land of people of the Fish Traps at the mouth of the Nass River: Laxgalts’ap and Gingolx—see Sapir 1915)...The search for the Nass River was on, it no longer ran on the original course on Ksi Luux (Wii Gadim Xsgaak, Eli Gosnell, in AN II: 211).

The houses of Gitwinksihlkw recorded the story that was vital to the villagers' survival. The great porticos and paintings, such as the one shown in the house of Wii Gadim Xsgaak, express the influence the family has with the spirit world, and is also a title to the land: a crest spirit that imbues the owner with some of its power. The crest spirit gives the household an understanding of their place within communities and ecosystems. This strong sense of place includes the recognition that many animals, plants, and unidentified powers also live in the same space. This particular worldview of integrated space, monitored and respected by people but shared with non-human species, is a contribution made by many indigenous peoples to the process of reversing environmental problems (Berkes 1999, Turner 2003). The houses, with their carved and painted narratives, relate the histories in which people, plants, animals, and landscape elements act together, in mutual respect.

The two volcano narratives demonstrate a key concept of Traditional Ecological Knowledge and Wisdom: without respect for the land, the penalties are enormous; with respect comes power and survival. These are the lessons of the tortured salmon, and of Wii Gadim Xsgaak whose act of compassion saved half of the villagers. Respect for the land and everything within is also the underpinning philosophy of wisdom conveyed in many Nisg̱a’a stories and longhouses.

Painted and carved elements of the house are the architect’s and artisan’s processes of re-narrating the histories, and the myriad ways that people, plants, animals, and landscape elements are bound to one another. The longhouse carvings and paintings were removed entirely from the Nass Valley through legislation and state-supported institutions—but the ways of telling stories through the carvings remain with the elders and skilled artists of today’s communities.
Ethnoecology, process and the present-day Nass Valley

Several traditional roles of architecture and named places continue into the present-day villages of the Nass Valley. Although all of the painted longhouses from the past are now gone, modified reconstructions continue to be part of the story-telling tradition. Reborn as museums, community centers, visitor centers, or schools, traditional building forms are part of the cultural renaissance that involves generations in knowledge exchange. Importantly, many of the longhouse-based structures actively integrate traditional knowledge and wisdom into modern day economic and political life. Complex narratives originally found on housefronts, carved poles, and dwelling contents have been organized and communicated within the Ayuukhl Nisga'a. Now a set of printed volumes, the Ayuuk is being re-interpreted back into carvings by Nisga'a artists, who study their ancestors' work and pass along the wisdom through carvings and housefront paintings (Jensen 1994).

In addition to its renaissance as narrative, Nisga'a architecture reinforces Traditional Ecological Knowledge in practical ways. Firstly, Nass Valley resource structures continue to be used in the Nass Valley, and are a living lesson in resource management practices dating back to time immemorial. Secondly, Nisga'a Community buildings, many of them built from "public works", afford the setting where the traditional worldview is passed along to new generations. Ceremonies that take place almost weekly in the community buildings re-teach values, skills, and relationship to the land much as had been done in the past. Thirdly, educational structures in the Nass Valley are engaged in teaching about resources and culture, using the latest instruction technologies alongside elder-led story-telling. For example, Gingolx Media Center, with its housefront painting of the four crests, offers courses in traditional learning using the latest computer graphics and communications programs. This and other present-day Nisga'a buildings, like those of the past, demonstrate that creation is a process, and tradition is a part of that process (McLennan and Duffek 2000).

The longhouse carvings and paintings were also a part of an on-going creative process that depended both upon the creativity and inventiveness of the individual artist/carver/architect, and a tradition-based system of recording images, histories, memories, and places. Most of the carvings and paintings have been destroyed; others were, until very recently, too faded to read clearly. The "Image Recovery Project" of Bill McLennan, some twenty years in the making (McLennan pers. comm.), reconstructed the paintings found on longhouse screens and on the storage boxes that are longhouses (and the universe) in miniature (Allison Nyce pers. comm., NTC 1998). In doing so, McLennan and Duffek (2000) discovered that the artist had gradually decided upon his final designs, countering the misconception that Northwest coast art is "anonymous and timeless (19)". To the contrary, it is a coexistence of inventiveness and continuity (ibid). "Through the infrared process, which react to heat rather than the conventional light spectrum, it becomes quite clear that the artist changed his mind several times during the painting process...In a society which placed the parameters of social convention above artistic individualism, the artist still found ways to express his own identity" (ibid).
Architecture as a catalyst in the integration of Traditional Ecological Knowledge and Western Science

According to Fisheries and Oceans (DFO) Canada (2004), there is an urgent need to bring traditional ecological knowledge and wisdom together with Western Science, specifically to correct the present crises of resource depletion and generally to reverse exponential loss of ecological diversity. The DFO lists three barriers to the integration of traditional knowledge and Western Science. Firstly, traditional ecological wisdom is being lost at a rapid rate, and the resources to document the knowledge are inadequate. Secondly, Western science and traditional worldviews are different, and translating between them is often difficult. Thirdly, cultural barriers between First Nations elders and Western Scientists constrain cooperative efforts, sometimes causing each party to deny the value of the other's knowledge base (ibid: 6).

To these three integration difficulties, Nisga'a architectural history suggests possible solutions. To the first barrier, loss of traditional knowledge, traditional architectural forms still in use in the Nass Valley prove to be themselves storehouses of traditional ecological wisdom. Reviving the knowledge of these building types, documenting their appearance, and adapting them to uses particular to the present, all contribute to the renaissance of traditional ecological knowledge.

The second problem, mediating between two worldviews, is finding some success in the Nass Valley, as both education, resource management, and architecture all work together to reinforce the distinctive Nisga'a culture within the modern Canadian context. While Wilp Wilxo'oskwhl Nisga'a, the Nisga'a House of Wisdom, teaches traditional spirituality and its function within scientific thought, Nisga'a Lisims Government works with Fisheries and Oceans to combine strategies, and buildings draw from the past to function within present-day circumstances. The ganee' e is an example of a construction that represents cohesion and the passing along of knowledge, serves an indispensable resource management function, and unites spiritual with practical considerations. The ganee'e records the reciprocal relationships among people, ecosystems, and the spirit world, a technological achievement that counters the dehumanization of a scientific world bemoaned by Carl Jung, wherein "man feels himself isolated in the cosmos, because he is no longer involved in nature...No river contains a spirit, no tree is the life principle of a man" (Jung 1964: 85).

