RESEARCH REPORT

ARCHITECTURE FOR ELDER HEALTH IN REMOTE BRITISH COLUMBIA : A NISGA'A-LED RESEARCH

EXTERNAL RESEARCH PROGRAM

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Nancy Mackin Ph.D. MAIBC and
Deanna Nyce, President and CEO, Wilp Wilxo'oskwhl Nisga'a
Read by Dalia Gottlieb-Tanaka and Mineo Tanaka

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ABSTRACT

Influences of architecture on health and well-being are explored in this research that investigates built-form solutions for Aboriginal Elders living in remote communities, as articulated by cultural leaders from the Nisga'a First Nation in Northwest British Columbia, Canada. In Nisga'a culture, where the word for house also means extended family, oral history attests that architecture has been an integral part of cultural and physical well-being since time immemorial or at least eleven thousand years in the study region. In present-day Pacific Northwest villages, buildings continue to influence health, oftentimes by posing physical, cultural, and social challenges to Elder well-being. For these challenges Nisga'a research participants recommend built-form solutions, many of which are practical adaptations or expansions of Northwest Coast traditional knowledge and wisdom. Residential solutions that minimize the loneliness and physical risks of living alone include housing with caregiver suites, sub-dividable housing, and single level flats. Healthy materials, accessible bathrooms, at-grade access, and culturally-suitable kitchens promote Elder well-being. High housing costs are addressed by innovative infrastructure and emphasis on community-based labour and materials. Community structures that maintain health of Elder populations include wilderness camps, cultural villages, and post-secondary campuses designed to educate future generations in traditional practices and in Elder care. Elders explain that most of the principles underlying their architectural recommendations can adapt to suit remote Aboriginal communities elsewhere in Canada and the world. Three ideas summarize how architecture can contribute to Elder health in remote regions. 1. Providing Elder-suited housing within remote communities makes life safer and more comfortable for Elders while fostering cultural well-being. 2. Housing that involves Elders and communities in design and production is most likely to foster traditional knowledge and respond to Elder health needs. 3. Elder housing initiatives can help remote communities to build strength from within through apprenticeship, local materials production, and other increases in local cultural capital.

RESEARCH HIGHLIGHT

October 2005

Socio-economic Series 05-030

ARCHITECTURE FOR ELDER HEALTH IN REMOTE BRITISH COLUMBIA: A NISGA'A-LED RESEARCH

INTRODUCTION

Influences of housing on health and well-being of First Nations Elders in remote British Columbian communities are explored in this research, which has been completed under the CMHC External Research Program. The research is community-led and facilitated by architect Dr. Nancy Mackin, following principles of participatory research and protocols specified by the Tri-Council and Wilp Wilxo'oskwhl Nisga'a, the Nisga'a University College under the direction of President and CEO Deanna Nyce.

The study investigated interrelationships between architecture and health over time. The goal is to understand the changing context of Elder housing so that landscape, architectural and planning decisions affecting Elders' lives can be based upon an understanding of processes that influence community health.

METHODOLOGY

Cultural leaders from the Nisga'a First Nation contributed their knowledge to this research on behalf of their home villages of New Aiyansh, Gitwinksihlkw, Laxgalts'ap and Gingolx, all located in the Nass River Valley of Northern B.C. adjacent to the Alaska Panhandle. Primary and secondary research was gathered in four stages:

1. A history of architecture and its influences on Elder health within the study region was assembled from literature and from interviews held with Elders.
2. A geography of Elder housing and support services available in Northern British Columbia was gathered from January to March 2005 and added to a Geographic Information System database.
3. Aboriginal peoples across Canada are now working towards self-government and renewed ownership of traditional lands, as well as new solutions for Elder housing and health. The Nisga'a Nation set an example for many communities with the ratification of the Nisga'a Treaty in May 2000. Within this context of change from within, a workshop was held with 16 cultural leaders from the Nisga'a First Nation in February 2005 to establish key principles through which architecture can enhance Elder health in remote regions. Research participants led discussions, prioritized topics of concern, and were compensated for their time and expertise.
4. Research participants were asked to comment upon research findings and clarify how the ideas can be adapted to suit Indigenous peoples in remote communities elsewhere in Canada and the world. Examples from communities across Canada showed working applications of architectural ideas distilled from history and the workshops.

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FINDINGS

1. Lessons from Architectural history

Northwest Coast First Nations history shows that construction ideas evolved over countless generations of experimentation and practice, thereby helping individuals and communities to remain strong despite environmental changes such as glaciation and floods or social changes such as, post-volcano restructuring, the reservation system and residential schools. Although architectural ideas changed over time, the history shows that certain principles and practices remained constant and contributed to the ongoing well-being of peoples and ecosystems.

A key health-giving principle in Northwest Coast architectural history is that of respect for resources. Respect for plants, animals, rocks and soils, water and air is part of the worldview, common among long-resident Indigenous peoples worldwide, that perceives all parts of the environment as spiritually and reciprocally linked with the lives of people. Respect for the environment translated into practices for maintaining healthy ecosystems, such as carefully harvesting and detailing of resources used for construction. The massive pole-and-beam house, called *wiłp* in Nisga'a, was constructed from a variety of woods (Red-cedar, Mountain maple, Wild crabapple), ropes (from Red-cedar root, small animal intestines), and thermal and moisture protection (tree moss from Cottonwoods, fir pitch) all of which were harvested in such a way as to ensure that the resources would be available for many generations. Detailing of the *wiłp* or longhouse often included slotted grade beams and overhead beams that permitted valued cedar planks to be slid out and used elsewhere. Construction practices that indicate respect for building components are an example of Indigenous peoples' Traditional Ecological Knowledge—a body of wisdom recognized nationally and internationally as essential for health and well-being of societies and ecosystems, and for the maintenance of cultural diversity.

In the case of traditional Northwest Coast housing, health and well-being were maintained for people as well as ecosystems, and Elders benefited from healthful design strategies. Traditionally, the *wiłp* would be built at or near grade around a fireplace where Elders could keep warm as they taught and worked. Tradition-based housing was therefore relatively easy for Elders to enter. Because of the grade-level fireplace, foods and other goods could be brought into the cooking area of traditional houses by people of all ages. The abundance of a range of foods has been established as one of the keys to Northwest Coast First People's health and longevity. Also important for Elder health was the social structure that was reinforced through traditional housing designs, which accommodated the extended family who could ensure Elders lived comfortably into advanced age.