Architecture also suggests solutions to the perceived lack of harmony between Western Scientists and practitioners of traditional wisdom. Both ancient and modern Nass Valley buildings neither stop at traditional wisdom, nor restrict themselves to the most recent technologies. Since earliest times, Nisga'a builders have adopted the most advanced technologies possible, adopting scientific principles yet not losing the unique narrative and ecosystem-adapted qualities particular to their culture. Many buildings become symbolic and practical evocations of synchronicity between Traditional Ecological Wisdom and Knowledge, and Western Science. For example, the Visitor Center near New Aiyansh is based on longhouse designs, but is powered by solar collectors.
The analysis of Nisga'a architecture and its role within ethnoecology suggests that traditional ecological knowledge can be successfully woven with Western Science. Architectural works such as the ganee'e, smokehouse, and fishwheel participate in the monitoring, conservation, and harvesting of fisheries; the diversity of architectural materials used in traditional structures emphasizes the importance of maintaining forest biodiversity, a value shared by Western Science; Nisga'a educational buildings provide spatial support for on-going communication of both traditional and scientific wisdom and practice.

Just as the story of Simgan and the Holocene longhouse-cedar history come to similar conclusions about ecology and culture, the stories and technologies of architecture suggest that the best traditional architecture and the finest cutting-edge designs have similar ends. Nisga'a building traditions, like other past and emerging architectural endeavors, contribute ideas or processes to current, pressing issues of reversing environmental damage. They are part of the way we, as people, choose to interact with the earth. Architectural decisions can be part of our choice to manage how resources are used, thereby maintaining ecosystem abundance and diversity. Because building solutions seem to mediate between Traditional Ecological Wisdom and Knowledge and Western Science, they offer one response to the concern and plea voiced by Nancy Turner (University of Victoria 2003): "Human activity has caused severe environmental degradation at many scales. If we are to soften our impact upon the earth, we must find ways of managing our behavior more effectively."

**HOW DO ARCHITECTURE AND LANDSCAPE COMMUNICATE ECOLOGICAL WISDOM?**

![Diagram of communication strategies of traditional ecological wisdom as they relate to architecture.](image)

Fig. 59 Diagram of communication strategies of traditional ecological wisdom as they relate to architecture.
DIRECT APPLICATIONS OF TEKW TO PRESENT-DAY DESIGN PROCESSES

Respectful use of materials

Using materials carefully, and re-using materials when possible, Nisga'a builders demonstrate how we might "soften our impact on the earth" (Turner 2003). The lesson from the elders is two-fold: respect for materials, and re-use of materials by transporting materials from one building site to another.

The principle of respect comes from a regard for plants as living beings, and recognition that plants, animals, water, and other non-human inhabitants of the earth have a spirit. "The old people, they knew Mother Nature, so they talked to anything. They talked to the tree. 'You are the one that is going to keep my family warm. We are going to live there'" (Horace Stevens interview 2003). The tree was addressed as a living thing to be used respectfully. Waste of the tree, or any other building material, was not an option. The ethic of respect for nature included building materials, in the elders' stories. The ethic is non-negotiable. The ethic of respect is also based on knowledge. In construction, the right material must be used in the right place for the best purpose, so it will last and the building will last. Had this principle been used during our times, architects would elect not to use a thin veneer of stucco as a waterproof membrane, nor would they elect to encase wood within a non-breathing space so any moisture trapped within could rot the wood. Knowledge of materials would preclude such errors.

One specific way to show respect was to use a building material over and over. In Nisga'a tradition, planks used on a building would sometimes be used at other building sites across the region. Careful joinery permitted re-use of the materials. This same principle is now being used in some present-day Vancouver building sites: the C.K. Choi Building at the University of British Columbia, for example, reused heavy timbers from a building across the road that was scheduled for demolition. In the C.K. Choi example, taking the building apart and re-using the parts was less expensive than buying new timbers, but the engineering analysis of the old wood made the costs of re-use equal or higher than those of traditional construction. Although traditional wisdom about the strength of materials is often as good or superior to calculations, present-day engineering standards require processes that sometimes made materials re-use seem too costly.

Walking and reading the site

Walking their ango'oskw every day, the Nisga'a people learned everything they could about the site, its ecosystems and climate. Walking a site as a precursor to designing a structure has design value. "As we walk, we make visual connections between parts of the landscape...understanding location and alignment, independent of measure...Reading allows and requires the naming of objects and features of the landscape...Merging involves heightened awareness of time and consciousness as a special quality, distinct from everyday life" (Jacks 204, 6-7). Nisga'a elders report all three of these activities as part of knowing the land, and knowing how to build.
Beginning the architectural design process with an in-depth knowledge of the land has benefits to the ecology of the land, and to the building itself. Walking the land, the architect becomes aware of micro-climates, adjacent influences, the movement of water and sunlight, and many other tangible and intangible qualities that will influence the design process. Walking the land takes place even before land surveys and soils tests are commissioned, since the walk may suggest what the surveyor needs to include, what other specialists should add to surveys, and what off-site soils or water regimes must be considered. For example, few standard construction surveys include an identification of plants (other than major trees) on a site. Yet a survey of rare or valued plants and their attendant plant communities enables the designer to either avoid disturbing those plants, or if avoidance is impossible ensure that the plants are moved, before construction begins, to a site equally amenable to the removed species (Mackin 2000).

7.2 Community-led Design: the charrette process

One of the final stages of this research were the "charrettes", which were held April 3, 2004 in Gitwinksihlkw, at the T'soohl T'sap Memorial Centre. Elders and community leaders who had contributed to the research were invited to attend the charrettes. Seventeen people attended. About seventy-five people from the Nisga'a communities also attended the main gathering that followed the charrettes. Through the interactive charrette process, this research gained new in-depth knowledge of materials use and harvesting, construction details, building forms, building evolution over time, and other aspects of architecture was offered to this research.

The charrettes had a dual purpose in this research. Along with verification of architectural ideas, the charrettes also served as a case study indicating how people match the image of a building that they have in their minds with an image of a building in drawing or model form. This is important information for architects and landscape architects who want to have real, useful input from client teams and those who will use the designed spaces.

In preparation for the charrette process, I had organized the elders' gifts of remembered knowledge about materials, spaces, and construction. This empirically found knowledge, combined with in-depth research of historic paintings and photographs from the region, had then been translated into drawings of six different building types: a large and small smokehouse, a hunting shed, a house or main living place where the famous Nisga'a feasting, generosity, and hospitality were exercised (Deanna Nyce pers. comm.)—"the longhouse as you call it", said Horace Stevens), underground dwellings, and storehouses. Several of the drawings were analytical, showing connection details, hidden underground spaces, construction processes, furnishing patterns. I also prepared a working model of a large winter house, with detachable structural parts and interior fittings. The architectural works were spread out on the table in front of us. The elders spent some time studying the drawings and model before the charrettes began.

Once conversations started, the elders immediately began to speak to and work with the drawings and models. In the presence of the architectural materials, the knowledge offered by the elders was more detailed and directly architectural than the earlier interviews. The
drawings and model seemed to act as a catalyst, bringing out a depth of architectural ideas and memories that we had not reached before.

The model attracted attention first, particularly the way the parts could be taken out and reconfigured. Interacting with the model seemed to be like recalling the construction process itself, particularly for elder Horace Stevens who had spent many years building and working with wood as well as in fishing and other resource-based activities.

When the model was first on the table the roof, which was inscribed with a pattern of overlapping planks and shown with its connecting ties, was in its place covering the interior structure. I briefly introduced the model, and explained each component as I understood it (As Nancy Turner pointed out after the charrettes, I could have also added how I learned about the plank pattern, which was mostly from historic photographs collected in museums and archives, and from explanations by Jacob McKay during his interview). Horace Stevens agreed with the basic idea of how the roof planks were shown, but stressed that the planks were longer than I had shown. The first layer of planks, he explained, went the full slope of the roof, and were pushed tightly together so there is no space between them.

*Your cedar shakes have to be put together, butted together, and then the next bunch goes on top, so when you lay your shingles they are double. It is really important to find the right spruce: that is what they used in our day. You cut your blocks of wood all ready measured out, you split it, and then you make how you are going to split the block. And you can make it very thin, about a quarter inch, some make it thick. The cedar you get in Portland Inlet. The spruce they call it "where you make boards", that is what we used here. They make it thick, this is right how you show it here [indicating the roof detail on one of the presentation boards]. They make it thick, and you can make it really long. They [also] used spruce knots. Why? Because the spruce knots are really strong, and expand more than any other knot. They use it to break the rock too, and the log. You make the board, you make it wide. For these siding boards you make them about two feet wide, and then you make small ones to put on top. It is just like you see on the wall here [indicating the board and batten pattern of the inside of T'soohl Tsap Memorial Centre]. They put those little strips in between the big wide ones so the wind wouldn't blow through. They use moss too. When you first build the house you put the small pieces in there so when the boards dry out and shrink you can push them in further. The boards come against the woosendo'o [main purlins that are placed horizontally down the roof slope parallel with the ridge], and then the rafters come on top of that.*

Although I had talked with several elders about roof construction, the model and drawing details brought forward new information that was at a greater level of detail and demonstrated how the details worked in practice. The discussion then moved on to the structural framework. I had designed the model to show a framework that was a combination of ideas extracted from photographs of deconstructed longhouses. These had been combined with some drawings of houses from southeast Alaska where Nisga'a artisans were known to be at work (produced by Emmons in the 1880's and 1890's, and re-published 1991) and drawings of Tsimshian houses produced by Boas (1916). As I prepared the model I knew
from my architectural training that the archeologists' drawings did not make complete sense structurally, and that I needed some feedback from the elders to correct the only drawings that seem to be available of the houses in and near the region.

Horace Stevens provided valuable information. Using the loose logs that I had brought along, he showed the pattern of main gable supports with large logs laid across and tied into place. He explained the regional differences in construction: how the houses further down the coast had a lighter structure (lighter snow loads and wind loads) and how the houses on Haida Gwaii used a different system for holding the roof planks in place. He also explained the choice of roof slope and another building type which was essential to the mechanical system of houses: the wood storage shed. Surprisingly, Horace also said that the great houses of that part of the Nass Valley, near Gitwinksihlkw and Laxgalts'ap, were sometimes constructed mainly with spruce. As he spoke he referred to the model and indicated what he meant with "logs" and other loose parts I had included.

So this [the system of horizontal purlins and the framework of upright corner posts] has to be strong. Down further [on the coast] they built them like this, but we had big spruce that go across. There is a name for the piece you put across, I have the name in my book. That's why you see it cut out. The post goes in the middle [of the gable walls], the first one you made before that you call Wilp Lax Lax, the same structure but the doors were on this side so when the wind blows in you could block it off. So that's the older one of ours, before this one. They still had the ala, and it was big like that. The people that wrote the book on that I was reading, they got it wrong! It doesn't smoke in the house. Why? Because they got the wood last year. They didn't go and bring in the really wet wood, no, they season it. That's why the people in Fishery Bay they make it just full of wood under the house, or else they have another house, it's a woodshed but it has...just one slope (a shed roof) but it's high so the deep snow will fall off. So they use just one slope. Why? In the spring, anytime, they go out and gather wood, or else during the winter months the wind blows, and the old people used to dry the big spruce. Everything dries, so when it gets really rotten the knots start coming out. My dad said the old people used to get the knots from the spruce trees and bang it in, bang it in, and it stays there for three or four years, and that's where they get the gum from the spruce. That's where they get the natural gum and they burn it and use it for medicine. Every once in awhile they bang it in. And that's your wood. Later on when the wind comes and big snow, then the tree falls. Then when the tree falls they go out and get it, no matter how far away it is. They wait until there is a crust on the snow, and they had sleighs, and pack the tree across the crust in the snow. Usually when the tree falls it breaks up, so that's what they use. Most times they put it away...These ones [the main horizontal purlins] come out [about four feet beyond the wall of the building] and they go on the big gable part. These ones go on there like that....You see some that build it over at Queen Charlottes, they use rocks to hold it down, but the Nisga'a catch the animal and they don't waste anything. So they use the intestines, I got it in one of the books, I made the old people that made the snow shoes show me, so that was the same thing they used when they made the boxes, they sewed it on the inside. You can't see their work! And that's how they hold the shingles. The first one they put on here, and then the next one you don't nail that.
That's right the way this is [the roof detail], but the shingle goes right down. And you don't use this [the pole on top]. And it's double [the row of shingles] too. I've seen them fix shingles really thin. Wilp lakw, they call it.

Intestines as a building material had not been mentioned to that point. Once the elders saw the tied details I had put together using magnifying glass and archival photographs, many of them unlabeled (Gathering what the Great Nature Provided 1980, Riley 1988, Emmons 1991, NTC 1998, Hancock 2003, British Columbia Museum and Archives), they knew what they were looking at and could finish the explanation. Also the great attention given to the making of planks of different lengths, and to the timing of harvesting trees, was stressed once the elders were able to re-imagine the spaces using model parts and drawings.

Three dimensional sketches and sections that I had made of the smokehouse elicited considerable interest, perhaps because the connection details were clearly visible at the same time as the other building components. Lawrence Adams (Sim'oogit Axdii hl'yoon) mentioned that his grandfather (William Moore, Baxgap) had taught him to build a smokehouse like that (fig. 60-61).