So closely linked were the concepts of house and extended family that both are referred to as *wiłp* in the Nisga'a language. Archeological evidence shows that people lived to old age within the social structure, and several early explorers document how oldest Northwest Coast family members were cared for within the family structure. While providing a place for Elders to live and teach, the architecture of the Northwest coast supported seasonal food-related activities. Structures such as oolichan drying racks and smokehouses facilitated a traditional diet characterized by variety and nutritional excellence. Since the diverse diets of people whose livelihoods relied mainly on hunting, fishing and gathering, has been consistently found to positively influence peoples' health within those cultures, architectural works that reinforce the traditional diet receive some credit for the health of pre-contact Northwest Coastal peoples.

By contrast, architectural designs that were imposed upon British Columbia's First Peoples in the twentieth century often had negative health impacts. Most of today's Elders and many younger adults lived their young years in crowded residential schools, which contributed to outbreaks of infectious diseases. Housing within remote communities was built with little or no design consultation with, or input from, Indigenous residents. Within these houses, access for Elders was inhibited by the mainly two-level designs that had living quarters and kitchens on the upper floor. Access to smokehouses and other traditional food processing areas was restricted by the unsuitable kitchen location and Western-style kitchen designs. Construction quality was often poorly monitored, leaving many houses with health-threatening problems including mold and mildew. Meanwhile, changes in Indigenous peoples' relationship to place had direct health impacts. High death rates of Aboriginal peoples compared with non-Native British Columbians correlated directly with imposed spatial changes that transformed landscapes, housing and places for education.[1]

[1] See *Colonizing Bodies* (1998) by Dr. Mary-Ellen Kelm.

2. Geography of housing and health in remote regions of Northern British Columbia

The mainly second level living, such as that found in most of the Nass Valley and other remote First Nations' housing, is dangerous and sometimes difficult for Elders to manage. It is therefore important for those with restricted health or mobility to know where to find assisted or continuous care housing and Elder day programs. This research discovered that although two remote communities on Haida Gwaii have built Elder housing and have nearby day programs, most assisted living options of Elders are in distant urban communities. The geography of current Elder housing options provided a reference point from which the Elders involved in this research could recommend changes.

Because of the rarity of Elder-suited housing that includes care of those who become ill or injured, many worry that if they need intensive care for awhile it may be hard to come home and resume earlier levels of independence. Research participants also noted that many Elders want to and need to stay active, but family members worry about safety—particularly since so many Elders have to go up and down the stairs to undertake traditional food processing practices.

3. Workshop recommendations and examples from remote communities located elsewhere

When architectural principles and practices that facilitate Elder well-being were distilled from the history, research participants confirmed that many are equally valuable in the present day. For example, nearly all research participants recommended the building of a cultural village that would address the needs of young people while enabling Elders to continue being active participants in the communities.

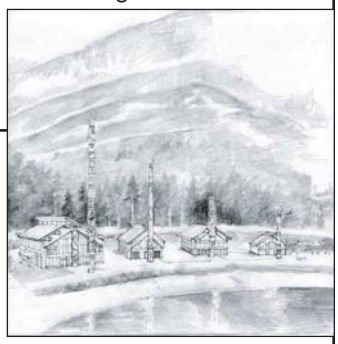
The cultural village would include buildings for producing food in the traditional way as well as housing and educational facilities for people of all ages. The Nisga'a Nation envisions a cultural village that is a centre of the post-secondary educational institution Wilp Wilxo'oskwhl Nisga'a. Building designs are based on the traditional longhouse and other structures for resource management and ceremonial teaching. Facilities for Elders are integrated with education, health, social and cultural services.

Depending on the processes of design, construction and funding, a cultural village concept could provide meaningful employment opportunities for the young while acknowledging Elders' importance to the community. All facilities—Elder housing, educational centres, wilderness camps—could be built by the local people, with youth apprentices forming a key part of the work force. With an apprentice system, building construction itself will follow with the Nisga'a historical solution of generations looking after one another, and of learning by doing.

Architects can facilitate gain of construction knowledge within remote Aboriginal villages by drawing buildings so clearly that inexperienced tradespersons can understand what is intended. Simpler detailing, less complex terminology, no obscure abbreviations—these are among the essentials of drawing buildings so that young Aboriginal citizens can train "on the job" with the assistance of experienced builders.

Traditional systems of construction and social organization usually require some adaptation to work for modern times, noted research participants. The charts list historic concepts related to health and adaptations of those concepts to the future. Ideas within the charts were distilled from workshop participants' comments. Many ideas have also been tested in communities in other parts of Canada.

Elders' challenges and architectural solutions: population health

Challenges	Nisga'a historical/ cultural solution	Potential present-day solution(s)	First Nation community that met the challenge
Physical architecture	A house is an expression of extended family crests.	The village is the longhouse, although trained health workers and Elder-suited housing is missing.	 Seabird Island First Nation Sustainable Community Demonstration Project is designed in a manner that provides sustainable housing for the extended family unit.
Elderly friends and relatives sent to distant care facilities appear to lose their cultural links and mental faculties.	Elders lived with extended families on their own land, usually on a river or stream and encompassing several ecosystems; Elders guided resource management.	Integrated communities that address cultural, educational, social and health needs of Elders. Many Elders recommended the construction of a traditional village that would enable Elders to be well looked after while maintaining connections to the land and their communities.	Wilp Wilxo'oskwhl Nisga'a campus is a total village concept that involves Elders in teaching while providing cultural, health and social services for all generations. Mohawk Bay of Quinte built a community that includes ground-level units for Elders.
Elders worry that the diminished importance of large extended families lead to loss of cultural independence and strength.	Longhouses, and then large Victorian houses, permitted generations to support one another.	The village is the longhouse, with housing close to the centre of village life and places where Elders can teach the young.	Seabird Island First Nation Sustainable Community Demonstration Project is designed to include suites for extended family members and a wellness garden where traditional plant uses can be passed on to the next generation.
No ceremonial areas available for teaching young people, who Elders worry are having children before they are ready.	Elders used to teach children the values of the community in specially designed locations.	Make an integrated "Cultural village" that includes Elders in Education and includes buildings that facilitate the teaching of traditional practices and values.	Wilp Wilxo'oskwhl Nisga'a includes Elders in campus design and teaching. 
Young people are lost to drugs and alcohol.	Longhouses were built to accommodate large families that took care of each other.	Build community camps where youth can be instructed in trapping and hunting, such as the one in Bella Bella. Assist youth by involving them in housing.	Seabird Island First Nation took on youth apprentices in the Community Demonstration Project.
Elders' have concerns for Aboriginal people in cities who want to move back to their homelands but cannot find housing due to the high cost of housing.	Families would combine their efforts to build a longhouse. Early twentieth century villages had sawmills, and people volunteered their time for public works projects.	Take a Habitat for Humanities approach: hire youth as apprentices. Community creation of some of the materials, maybe with a portable sawmill.	Oujé-Bougoumou Elders' Housing conforms infrastructure to natural land to reduce construction and operating costs. 
Elders' knowledge leads to healthy communities. Elders' health improves when given some control over their surroundings.	Elders were influential in community planning and design decisions.	Involve Elders in design. 	A non-Native example is the West Vancouver Seniors Activity Expansion of 1994, by Nancy Mackin Architects, which included over 50 meetings with the seniors whose ideas were summarized in dozens of perspective sketches and models. The Mohawks of the Bay of Quinte First Nation (Tyendinaga) involved Elders in the design of the community's Granny Flats.