Fig. 60. Rafters in Lawrence Adam's smokehouse are at different levels, allowing fish to be processed in stages. Photograph by Nancy Turner
Fig. 61. Lawrence Adams and his grandfather built this smokehouse in the traditional manner, using large planks on the outside of posts set in the ground. This smokehouse uses nails, unlike earliest smokehouses. Oolichan are being processed in this photograph, taken in early April 2004 by Nancy Turner.

Then Horace explained something that amazed many younger people present. He explained the spacing of boards in the smokehouse, and also the roof pitch needed.

*And the smokehouse is built the same way: you either fix the shingles or Lukw Hloks: make the sun walk around the building. When they stand there and the sun goes and you are standing inside the smokehouse you see the sun's rays moving inside. When you tie the boards on the smokehouse they are up and down, and they used the whole cedar like your detail here, and then they put these outside (tying boards). They don't use this [an eight in twelve pitch that I had shown on the section], the smokehouse [peak] was really high, they had nine or twelve pitch. The pitch you have here is okay for down south there because they don't have snow like we do.*
Fig. 63 Steep-roofed structure photographed by G.F and W.A. Newcombe in about 1911 at Gitlax't'aamiks. Canadian Museum of Civilization photo 70689C
About the sun going around: when they put the boards in, they left the spaces between the boards open so when the air goes through it dries the fish real fast. But that's the only reason why they do that, to dehydrate the fish. They slide the boards in, just like you show in this detail [indicates the detail of slotted base plank with vertical wall planks slid in] (Horace Stevens speaking at the 2004 Gitwinksilhkw charrettes).

The type of drawings prepared was clearly important. Details were of great interest, as was three dimensional form of structures. It took some time for everyone present to begin to be involved. Then, after about an hour, the conversation became quite excited and people started exchanging ideas with one another and comparing memories. It was as though the time spent with the models and drawings had been a time of re-learning what they knew, and they were ready to speak about it. The conversation that follows shows a portion of the discussion:

Sim'oogit Baxk'ap, Jacob Nyce: At one time they had a lot of these longhouses tight where we are today. They all burnt together. They used counterweights for joining. Everything was counterweights. They looked for wild crabapples, because they are hard. They take small little pieces, branches, and they burn them through and then they wedge pieces in like these. They make these long too, because of no nails on the shingles everything was bound by weights and wedges. These cross ties are pretty big, they are the most important part of the longhouse.

Sim'oogit Niisjoohl, Horace Stevens: They do have this part. That's why they use the big wosendo'o (horizontal purlins). The center ridge beam goes all across too, they don't cut it even with the ala there [unlike in all the drawings produced by Emmons and Boas—again probably because the Nass Valley snow and wind loads are so heavy]. But the one they use on the snowshoe, the intestine of the small animal, they put it on like that. They put it around there and they stretched it out. And while they are still wet after stretching then they take a rock and turn it, because once it is dry you can see right through! They used the intestine of the animal. They use that for snowshoes, and once it stretches it dries.

Sigidimnak' Mahlhaas, Alice Azak: I've seen my grandmother, Lucy Williams do that. (Deanna Nyce added after the charrettes: "I also saw my ye'ye [grandfather] Peter Nyce Sim'oogit Gwinay nuutkw do that too").

Horace also stressed how knowledge was passed along. "How do I know [about all these things]? My granny always was the one that cooks the feast. She would stand there for an hour talking, so that's where she gets all their wisdom. That's our school." Architecture was part of story-telling, part of cooking, and part of learning. Not separated from other disciplines, architecture provided the place where people could exchange ideas.
Towards the end of the charrettes, the elders explained that great designers, in their culture, were those who listened to the people for whom a space or carving was made. Being a great designer or carver was not enough. Every architect or artisan had to think and listen. The design had to be guided by the community to be good, explained Sim'oogit Ba̱x'ap, Jacob Nyce. He told of how his relative Oyee, the famous Gitwinksihlkw-based Nisga'a architect, artist, and carver who worked over one hundred years ago in many Pacific Northwest communities, always listened. To demonstrate, Sim'oogit Ba̱x'ap related a lesson learned by his brother, a great carver. "I remember the chiefs and elders of New Aiyansh coming by, and offering advice. My brother George was angry over that, and his question was 'What do they know about colour?' His Dad told him, 'You have heard of Oyee. That is why his totem poles were alive when he finished, because he took advice from people, and some of the figures would be re-adjusted until the pole was finished it was so perfect, and people enjoyed the work he had done!'" (Jacob Nyce at the March 2003 charrettes). Jacob continued to explain that each person would come up to Oyee and ask him to change a figure in a certain way, or add a detail here or there. Then, as the work evolved, it came alive. That is why Oyee's work looked like it was alive! From Oyee, architects can learn to listen to their clients, who also have very good ideas (and who, if the ideas are taken to heart, make the architect look better in the end too). Oyee used a feedback process much like the charrette as an on-going method of improving his work. The Oyee experience indicates that not even the most expert and renowned practitioner can hold and translate all the wisdom that a community of people can offer. For specific projects or parts of projects (including buildings, gardens, and other designs) it is important to hire cultural experts to guide the evolution of the work (Deanna Nyce pers. comm.)

In order to effectively translate the community's ideas, however, an architect or landscape architect must take everything known at the time and synthesize it into three dimensional ideas. Working models are a particularly good way to encourage people to speak about what they know and understand. The model needs to be sturdy, and able to come apart without losing its overall shape.

Drawings are also crucial because they convey spaces at a range of scales rarely practical for model-building. An entire landscape many square kilometers in area can be drawn at a relatively coarse scale, or a detail can be drawn to full size, showing each component as it is perceived in reality. Three dimensional coloured drawings show many details simultaneously, and approximate reality in the relationship of site and building or detail to the whole. As was found during the charrettes, perspectives make the details more accessible to non-architectural readers, since context is usually portrayed in a perspective, and because the three-dimensional view approximates how we see. Despite the accessibility of perspectives, many sets of "preliminary" architectural drawings do not include any construction details or three-dimensional portrayals of space. Whereas floor plans and site plans are often the focus of architect, landscape architect, and planner, the community also needs to see how these rise from the ground as a three dimensional space. During the charrettes the people barely looked at floor plans and did not comment on them at all except to note that there was no sand whatsoever inside the longhouse, but rather the flooring...
material was small rocks and gravel. Sections and three dimensional sketches were of much more interest. Elevations were fine too: Horace Stevens told me that the plank pattern I showed was correct. But people took much longer to comment on the standard orthogonal drawing types, and did so only after spending time with the perspectives and model. If more work must be done by the design team to elicit detailed responses from people who use spaces, the extra effort is made worthwhile by the quality of spaces that result. As Oyee knew, community-led design means the design comes alive and has meaning beyond what is immediately visible. Designing through the eyes of a community enables the architect to gain new ways of knowing space, and to become sensitive to how people perceive new spatial works. Creating space and communication interweave to make spaces that have meaning to the people who use the spaces.