Elders' challenges and architectural solutions: maintaining health of Elders

Elders' challenges	Nisga'a historical/ cultural solution	Potential present-day solution(s)	First Nation community that met the challenge
Stairs to houses cause injuries.	Many longhouses were constructed with ground level entrances.	Build houses with the FlexHousing™ feature of making the entrance at street level.	The Mohawks of the Bay of Quinte First Nation Elder housing is single level.
Difficulties bathing.	Traditional bathing in hotsprings: Elders could walk into pools from the ground level.	FlexHousing™ has a shower unit that has a slight slant for water drainage but is level with the floor.	Elders' housing by the Mohawks of the Bay of Quinte First Nation have a self-draining shower level with the floor and large bathroom doors that can accommodate a wheelchair.
Asthma and respiratory problems.	Orally conveyed traditional landscape knowledge informed builders about healthy building materials.	FlexHousing™ recommends the use of non-toxic products and paints in buildings and no carpets.	The Seabird Island First Nation Sustainable Community Demonstration Project uses non-toxic building products and radiant heat to keep floors warm instead of carpet.
Going to and from the smokehouse to the kitchen involves using stairs.	Kitchens were at ground level.	FlexHousing™ recommends no stairs with a kitchen at ground level and an exit from the kitchen to the yard.	Apache housing designed with anthropologist George Esber has ground floor kitchens designed to suit traditional cooking approaches.
Using a grab bar to get into the house or the washroom.	Houses were at ground level. Traditional bathing in hotsprings.	FlexHousing™ recommends that houses be at ground level and that grab bars be installed during initial construction.	Rae-Edzo Elders' housing has grab bars at several levels and in strategic places where Elders need them. 
The importance of traditional food, such as smoked fish.	Smokehouses were built so that approximately four families could share them.	Build community smokehouses or build a smokehouse on the back of Elder housing units where they can teach young people how to smoke fish.	Laxgalts'ap Elder housing, by Nancy Mackin Architecture, has a smokehouse behind the house.
The Elders stay strong by remembering their connection with the land.	Longhouses and smokehouses used to be built near the source of much food, the river.	Site housing in a manner that expresses people's relationship with the land.	Lax Ksi Luux and Gitwinksihlkw are traditional river-fronting village sites that are proposed for Nisga'a Elder housing.
Elders are lonely and sometimes at risk when they live by themselves or far from their extended family.	Longhouses allowed extended family members to be in close contact.	Design houses that are attached and have one or two units available for a health caregiver(s). This could provide much-needed youth employment and housing. Build Elder hostels where Elders can get together.	Rae-Edzo and Deline Elder Housing are both within the traditional village boundaries and include caregiver housing. In Metlakatla, Alaska there is an Elder Hostel that has a café with organized activities.
Elders are healthier when they eat traditional food.	Food preparation was taught from generation to generation, and the diet was varied and healthful.	Build a community kitchen in the schools and have Elders in to eat. Students could do the cooking (and even the gardening and fishing) as a high school credit course.	A non-First Nations example is Alice Waters' work in American schools, where children help grow, harvest and cook fresh foods.

Elders' challenges and architectural solutions: maintaining healthy ecosystems (people are part of the land)			
Challenges	**Nisga'a historical/ cultural solution**	**Potential present-day solution(s)**	**First Nation community that met the challenge**
Traditional respect for water.	Houses were sited with access to water as a first priority.	Use low-flow showers.	The Seabird Island First Nation Sustainable Community Demonstration uses water-efficient plumbing fixtures.
Traditional respect for the land.	Longhouses were built in close proximity to one another.	Design higher density housing and make efficient land use to express peoples' relationship to the land.	Laxgalts'ap housing was created with community-led design to reflect cultural values. A non-Native example is West Vancouver Seniors' Activity Centre which was co-designed with the Seniors.
Traditional respect for the resources the land provides.	All parts of trees were used; construction materials were harvested so they would be plentiful for countless generations. Selective harvesting and value for a variety of species ensured future abundance.	Use recycled products. Use building products in a manner that they remain durable for a long time.	Seabird Island First Nation houses have a projected life cycle of 100 years.

CONCLUSIONS

Architecture, health and sustainable design are interdependent. The worldview, held by many Indigenous peoples worldwide, that the health of people and health of ecosystems are interconnected necessitates respect for water, trees and resources. Acknowledging reciprocal relationships between people and other inhabitants of the ecosystem is a key to architectural design for health, since countless generations of experimentation and practice have shown that design decisions beneficial to the health of living and non-living components of the environment will also enhance the health of people and their communities. The Royal Architectural Institute of Canada (RAIC) and the American Institute of Architects (AIA) are now also urging architects to think about the connections among architecture, health and sustainable design in projects of all scales.

Community-led processes bring forward culturally specific needs that must be included if a design is to work within a people's social organization and social use of space.

Elder housing has the potential to catalyze economic and cultural strength from within a community, not only through participation in design decision-making but also through construction projects that involve apprenticeship, local materials production and other community-engaged practices.

Ecological, cultural and economic sustainability provide keys to architecture for Elder Health. Since sending Elders away to urban centres for care and housing takes an enormous toll on cultural strength, and may damage links between youth and Elders, housing for Elders within remote communities is definitely needed in order to sustain community and individual well-being. Further, if housing is to contribute to well-being of communities, it must be sustainable: that is, it must last a long time and work well within the context of the culture, ecology and economy of the people and their homelands.

OTHER RESEARCH OF INTEREST

Free Publications

An Examination of the Use of Domestic Space by Inuit Families Living in Arviat, Nunavut - *Research Highlight*
(Product Number 63600)

A Review of Training and Delivery Options Concerning Aboriginal Housing - *Research Highlight*
(Product Number 63618)

Building a Sustainable Future, Seabird Island First Nation Sustainable Community Demonstration Project
(Product Number 63553)

Comprehensive Community Planning: Experiences in Aboriginal Communities - *Research Highlight*
(Product Number 63596)

Building Communities: First Nations Best Practices for Healthy Housing and Sustainable Community Development
(Product Number 62317)

Arctic Hot Roof Design - *About Your House* (North Series)
(Product Number 62313)

Building with Structural Panels, Repulse Bay - *About Your House* (North Series)
(Product Number 62303)

Eagle Lake Healthy House - *About Your House* (North Series)
(Product Number 62154)

Priced Publications

FlexHousing: The Professional's Guide
(Product Number 61844)

Maintaining Seniors' Independence: A Guide to Home Adaptations
(Product Number 61042)

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LE POINT EN RECHERCHE

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L'ARCHITECTURE ET LA SANTÉ DES AÎNÉS DANS DES RÉGIONS ÉLOIGNÉES DE LA COLOMBIE-BRITANNIQUE : UNE ÉTUDE MENÉE PAR LA NATION NISGA'A

INTRODUCTION

Les répercussions de l'habitation sur la santé et le bien-être des Aînés des Premières nations dans les communautés éloignées de la Colombie-Britannique ont été étudiées dans cette recherche réalisée dans le cadre du Programme de subventions de recherche de la SCHL. La recherche a été menée par les communautés elles-mêmes et facilitée par la docteure en architecture Nancy Mackin, selon les principes de la recherche participative et les protocoles spécifiés par le conseil tripartite et par Wilp Wilxo'oskwhl Nisga'a, l'université de Nisga'a, sous la direction de la présidente et directrice générale Deanna Nyce.

Cette étude examine les liens entre l'architecture et la santé au fil du temps. Le but est de comprendre le contexte changeant du logement des Aînés afin que les décisions ayant trait au paysage, à l'architecture et à la planification et affectant la vie de ces Aînés soient fondées sur une compréhension du processus qui influence la santé de la communauté.

MÉTHODOLOGIE

Les leaders culturels de la Première nation Nisga'a ont contribué à cette étude en partageant leurs connaissances au nom de leurs villages natals de New Aiyansh, Gitwinksihlkw, Laxgalts'ap, et Gingolx, tous situés dans la vallée de la rivière Nass, dans le nord de la Colombie-Britannique, tout près de l'extrême sud de l'Alaska. Les recherches primaire et secondaire se sont déroulées en quatre étapes :

1. Une histoire de l'architecture et de ses influences sur la santé des Aînés à l'intérieur de la région étudiée a été assemblée à partir de documents écrits et d'entrevues avec des personnes âgées.
2. La géographie du logement des Aînés et des services disponibles dans le nord de la Colombie-Britannique a été assemblée de janvier à mars 2005 et ajoutée à la base de données du Système d'information géographique.
3. À travers le Canada, les peuples autochtones travaillent maintenant pour une autonomie gouvernementale et des droits de propriété renouvelés sur les terres traditionnelles ainsi que pour de nouvelles solutions pour le logement et la santé des Aînés. La nation Nisga'a a servi d'exemple à plusieurs communautés avec la ratification du traité de Nisga'a, en mai 2000. Dans ce contexte de changement provenant de l'intérieur, un atelier a été organisé en février 2005 avec 16 leaders culturels de la Première nation Nisga'a pour établir les principes clés par lesquels l'architecture peut améliorer la santé des Aînés dans les régions éloignées. Les participants à la recherche ont mené les discussions en mettant l'accent sur les questions actuelles et ont été rémunérés pour leur temps et leur expertise.
4. On a demandé aux participants de la recherche de commenter les conclusions de l'étude et d'expliquer comment ces idées pourraient être adaptées à des Autochtones vivant dans des communautés éloignées au Canada et ailleurs dans le monde. Des exemples provenant de communautés à travers le Canada ont démontré des applications fonctionnelles des idées émergeant de l'histoire et des ateliers.

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CONSTATATIONS

1. Leçons tirées de l'histoire architecturale

L'histoire des Premières nations de la côte nord-ouest démontre que les concepts de la construction ont évolué à travers d'innombrables générations d'expérimentation et de pratique, aidant ainsi les individus et les communautés à demeurer forts malgré des changements environnementaux comme les glaciations et les inondations ou des changements sociaux comme la restructuration post-volcanique, le système de réserves et les établissements d'enseignement avec internes. Mêmes si les idées architecturales ont changé avec le temps, l'histoire démontre que certains principes et pratiques sont demeurés constants et ont contribué au bien-être continu des gens et des écosystèmes.

Un principe de santé clé, dans l'histoire architecturale de la côte nord-ouest, est le respect des ressources. Le respect des plantes, des animaux, des rochers, du sol, de l'eau et de l'air fait partie d'une vision du monde commune parmi les peuples autochtones du monde entier qui considèrent tous les éléments de l'environnement comme spirituels et réciproquement liés à la vie des gens. Le respect de l'environnement s'est traduit en pratiques pour maintenir des écosystèmes sains, comme la récolte méticuleuse et le détail des ressources utilisées pour la construction. L'énorme maison de tiges et de poutres, appelée *wilp* à Nisga'a, était construite à partir d'une variété de bois (cèdre rouge, érable à épis, pommier odorant), de cordes (provenant des racines du cèdre rouge et d'intestins de petits animaux) et de protections thermales et contre la moisissure (mousse d'arbre provenant du peuplier et résine de sapin) récoltés de façon à ce qu'ils soient disponibles en abondance pour les générations à venir. Les plans du *wilp*, ou maison longue, incluent souvent des poutres de sol et de plafonds rainurées pour permettre de retirer les planches de cèdre de valeur et les utiliser ailleurs. Des pratiques de construction démontrant un respect pour les composantes du bâtiment sont un exemple de la connaissance écologique traditionnelle des Autochtones : une sagesse reconnue nationalement et internationalement comme essentielle à la santé et au bien-être des sociétés et des écosystèmes et au maintien de la diversité culturelle.

Dans le cas des habitations traditionnelles de la côte nord-ouest, la santé et le bien-être étaient maintenus tant pour les gens que pour les écosystèmes et les Aînés bénéficiaient de ces stratégies saines. Traditionnellement, le *wilp* était construit au niveau du sol ou près de celui-ci, à proximité d'un feu de camp pour que les Aînés restent au chaud tout en enseignant et en travaillant. Il était donc relativement facile pour les Aînés d'entrer dans l'habitation traditionnelle. Grâce au feu de camp au niveau du sol, la nourriture et les autres biens pouvaient être amenés dans l'aire de cuisine des maisons traditionnelles par les gens de tous âges. L'abondance d'une variété de denrées a été identifiée comme un des facteurs clés de la santé et de la longévité des Autochtones de la côte nord-ouest. La structure sociale, qui était renforcée par le concept de la maison traditionnelle accueillant la famille étendue et assurant aux Aînés de vivre confortablement à un âge avancé, était également un facteur important pour la santé de ceux-ci.