7.3 Architecture as narrative

For First Peoples of the Pacific Northwest Coast, buildings have long been important for keeping the stories alive. Looking at time-honoured traditions of buildings as narrative through the lens of Nisga'a architectural history, we see how buildings of the past and present, integrated with landscape and art, serve as narrators, communicating knowledge to future generations. Further, architecture, designed through a process of communication or community-led design, becomes a way of writing down what is known about the land and about people within the land.

To analyze how Nisga'a—and other—architecture might best communicate and help to retain memories, qualities of space are compared here to characteristics of orally based thought and expressions. In particular, thought patterns as defined by Walter J. Ong (1982: 32-72) are compared to architectural and landscape ideas, as a key to analyzing how architecture contributes to oral history and serves as a co-narrator of stories.

How do we remember complex thoughts, including how spaces are put together, without writing about them or drawing maps and plans? Clearly the thoughts, or places, must themselves be memorable (Ong 1982). Spaces that are rich with meaning, and that tell a story, are remembered (Bloomer and Moore 1977). The corollary is also true: stories depicted within architectural designs or landscape forms are remembered as the story-teller contemplates places where events occurred (Emma Nyce pers. com.). In addition, places—architecture and landscapes—are named to reinforce their memorable qualities. Place names recited in order, as in a song, become a map we can hear (Kelly 1999). When Nisga'a places and buildings are named, they reflect and take on meaning, in part because they are named. In the same way as botanists recall plants by relating their scientific names to shapes and qualities of leaves or stems, places are recalled partly by the sound and meaning of their name. When the name is not written down, but is heard only, the sound of the name becomes even more important to memory (Ong 1982).

Specific formal attributes of specific spaces also help to make them memorable. Defined shapes and forms, or patterns of movement, imprint an idea in memory (Bloomer and Moore 1977, Ong 1982). Patterns of architectural elements or of landscape forms are remembered in much the same way as people recall laboriously worked out abstract thoughts when no notes
or reminders are available. When thinking complex thoughts "you have to do your thinking in mnemonic patterns, shaped for ready recurrence" (ibid 34). Architecture is by its nature made of repeated patterns: structural elements are repeated so that loads can be efficiently distributed, interior layouts are patterned to reflect the routines of daily life and ceremonies, and exteriors of buildings are patterned to respond to recurring climatic events or circulation systems. These patterns read like a story when people recall them. Northwest Coast architecture is particularly rich with pattern; ovoids and formlines (Holm 1965) of housefront paintings are an example of patterns that are recognized and remembered, sometimes for thousands of years.

Repetition is an extension of pattern, and is a key to successful oral story-telling. When recalling important events, renowned story-tellers like Horace Stevens or Emma Nyce repeat important moments or phrases. Sometimes this is for emphasis, other times repeating an already-spoken thought leaves the story-teller some time to formulate the next idea. Similarly buildings have repetition, whether in construction details or in the intricate stories painted on housefronts or carved on poles. As McLennan and Duffek (2000) attest, "redundancy and repetition characterize oral narrative as ways of conserving knowledge that could otherwise disappear. These qualities also characterize the orthodox language of form on which painted images of the northern coast are based. Only a handful of basic formal elements—redrawn, reinterpreted, and recombined by centuries of painters—are the components with which images have traditionally been created" (109). Further, repeated elements are often imbued with dual meaning, a technique used distinctively in Nisga'a art (Nishga Cultural Infusion Resource 1981: 29). In the Nisga'a carving shown below, a human figure becomes the backbone of a bird, and a moon-like face becomes the joint of the bird's wing. Eyes become joints within faces. The storyteller could then interweave the characters and the themes expressively, finding meaning in intricate layers (ibid). Similarly the layering of poles in a smokehouse weaves together many levels of form and use. The intricate pattern enables fish to be hung at different distances from the fire, while at the same time rationing the drying rays of the sun as it permeates between vertical plank cladding, marking the hours of the day with the motion of light (Horace Stevens, Gitwinksihlkw charrettes 2003) A multiplicity of meanings and uses determines the placement of each pole or plank.

"Formulas: set expressions skillfully used" (Ong 1982: 35) are another key to the way we recall thoughts, and to the way buildings and landscapes become memorable. Formulaic elements in Northwest Coast First Peoples' architecture include the distinctive carved and painted details used to tell stories on poles and housefronts (Holm 1965). The gable-roofed form of the Northwest Coast longhouse brings inherited tradition together with the builders' imagination, speaking of continuity as well as present context (McLennan and Duffek 2000: 109). Formulas echo through many different types of constructions. For example, intestines are used to sew boxes together so that the stitching is inside the box and invisible to the viewer; pegs and tied connections for a house were similarly placed with ingenuity and subtlety (Allison Nyce interview 2003, Nita Morven interview 2003). Ties on the outside of the box use the same double wrapping and repertoire of knots that was used to secure the planks of a smokehouse or the working parts of an oolichan press.
Finally, story-tellers—and buildings that tell stories—are participatory. The architect, like the story-teller, communicates best when (s)he is deeply involved in a specific project and immersed in its meaning and landscapes. This underscores the importance of walking the site, and of spending countless hours on the site listening and thinking; then spending still more hours listening to the people for whom the building is made. Just as Alver Tait carves the eagle and beaver crests that are his family history, the architect needs to become as much as possible a part of the building and its community. Before an architect builds something that is physically part of a community's history, (s)he participates imaginatively in the design and its context. The community-responsive architect/landscape architect physically walks the site, then recalls the remembered site while taking imaginary walks through drawings and models (alone and with the client team), and then during detailing and other aspects of construction documentation lives the experience of building the building and being inside it—all before construction begins. The details are as important as the floor plans in this experiencing of not-yet-existent space. During each stage of design and drawings production, the participatory process of the charrette helps the landscape/architect see the building through the eyes of others. Charrette participants remind the designer that the building tells a story and has an identity unique to its place and community. Under community direction, spaces evolve that are good places for sharing knowledge. Knowledge-sharing spaces then facilitate more community-led research and design, which responds to the unique needs of a landscape and community and fosters still more interactive decision-making.