Les concepts de la maison et de la famille étendue sont donc intimement liés et portent tous deux le même nom dans le langage Nisga'a : *wilp*. Des preuves archéologiques démontrent que des gens vivaient très vieux au sein de la structure sociale et plusieurs explorateurs d'autrefois ont documenté la façon dont on prenait soin des Aînés à l'intérieur même de la structure des familles de la côte nord-ouest. Tout en fournissant aux Aînés une place pour vivre et enseigner, l'architecture de la côte nord-ouest favorisait les activités alimentaires saisonnières. Des structures comme les séchoirs verticaux pour les eulachons et les fumoirs favorisaient une diète traditionnelle caractérisée par l'excellence de sa variété et de ses valeurs nutritives. Puisque la diversité des diètes des gens appartenant à des groupes culturels où la vie dépend de la chasse, de la pêche et de la cueillette a toujours été reconnue comme ayant une influence positive sur leur santé, le travail architectural qui renforce cette diète traditionnelle obtient un certain mérite pour la santé des peuples amérindiens de la côte nord-ouest.

En contraste, les concepts architecturaux qui furent imposés aux Premières nations de la Colombie-Britannique au 20e siècle ont souvent eu un impact négatif sur la santé. La plupart des Aînés d'aujourd'hui, de même que plusieurs adultes un peu plus jeunes, ont vécu leur enfance dans des internats bondés qui ont contribué au déclenchement d'épidémies. Les habitations des communautés éloignées étaient construites en consultant peu ou pas les résidents autochtones quant au design. Pour les Aînés, l'accès à ces maisons était difficile parce qu'elles étaient construites sur deux étages et que la cuisine et les pièces d'habitation se trouvaient à l'étage. L'accès aux fumoirs et aux autres aires de transformation des aliments était limité par le positionnement inadéquat de la cuisine et par la conception occidentale des cuisines. La qualité de la construction était souvent mal surveillée, laissant plusieurs maisons avec des problèmes nuisibles à la santé comme des moisissures et de la rouille. Pendant ce temps, des changements dans la relation des peuples autochtones aux endroits ont eu un impact direct sur leur santé. Des taux de décès élevés chez les Autochtones, en comparaison aux Britanno-Colombiens non autochtones, correspondent directement avec des changements spatiaux imposés qui ont transformé les paysages, les habitations et les lieux d'éducation[1].

[1] Voir *Colonizing Bodies (1998)*, Dr. Mary-Ellen Kelm.

2. Géographie de l'habitation et de la santé dans les régions éloignées du nord de la Colombie-Britannique

Les pièces d'habitation situées surtout au deuxième étage, comme on les retrouvait dans la majeure partie de la vallée de la Nass et dans d'autres habitations des Premières nations en régions éloignées, sont dangereuses et malcommodes pour les Aînés. Il est donc important pour les gens à mobilité réduite ou dont la santé est diminuée, de savoir où ils pourront trouver des habitations avec assistance ou soins continus et des programmes pour les personnes âgées. Cette recherche a démontré que même si deux communautés éloignées de Haida Gwaii ont construit des habitations pour les Aînés avec des programmes pour les personnes âgées à proximité, la plupart des possibilités de résidences assistées pour les personnes âgées se trouvent dans des communautés urbaines éloignées. La géographie des possibilités de résidences pour les personnes âgées a servi de point de référence à partir duquel les Aînés interrogés dans cette recherche ont pu recommander des changements.

À cause de la rareté de résidences adéquates pour des personnes âgées offrant des soins pour ceux et celles qui sont blessés ou malades, beaucoup s'inquiètent à l'idée que s'ils avaient besoin de soins intensifs durant une période prolongée, ils pourraient éprouver des difficultés à rentrer à la maison et à reprendre une vie normale avec le même niveau d'indépendance. Les participants à la recherche ont aussi remarqué que plusieurs Aînés souhaitent et ont besoin de rester actifs, mais les membres de la famille s'inquiètent de leur santé — surtout parce que beaucoup d'Aînés ont à monter et descendre des escaliers pour accomplir les tâches traditionnelles de transformation des aliments.

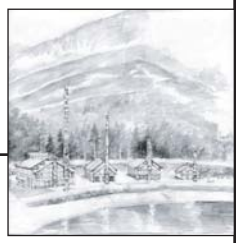
3. Recommandations des ateliers et exemples provenant d'autres communautés éloignées

Lorsque les pratiques et les principes architecturaux qui facilitent le bien-être des Aînés ont été analysés dans l'histoire, les participants à la recherche ont confirmé que plusieurs sont encore tout à fait valables aujourd'hui. Par exemple, presque tous les participants ont recommandé la construction d'un village culturel qui satisferait les besoins des jeunes tout en permettant aux Aînés de rester actifs dans leur communauté. Le village culturel comprendrait des bâtiments pour produire des aliments de façon traditionnelle de même que des logements et des lieux d'éducation pour des gens de tous âges. La nation Nisga'a envisage un village culturel qui est le centre de l'institution d'enseignement postsecondaire Wilp Wilxo'oskwhl Nisga'a. La conception des bâtiments est fondée sur la longue maison traditionnelle et d'autres structures pour la gestion des ressources et l'enseignement des cérémonies. Les installations pour les Aînés sont intégrées à l'éducation et aux services sociaux, culturels et de santé. Dépendamment des processus de conception, de construction et de financement, un concept de village culturel pourrait créer des occasions d'emploi significatives pour les jeunes tout en leur apprenant l'importance des Aînés dans la communauté. Toutes les installations — les logements pour les personnes âgées, les lieux d'éducation et les campings sauvages — pourraient être construites par la population locale, avec de jeunes apprentis constituant un élément clé de la main-d'œuvre. Par le biais d'un système d'apprentis, la construction de bâtiments elle-même suivra la méthode historique de Nisga'a par laquelle les générations veillent les unes sur les autres et où l'on apprend par la pratique.

Les architectes peuvent faciliter l'acquisition de connaissances en construction au sein des villages autochtones éloignés en dessinant les plans des bâtiments si clairement que des commerçants inexpérimentés peuvent en comprendre la signification. Des détails plus simples, une terminologie moins complexe et l'absence d'abréviations obscures constituent les éléments essentiels du dessin de bâtiments qui permettront à de jeunes citoyens autochtones d'être formés en travaillant avec des bâtisseurs expérimentés.

Les systèmes de construction traditionnels et les organisations sociales nécessitent habituellement des adaptations pour fonctionner dans le monde moderne, ont remarqué les participants à la recherche. Les tableaux suivants présentent les concepts historiques liés à la santé et les adaptations de ces concepts au futur. Les idées contenues dans ces tableaux ont été tirées des commentaires des participants durant les ateliers. Plusieurs idées ont également été testées dans des communautés d'autres régions du Canada.

Les défis des Aînés et les solutions architecturales : la santé de la population

Défis	Solution culturelle / historique de Nisga'a	Solution(s) potentielle(s) actuelle(s)	Communauté de Première nation ayant relevé le défi
Architecture physique	La maison est l'expression de la famille étendue.	Le village est la longue maison malgré le manque de travailleurs de la santé formés et de résidences adéquates pour les Aînés.	Le projet de démonstration de communauté durable de la Première nation de Seabird Island a été conçu de façon à offrir des logements durables pour la famille étendue. 
Les amis et les proches âgés qui sont envoyés dans des résidences éloignées semblent perdre leurs repères culturels et leurs facultés mentales.	Les Aînés vivaient avec la famille étendue sur leurs propres terres, habituellement près d'une rivière ou d'un ruisseau où l'on trouvait de nombreux écosystèmes : les Aînés servaient de guides dans la gestion des ressources.	Des communautés intégrées qui, aux niveaux culturel, éducatif, social et de la santé, répondent aux besoins des Aînés. De nombreux Aînés ont recommandé la construction d'un village traditionnel qui leur offrirait le soutien dont ils ont besoin tout en leur permettant de maintenir leurs liens avec leur terre et leur communauté.	Le campus de Wilp Wilx̲o'oskwhl Nisga'a est un concept de village global qui fait appel aux Aînés pour l'enseignement tout en offrant des services sociaux, culturels et de santé à toutes les générations. Les Mohawk de la baie de Quinte a construit des logements comportant un seul niveau pour les personnes âgées.
Les Aînés craignent que la diminution de l'importance de la famille étendue mène à la perte de l'indépendance et de la force culturelles.	Les longues maisons et, ensuite, les grandes maisons victoriennes permettaient aux générations de veiller les unes sur les autres.	Le village est la longue maison. Les logements sont à proximité du centre de la vie du village et des lieux où les Aînés peuvent enseigner aux jeunes.	Le projet de démonstration de communauté durable de la Première nation de Seabird Island a été conçu pour inclure des suites pour les membres de la famille étendue et un jardin du bien-être où l'utilisation des plantes traditionnelles peut être enseignée de génération en génération.
Les gens ne disposent pas de lieux de cérémonie pour enseigner aux jeunes qui, selon les Aînés, ont des enfants beaucoup trop tôt.	Autrefois, les Aînés enseignaient aux enfants les valeurs de la communauté dans des endroits prévus à cet effet.	Concevoir un « village culturel » intégré qui inclut les Aînés dans l'éducation et des bâtiments qui facilitent l'enseignement des valeurs et des pratiques traditionnelles.	Wilp Wilx̲o'oskwhl Nisga'a fait appel aux Aînés pour la conception du campus et pour l'enseignement. 
Les jeunes se perdent dans l'alcool et la drogue.	Les longues maisons étaient construites pour accueillir de grandes familles où l'on prenait soin les uns des autres.	Construire des camps communautaires où les jeunes pourront apprendre la chasse et la trappe, comme celui de Bella Bella. Aider les jeunes en les faisant intervenir dans l'habitation.	La Première nation de Seabird Island a fait appel à de jeunes apprentis dans le projet de démonstration de la communauté.
Les Aînés s'inquiètent des Autochtones qui vivent en milieu urbain et souhaitent retourner sur leurs terres natales, mais qui ne peuvent trouver de logements à cause de leurs coûts trop élevés.	Les familles uniraient leurs efforts pour construire une longue maison. Les villages du début du 20e siècle avaient des scieries et les gens travaillaient de façon bénévole à la réalisation de travaux publics.	Adopter l'approche « habitat pour l'humanité » : engager des jeunes comme apprentis. Création communautaire de matériel avec, par exemple, une scierie mobile.	Les résidences pour personnes âgées d'Oujé-Bougoumou adaptent les infrastructures à l'environnement naturel afin de réduire les coûts de construction et d'utilisation. 
Les connaissances des Aînés engendrent des communautés saines. La santé des Aînés s'améliore lorsque ces derniers ont un certain contrôle sur leur environnement.	Les Aînés exerçaient une certaine influence sur la planification et les décisions liées à la conception.	Faire participer les Aînés à la conception. 	Le projet d'expansion de l'activité des Aînés de Vancouver ouest en 1994, de l'architecte Nancy Mackin, constitue un exemple non-autochtone. Plus de 50 rencontres ont été tenues avec des personnes âgées dont les idées ont été résumées dans des douzaines de modèles et de croquis. Les Mohawks de la Première nation de la baie de Quinte (Tyendinaga) ont fait appel aux Aînés pour la conception de pavillons-jardins dans leur communauté.

Les défis des Aînés et les solutions architecturales : maintenir la santé des personnes âgées