7.4 Applying Elder-led wisdom to the Laxgalts'ap and other architectural/landscape projects

This section focuses the knowledge and wisdom of Nisga'a elders into processes and principles for community-led and ecologically-aware design, showing that the elders' wisdom has vital applications to architectural and landscape decision-making. Reflecting upon community-led research in this document, three key ideas are summarized: participation and observation in design, landscape/architecture as narrative and metaphor, and design applications of ecological wisdom. The three ideas are tested against architectural experiences in Laxgalts'ap described in Chapter Two, wondering: if (I) could design the spaces in Laxgalts'ap again, informed by these past years of community-led research, how would the design process and built results be different than those of a decade ago? The Laxgalts'ap projects form a case study for applying this research, suggest that enhanced, community-aware designs relate to the three corrected displacements identified in Chapter two, and set an example for further applications within and beyond the Nass Valley.

Charrettes: a design feast

A Northwest Coast feast—the communications system used for dealing with complex issues within and among communities (Marsden, Anderson, and Nyce 2000: 283)—provides a model for community-led design that improves upon the "several to many meetings" approach followed within many design practices. My experiences in architectural practice indicate that community consultation meetings rarely last for more than an hour or two, after which the landscape/architect rushes back to revise and complete the drawings. Meetings held later in the design process are inhibited by a progressively diminishing consulting fee
and a solidifying design solution. Within the "many short meetings" process, community-led alterations are rarely welcomed once a design idea is formulated. Extensive comments from the public are seen as adding delays—and costs—to the design process (more bank interest, more consulting time, more inflation with each "delay").

The feast system offers an alternative to the "many meetings" model. One long charrette that lasts until the decisions are made satisfies both the time needed for ideas to mature through the discussion and drawing process, and the urgency of decision-making. Indeed, Nisga'a oral and written histories demonstrate that feasts were vital to addressing matters of urgency. Choosing new village sites, expanding or dividing family lineages, selecting recovery strategies after floods or volcanoes—all were pressing situations. All were decided, throughout Nisga'a history, within feasts wherein knowledge of the past and concerns of the future could be considered by people of diverse knowledges and backgrounds. The feast would take one or as much as two days (Charles Alexander pers. comm.) but at its conclusion the essential decisions would be made. Similarly, one long charrette during which design decisions are roughed out in model and perspective brings the wisdom of the community into the result, in a time-sensitive fashion.

The charrette gathering, which closely resembles (and may be seen here as a replica of) the traditional Northwest Coast feast, is a way of reconciling the urgency of most design projects with the patience needed to hear each voice and to let ideas mature with community guidance and input. Urgency and patience are balanced in feast protocols. For example, before a Nisga'a feast the host urges his guests Haagwil di txooxkwism, which means "eat slowly. Do not leave until the feast is over" (Nisga'a Final Agreement Annual Report 2001/ 2002). The "eat slowly" protocol is particularly meaningful to community-led design given that wisdom and knowledge are ingested along with food in Nisga'a tradition (Bert McKay pers. comm.). During a feast, knowledge and food are metaphorically and practically the same. Both are given and taken gradually. Models and drawings evolve alongside ideas, and are deconstructed and reassembled to better represent the thoughts and aspirations of the community. Memory and built form interact in the charrette, which often enhances the self-knowledge of a community and helps them to more clearly identify their own needs (Esber 1987).

"Chewing slowly" and "Staying until the feast is over" may seem counter-intuitive to the design process, since most buildings are planned when the need for the structure is already pressing. This research argues, however, that charrettes conserve design time while contributing to a responsive, useful result. The efficiencies of the charrette versus many meetings process can be demonstrated by comparing the 1995-2000 Laxgalts'ap experiences with the 2004 Gitwinksihlkw charrettes of this research. While designing the Government Office Building, I recall two vitally important meetings, during which the stories of history and the understanding of landscape began to be unveiled. Both meetings were limited by time (flights to catch encumbered by a long unpredictable drive to the airport) and number of attendees (the small conference room barely large enough for council and the design team). Chief Councilor Alvin McKay had little time to share his extensive wisdom, while other members of the community did not have any voice in the process. Meeting time allocations were inadequate to permit extended ideas exchange. Even tighter time frames constrained
community input into the Laxgalts'ap Daycare Center. Budgets were too tight to permit more than one design-stage site meeting, so most conversations with client were one-on-one, by telephone. Imagine, instead, if a Saturday evening had been set aside for a community design feast. For a similar cost as two return fare flights to Vancouver, the people of the community could have gathered with the architect to share food, ideas, and knowledge. According to feast protocols, everyone stays until complex problems are solved. The architectural model could have been re-configured during the feast/charrettes, the site walked to and its multiple meanings uncovered, input received from many generations. How much richer might the Laxgalts'ap designs might have been, with the extended input a feast would have allowed.

This Ph.D. research provides a working model for reformatted design processes which follow protocols of the traditional feast, thereby optimizing the time invested, depth of knowledge revealed, and creative skills of the participants. The charrettes in Gitwinksihlkw were a feast for sharing ideas about spaces. Food was also shared because in Nisga’a tradition eating is a vital prelude to sharing knowledge. Eating together is a way of building trust and of reiterating family, clan, and community ties before decisions are made (Deanna Nyce pers. comm.). On April 3 2004 in Gitwinksihlkw, feast proceedings were ordered in a way that permitted everyone to speak. Many viewpoints and an array of generations were heard. Through interactive dialogue, models and drawings were discussed and reconfigured. At the end of the feast, knowledgeable elders summarized the feast accomplishments. As a system to receive, organize, and bring into active use the ideas and aspirations of a community, the charrette/feast far outweighed the conventional short-meeting process that had been used during my architectural experiences of the 1990's at Laxgalts’ap.

Wide-ranging applications of the process are evident. The charrette process illuminates the importance of pacing activities to suit a culture and its traditions. Both charrettes and feasts are examples of polychromic time: "the simultaneous occurrence of many things and by a great involvement with people" (Hall 1990: 14). In contrast, the many-short-meetings approach is characteristic of monochromic time, wherein events are scheduled one at a time and schedules dominate interpersonal relationships (ibid). Community-led research and design in the Nass Valley substantiate the validity of collaborative processes that enable events to occur in polychromic fashion—through social interaction, with the greatest possible involvement of people. The greater involvement of people in design, as well as in other decision-making fields from curriculum development to resource management, achieves results with improved accountability to communities and relevance to community goals (Anderson and Nyce 1999).