Défis des Aînés	Solution culturelle / historique de Nisga'a	Solution(s) potentielle(s) actuelle(s)	Communauté de Première nation ayant relevé le défi
Les escaliers menant aux maisons causent des blessures.	Plusieurs longues maisons étaient construites avec des entrées au rez-de-chaussée.	Construire des maisons ayant la caractéristique Bâti-Flex[MC] de l'entrée au même niveau que la rue.	Les logements pour personnes âgées de la Première nation mohawk de la baie de Quinte ne comportent qu'un seul niveau.
Difficultés pour le bain	Les bains traditionnels dans les sources thermales : les Aînés pouvaient se rendre aux bassins aménagés au niveau du sol.	Bâti-Flex[MC] comporte un bloc-douche avec une légère inclinaison pour l'écoulement de l'eau mais qui est au même niveau que le plancher.	Les logements pour personnes âgées de la Première nation mohawk de la baie de Quinte ont des cabines de douche de plain-pied avec avaloir, et des portes larges pour les fauteuils roulants.
Problèmes respiratoires et d'asthme	Grâce au savoir traditionnel, transmis oralement, les bâtisseurs connaissaient les matériaux de construction sains.	Bâti-Flex[MC] recommande l'utilisation de produits et de peintures non toxiques dans les bâtiments et déconseille l'utilisation de moquette.	Le projet de démonstration de communauté durable de la Première nation de Seabird Island utilise des produits non toxiques et a recours au chauffage par le sol plutôt que de recourir à de la moquette.
Il faut monter ou descendre des escaliers pour aller du fumoir à la cuisine ou de la cuisine au fumoir.	Les cuisines se trouvaient au rez-de-chaussée.	Bâti-Flex[MC] recommande des cuisines sans escalier, au rez-de-chaussée, avec une sortie vers la cour.	Les habitations apaches, conçues avec l'aide de l'anthropologue George Esber, comportent des cuisines au rez-de-chaussée pour convenir aux méthodes culinaires traditionnelles.
Utiliser une barre d'appui pour entrer dans la maison ou dans la salle de bain.	Les maisons étaient au niveau du sol. Bains traditionnels dans les sources thermales	Bâti-Flex[MC] recommande que les maisons soient au niveau du sol et que des barres d'appui soient installées durant la construction initiale.	Les résidences pour personnes âgées de Rae-Edzo comportent des barres d'appui à plusieurs étages et dans des endroits stratégiques où les Aînés en ont besoin.
L'importance des aliments traditionnels comme le poisson fumé	Les fumoirs étaient conçus de façon à ce qu'environ quatre familles puissent se les partager.	Construire des fumoirs communautaires ou construire un fumoir derrière les résidences pour personnes âgées afin que les Aînés puissent enseigner aux jeunes comment fumer le poisson.	 Les résidences pour personnes âgées de Laxgalts'ap, conçues par l'architecte Nancy Mackin, comportent un fumoir derrière la maison.
Les Aînés restent forts en se remémorant leur contact avec la terre.	Les longues maisons étaient construites près de la source d'une grande partie de leur nourriture : la rivière.	Choisir l'emplacement des habitations de manière à refléter la relation des gens avec la terre.	Lax Ksi Luux et Gitwinksihlkw sont des sites de villages traditionnels, sur le bord de rivières, proposés pour le logement des Aînés de Nisga'a.
Les Aînés sont seuls et parfois en danger lorsqu'ils vivent en solitaires ou loin de leur famille étendue.	Les longues maisons permettaient aux membres de la famille étendue de rester en contact étroit.	Concevoir des maisons en rangée comportant un ou deux logements disponibles pour les soignants. Cette solution permettrait d'offrir des emplois et des logements dont les jeunes ont grandement besoin. Construire des auberges où les Aînés peuvent se rassembler.	Les résidences pour personnes âgées de Rae-Edzo et de Deline sont toutes deux situées à l'intérieur des villages et comportent des logements pour les dispensateurs de soins. À Metlakatla, en Alaska, il y a une auberge pour les Aînés qui comporte un café où des activités sont organisées.
Les Aînés sont plus en santé lorsqu'ils se nourrissent d'aliments traditionnels.	La préparation des aliments était enseignée de génération en génération et la diète était variée et saine.	Construire une cuisine communautaire dans les écoles et y faire manger les Aînés. Les étudiants pourraient cuisiner (et même pêcher et jardiner!) dans le cadre d'activités créditées pour leur formation secondaire.	Le travail d'Alice Waters dans les écoles américaines, où les enfants aident à cultiver, récolter et cuisiner les aliments frais, constitue un exemple non autochtone.

Les défis des Aînés et les solutions architecturales : maintenir des écosystèmes sains (les gens et la terre ne font qu'un)			
Défis	**Solution culturelle / historique de Nisga'a**	**Solution(s) potentielle(s) actuelle(s)**	**Communauté de Première nation ayant relevé le défi**
Respect traditionnel de l'eau	La priorité dans le choix d'un emplacement pour les maisons était l'accès à l'eau.	Utiliser des pommes de douche à faible débit.	Le projet de démonstration de communauté durable de la Première nation de Seabird Island utilise des accessoires de plomberie qui économisent l'eau.
Respect traditionnel de la terre	Les longues maisons étaient construites à proximité les unes des autres.	Concevoir des habitations à plus haute densité et utiliser la terre de façon efficace pour exprimer les liens entre les gens et la terre.	Les habitations de Laxgalts'ap ont été créées avec l'aide de la communauté pour refléter ses valeurs culturelles. Le Vancouver Seniors' Activity Centre, dont les plans furent dessinés en collaboration avec les personnes âgées, constitue un exemple non autochtone.
Respect traditionnel des ressources provenant de la terre	Toutes les parties des arbres étaient utilisées. Les arbres étaient abattus de façon à ce qu'ils demeurent abondants pour les générations à venir. L'abattage sélectif et la valorisation de la diversité des espèces ont assuré une abondance dans le futur.	Utiliser des produits recyclés. Utiliser des matériaux de construction de façon à ce qu'ils soient durables pour une longue période.	Les maisons de la Première nation de Seabird Island ont un cycle de vie projeté de 100 ans.

CONCLUSIONS

L'architecture, la santé et la conception durable sont interdépendants. La vision du monde partagée par de nombreux peuples autochtones à l'échelle planétaire, voulant que la santé des gens et celle des écosystèmes soient interreliées, passe par le respect de l'eau, des arbres et des ressources. Il importe de reconnaître les relations réciproques entre les gens et les autres habitants de l'écosystème au moment de concevoir des éléments architecturaux bénéfiques pour la santé puisque d'innombrables générations d'expérimentation et de pratique ont démontré que les choix de conception favorisant la santé des composantes vivantes et non vivantes de l'environnement amélioreront également la santé des gens et celle de leur communauté. L'Institut royal d'architecture du Canada (IRAC) et l'American Institute of Architects (AIA) conseillent maintenant vivement aux architectes de réfléchir aux liens entre l'architecture, la santé et la conception durable dans les projets de toutes envergures.

Les processus menés par les communautés mettent en évidence des besoins culturels particuliers dont il faut tenir compte si une conception doit s'insérer dans une organisation sociale et dans l'utilisation sociale de l'espace.

Le logement des Aînés a le potentiel de catalyser les forces économiques et culturelles au sein de la communauté, non seulement par la participation au processus de décision de la conception, mais aussi par le biais de projets de construction faisant appel à des apprentis, à la production locale de matériaux et à d'autres pratiques nécessitant la participation de la communauté.

La durabilité écologique, culturelle et économique fournit les éléments clés de l'architecture favorisant la santé des Aînés. Puisque l'exil des Aînés dans les centres urbains pour obtenir des soins et des logements est un désastre culturel qui peut amenuiser les liens entre les jeunes et les Aînés, les résidences pour personnes âgées au sein des communautés éloignées sont manifestement requises pour assurer un bien-être collectif et individuel durable. De plus, si ces habitations contribuent au bien-être des communautés, elles doivent aussi être durables : elles doivent durer longtemps et s'intégrer efficacement dans le contexte culturel, écologique et économique des communautés et de leurs terres natales.

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Architecture for Elder Health in Remote British Columbia: A Nisga'a-led Research

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Read by Dalia Gottlieb-Tanaka and Mineo Tanaka

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The true authors of this document are the Nisg̲a'a Elders who have contributed their knowledge and wisdom to this research. Linda Adams of Wilp Wil̲x̲o'oskwhl Nisg̲a'a has been tremendously resourceful and helpful. Workshop and meeting space were generously donated by Wilp Wil̲x̲o'oskwhl Nisg̲a'a. We would also like to thank the communities and architects who have contributed their knowledge and photographs to the research, including the Skidegate Band (Haida), Gino Pin of Pin/ Taylor architects, Mona Kelley from Home and Community Care in Prince George. We also appreciate the funding and support from CMHC and the encouragement and insights of our CMHC research coordinator Marcelle Gareau.