Mapping social and landscape patterns

Culturally-specific ways of using time parallels another significant design factor: cultural awareness of the social use of space, and its intersection with landscape pattern. Before designing for a community, it is vital to understand the features of social, political, and economic life that influence spatial use and pattern (Esber 1987), and the reciprocal relationships between landscape structure and the way spaces are used. Interactions between social and ecological pattern are made visible through mapping, which then connects to architectural responses. In Chapter six of this research, maps were prepared after intensive
work with individuals and groups, and then inspired much discussion and interaction at the Gitwinksihlkw charrettes. This process of mapping social patterns that overlay built form and landscape enables architects and landscape architects to appreciate persistent pattern of use and customs of great significance, and gives charrette participants the opportunity to show how these complexities influence spatial decision-making.

Mapping complements charrettes, since it provides the design materials that facilitate community involvement in design. Upon reflection, the Laxgalts'ap architectural projects would have benefited from participatory research and mapping, perhaps sandwiched between a programming charrette and a design charrette. During the mapping stage I would have interviewed people and walked the land, perceiving and recording cultural and ecological patterns while learning about social patterns of great importance to the villagers (and watching out for bears!). I would have learned, during that research/mapping stage, about the gift-giving feast and its significance. This was vital information: I completed the design commission without understanding the importance, required size, and past and present cultural uses of gathering spaces, since my first-ever Nisga'a feast was the post-construction feast, naming ceremony, parade, and opening celebrations of the Laxgalts'ap Government Offices. Indeed, it was some years before I appreciated the significance of feasts within many Northwest Coastal communities, wherein traditional gatherings were resuming their former cultural importance and gaining new significance in the changing political and social landscape of British Columbia, Canada, and the world.

The built form of the Government Offices would have been different had I understood the Nisga'a feast. I would have worked with acoustically-private moveable partitions that would convert the council chamber from an in camera meeting space to a large room open to the lobby and adjacent reception spaces. This kind of flexible arrangement would facilitate mid-size political feast/gatherings. (Currently Laxgalts'ap has a full-sized gymnasium that doubles as a feast hall for hundreds of people, but not an intermediate-sized space comfortable for about one hundred people.) In anticipation of this possible use I would have worked with the matriarchs to design servicing and workspace for a catering kitchen, possibly near the reception area as an elaboration on the present staff coffee lounge.

Because the resources gathered in nearby ecosystems provide much of the food served to large gatherings, an investigation of feast spaces leads outwards into the landscape. Particularly evident would have been the strong connections between nearby oolichan-rich Fishery Bay and the economy and identity of Laxgalts'ap. With this improved knowledge, I would have sought architectural expressions of oolichan-related structures in a more meaningful and practical way. The form and siting of ganee'e, already an inspiration for the Office Building, might have inspired a three-sided (rather than eight-sided) Council Chamber, saving on the number of costly poles needed while referencing the multi-faceted importance of the oolichan in Nisga'a history.

The Laxgalts'ap Daycare Center would also have benefited from culturally-sensitive details. Shed-roofed open-walled Fishery Bay cooking structures, which inspired the covered play area of the Daycare Center, would have informed the design with greater clarity. Some traditional tied details on the daycare center would have educational value, teaching the very
young about their architectural heritage. Architecture would then support the Nass Valley communities' bi-cultural education systems, which is correcting the culture and language erasures of the residential school system and has reversed the "displacement of children's voices from the villages" (see Chapter two of this document).

Fig. 64. These photographs, read clockwise beginning with the upper left corner, the actual Laxgalts'ap Daycare Center design process, and a proposed modified process using charrettes as part of community-led design. Top left: the buildings at Fishery Bay inspired the shed-roofed, partially open design form (a form that also solved children's need covered outdoor space, and was simple enough to fit into budgetary limitations); top right: the daycare center under construction; bottom right: elders explaining the way planks were used for roofing before the introduction of nails and shingles; bottom left, N. Mackin's revised drawing showing tied connections and plank roofing, produced in response to the charrettes.

**Narrative and metaphor in buildings and landscapes**

Observation and participation make a design more accountable, more meaningful—and sometimes more communicative. Nisga'a history demonstrates that building designs and landscapes can consciously participate in story-telling and spiritual meaning through a
variety of means including siting, given and inherited place names, artistic features, materials and forms, plant and rock formations, circulation routes, fittings and furnishings, lighting, and construction details. Stories and metaphors may be expressed in a traditional manner, such as on a housefront painting or pole, or in evolving strategies and technologies, including computer-generated images.

Looking back nearly ten years to my architectural experiences in Laxgalts'ap, it is apparent that the elders guiding the design processes of 1995 to 1998 wanted their upcoming buildings to tell histories and convey ancient, gradually-learned wisdom. During a design meeting, a particular site plan reminded Chief Councilor Alvin McKay of important knowledge that needed to be kept in active use, information forgotten or covered up until the focus on a certain landscape and time reminded him of associated events. The process of design thereby became a forum for bringing wisdom back into community awareness.

Sim'oogit McKay and his fellow councilors also wanted to represent the four Nisga'a crests in and on the building, so people would know that all lineages are represented and unified within the new village government. I suggested sand-blasting the crests onto the four large windows of the council chamber, an affordable and nearly permanent way to show the spiritual guides of Nisga'a families. Council decided instead to have crest representations carved on the doors and on panels on the exterior Council Chamber walls, a more traditional evocation of narrative (and less susceptible to breakage, as I recall the discussion). However, construction budgets did not extend to cover artwork and the crests are not yet in place. (In retrospect, perhaps the crests could have been painted on the window blinds, facing outward towards the approach to the village but protected inside the glass).

Nisga'a ancestral wisdom suggests criteria for placing narrative elements within a building. Crest poles were often used to support a house structure so that removal of the story-telling elements was nearly impossible. How do we apply this wisdom to budget-conscious works of architecture? Perhaps important narrative elements are best located where they are intrinsic to the design, such as within a structural element, rather than as post-construction amendments that might be deleted from the budget or forgotten about. Narrative elements made essential to a design add corrections to the "displacement of history-making artistry" of the early twentieth century, the widespread loss of artifacts on the Northwest Pacific Coast that was identified in Chapter two.

Ecological wisdom and respect

Many oral narratives recalled on housefront paintings and carved poles extol attitudes and practices of respect for the biotic and abiotic environment (Marsden, Anderson, and Nyce 2002). The adaawak of respect acknowledge the interconnectedness of all creation—animals, plants, people, landscapes, weather systems, the spirit world. Within the adaawak of respect are many applications to architectural and landscape practices. In particular, stories often suggest a different way of thinking about material selection, detailing, and longevity: a worldview that is increasingly meaningful as more people place ever greater demands on the earth's limited resource supply.
How does a philosophy of interconnectedness change the way one designs with a given material? The elders’ stories teach that each substance is understood and utilized within its context (Corsiglia and Snively 1995). For example, traditional wisdom would analyze a cedar plank relative to its place of growth within the tree; where the tree was harvested; the social properties of the wood (how it interacts with other materials and with the environment); the spiritual value of the tree relative to oral histories; how the roots, fronds, and other tree parts were used when the tree was felled. The architectural wisdom of the contextual approach to materials becomes apparent. Consider, for example, the context of the plank within the tree from which it is split. If the plank is mostly heartwood, it is more resistant to decay than the lighter coloured sapwood of the same species, but may also check (split from the bark side moving inward towards the heartwood) more easily (John Ruddick pers. comm.). If the plank is dried slowly, checking is minimized. Did the tree grow slowly in a cold environment? If so, the wood will be denser and more accepting of finely carved details than a tree growing rapidly in a warmer place. Will the plank be exposed to southeast or northwest storm winds? If so, it will need additional protection from the elements. How hot is the sun that will dry the plank? Planks that are dried very rapidly in the sun check more frequently and deeply than planks dried gradually in shade. The tree has spiritual value related to its “Tree of life” properties (a multiplicity of uses including life-saving medicinal properties), so the whole tree must be respectfully used. Complete usage of trees and other resources means not wasting anything, a resource management principle that has been connected to abundance over many generations of observation (Ayuukhl Nisga’a IV).

Thinking about materials contextually and making spatial decisions within an interconnected worldview are valuable approaches for architects and landscape architects. Both design fields are applied sciences that work within the specific context of the land, while making decisions that are connected to other fields of inquiry. Both are also cultural, articulating societal values and filtering them through the knowledge and creative expression of individual practitioners. Ideally, the spatial professions emulate traditional histories, which "articulate culturally and ecologically articulated conceptions of self and a sense of the conceptions which bind their communities together and with the land" (Corsiglia and Snively 1995: 34). Like TEKW histories, which "are closely tied to place and therefore not easily exportable" (ibid), landscape/ architecture ties to place. Importantly, applied traditional knowledge and wisdom result in long-term sustainable societies (ibid), a goal shared by many architects and landscape architects.

If the greatest possible depth of Nisga’a elders' ecological wisdom had been applied to the Laxgalts’ap projects some decisions might have been different. Contextual use of materials is one possible amendment. Neither the office building nor the daycare center takes advantage of the elders' knowledge of how the winds sweep down from the mountains or through the river valleys. Site-specific elders' knowledge would probably have influenced the selection of materials and the extent of roof overhang on the most wind-exposed faces (although both buildings do have extensive overhangs).

Sources and harvesting strategies for materials would also be a consideration. In the 1990’s, materials, including wood poles, for Nass Valley buildings were imported from Terrace or
the Lower Mainland. Perhaps at some time in the future the Nisga'a communities will once again have facilities for local production of boards and poles, bringing employment opportunities back to the Nass Valley and adding value to the resources before they are used or sold outside the communities.

Elders' spiritual and practical knowledge of materials would also have been useful design information. For example, both buildings feature wood structural elements, but the office building cladding is stucco, primarily because Laxgalts'ap Council preferred the maintenance characteristics of stucco at the time the building was designed. In retrospect, cedar (in combination with cementitious reconstituted wood siding for improved cost and maintenance) would have better expressed the region's architectural history, and would have acknowledged the importance of the "tree of life" within a building that symbolizes and actualizes aboriginal self-government.

Other traditional elders' wisdom that would have resulted in long-term sustainability for the Laxgalts'ap projects include natural ventilation systems optimizing winds for cooling (replacing the existing computer-controlled heating and air conditioning, which is sometimes troublesome). Elders' plant knowledge may also have informed the ecological relationship between landscape and building. Specifically, instead of seeded lawn I would have asked the elders to recommend native plant materials that are known to purify storm water from parking and roof areas before it runs into the streams and rivers. These and other elder-led sustainability measures would enhance the Nisga'a peoples' already extensive corrections to the "displacement of cultural/ecological systems" (see page 12).

7.5 Spatial histories: catalysts for memory, decolonization, communication, and negotiations across space and time

From the Nisga'a people who have learned by doing, from their elders, over countless generations, architects and landscape architects can learn how spaces communicate and bring back memories. Making spaces meaningful and memorable is intertwined with the expression of pattern and form, since these orderly characteristics enable complex ideas to be contained and reconstructed. "In an oral culture, to think something through in non-formulaic, non-patterned, non-mnemonic terms...would not be abiding knowledge, but simply a passing thought, however complex" (Ong 1982: 36). The importance of architectural pattern and structural formula in helping to reconstruct memory is known to the Nisga'a people, and can be applied to the design of spaces for learning and teaching—which is, in the Nisga'a tradition, all spaces. "Memories that just keep flashing" (Alice Azak interview 2003) become concrete and tangible when the rhythms of architectural space and design are brought together, as an expression of community goals and of the landscape.

Nisga'a experiences also form a case study in the way architecture and landscape design negotiate across time and between cultures. Divesting their lands of the negative influences of colonialism such as resource depletion or loss of cultural treasures is an on-going project in many parts of the world. The Nisga'a architectural tradition recognizes that as buildings and landscapes re-enliven stories, social systems, and ecological knowledge they become a source of strength and cohesion. Usually a building works as a catalyst or active ingredient
within a larger system of institutions and technologies: for example, education, architecture, and resource management work together to use resources wisely, and to recover from unwise resource practices of the past. In another example, cultural centers on Native lands provide places to which artifacts can be gradually restored to their ancestral communities.

Architectural and landscape histories also help people to choose mediating paths between seemingly opposite poles of thought, such as globalization and regionalism, historicism and modernity, conservation and economic advancement. The Nisga'a experience shows that seemingly "globalizing" spatial change, such as the Nisga'a Highway, can provide an opportunity to strengthen what is unique about Nisga'a lands, melding opportunity for growth with opportunity for improved education and communication. Similarly, as Nass Valley communities continue to use ancient wisdom to construct buildings for resource management, they demonstrate how retaining and reviving knowledge of traditional building types brings back ideas of how to use the land so it will be there for countless generations in the future: an important idea of these times of escalating climate change and plummeting biodiversity. Finally, as this research looks back through Nisga'a time and space, patterns of decision-making that are made with respect for and knowledge of the land become clear. These patterns become the stories of the places and the buildings within those places. In the Nass Valley as elsewhere, buildings retell the stories of the past and present, human action and ecological consequence. As buildings keep the stories alive they remind people of wisdom and knowledge gathered over countless generations.
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