GLOSSARY

adaawak̲	Story, legend, or history
daẁihl	Years ago
g̲anee'e	Oolichan drying structure supported with three poles
Huwilp Haldaakws (plural) or Wilp Haldaakws	House(s) of Medicine
Sigidimnak̲	Matriarch, the highest ranking woman in a Wilp
Sim'oogit	Chief, one of the highest ranking men in a family
walbay'askw	Isolation hut for girls at puberty
wilba g̲an	Hunting lean-to
Wilp	House. The same word means extended maternal family
wilp-doos	Hunting shed
′wo'otkw	To be invited

CHAPTER 1: Introduction and Methodologies

1.1 Question and Context

What architectural solutions are needed to satisfy the health and housing needs of Elders living in remote regions of British Columbia and Canada? "Architecture for Elder Health in Remote British Columbia" documents solutions for Elder housing and health as recommended by Nisg̲a'a Elders from four villages in the Nass River Valley, in Northwestern British Columbia adjacent to the Alaska panhandle (Map 1). Research direction and outcomes are guided by Elders from the villages of Gingolx (400 people), Laxg̲alts'ap (460 people), Gitwinksihlkw (219 people), and New Aiyansh (690 people) (all population figures from 2001 census). While primary research is geographically limited to Northwestern British Columbia and culturally focused upon communities of the Nisg̲a'a Nation, examples from and applications to remote regions elsewhere in Canada are explored and verified through case study comparisons.

The Nisg̲a'a communities form an ideal lens through which to comprehend the dynamic context of Elder care within Aboriginal communities of Canada. First, the four selected communities are within Canada's Pacific Region, which according to Elliot and Foster's analyses of Health and Welfare Canada data has the most First Nations communities classified as "remote"[1]. Remote communities, which may be semi-isolated (with road access to hospital at a distance greater than ninety kilometers), isolated (no road access, but scheduled ferries and good telephone services), or remote isolated (minimal telephone or radio services and little scheduled access), are notable for having restricted access to hospital, extended care, and other facilities that are concentrated in urban regions. Secondly, Nisg̲a'a communities, like many communities in Canada, have recently benefited from improved access to telephone and transportation.[2] Although seasonal disruptions in electricity, telephone, and road access are still common, many Elders in remote communities can now reach physician and hospital services far more readily than a decade or two

ago. Thirdly, the Nisga'a context, which includes the first modern treaty enacted in British Columbia, foreshadows the changing political landscape. As Aboriginal self-government and land-use ownership proceed to final stages of negotiation in many parts of Canada, impending and enacted treaties redefine research parameters and definitions. As a result, Aboriginal Elders' housing, typically classified as either "on-reserve" (living on Crown-owned land set aside for Native peoples – without treaties in most of British Columbia) or "off-reserve", will need to recognize a third category: housing for Elders with land entitlements in their homelands.

In recognition of this dynamism, this research looks for solutions that are sustainable, defined here as those that are good for today while continuing to benefit future peoples and ecosystems. Sustainable solutions anticipate needs of the future as well as those that are evident today. As Elders –and all of us – grow older, how can we effectively look ahead to challenges that will emerge, thereby making this document useful and valid beyond the date of writing? The next section summarizes methodologies that have been selected because they address the dynamic context of peoples' lives and architectural needs.

1.2 Key Methodologies

Three methodologies are used to understand the changing context of Elder housing. To begin, the historic and geographic research context is outlined, so landscape, architectural, and planning decisions affecting Elders' lives can be based upon an understanding of past and present processes that influence community health. Then, we ask the Elders themselves what they expect to need in future years. During workshops and interviews, insights are offered into sustainable traditions and into the possibilities of adapting those traditions to future solutions that will contribute to community, environmental, and individual health. Finally, we test the practicality and extent of application of research participants' ideas by looking at selected Elders' projects built elsewhere. Built projects combined with participant insights suggest how findings relate to regions beyond the study area. These methods strive to bring housing and health solutions together with issues of place and identity that will continue to have meaning in the future.

Elder consultation is the foundation of this architectural research and design. "The real essence of good design is to consult with people you're building for – take their ideas and gel them into a building"[3] Sometimes called participatory research and design[4], the direct involvement of people in their own architectural and health promotion solutions necessitates detailed attention to ethical research protocols. To this end, "Sustainable Elder Care in British Columbia" consulted with the Nisga'a House of Wisdom, Wilp Wilxo'oskwhl Nisga'a (WWN) to design a methodology that also meshes with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (2003). All WWN protocols have been adhered to in this document. Workshop materials and workshop transcriptions are property of the WWN, and the WWN is recognized as owner of research results. Written approval was sought and obtained from the WWN before research began. A member of the Nisga'a Nation, Professor Deanna Nyce, has been a key member of the research team. Deanna's involvement began with involvement in the preliminary design of the project. She has also helped this research to represent the many viewpoints and knowledge of subgroups within Nisga'a society: people from all four villages, from all four crest affiliations (Eagle, Frog/ Raven, Wolf, and Killer Whale), and from both genders have been included in the research (table 1). WWN Education Coordinator and Executive Assistant Linda Adams advised us of the best times and places to hold workshops and interviews, contacted Elders, organized lunch, and summarized Elder reimbursements including per diem and transportation costs. Linda also contacted workshop participants, all of whom are volunteer delegates recognized as leaders by their communities.

On February 14, 2005, the Elders' workshop was held to investigate interrelationships between health and architectural/ landscape facilities based on Nisga'a culture, traditions, and knowledge. Before discussions began, the researchers contracted with local caterers to serve a buffet lunch for Elders, Wilp Wilxo'oskwhl Nisga'a staff, and the research team. Principal investigator Nancy Mackin then introduced Elders to the project, invited comments on project parameters, and asked Elders to suggest how the project may better meet their needs. Consent forms were distributed and amended to meet any privacy,

Table 1 Elders participating in research lived in four Nass Valley villages; each is a member of one of four crests: Eagle (symbolized E), Killerwhale (KW), Wolf (W), or Frog/ Raven (F/R).

Gingolx	**Laxgalts'ap**	**Gitwinksihlkw**	**New Aiyansh**
Hubert Stephens Sim'oogit Wii Laxha KW	Jacob McKay E Sim'oogit Bayt Neekhl	Emma Nyce E Sigidimnak Hlguwil Ksi hlgum Maaskgum Hlbin	Nita Morven F/R Sigidimnak Ksim Sook'
Grace Nelson E Sigidimnak Axdii Kiiskw	Horace Stevens F/R Sim'oogit Nii'ysts'ool	Lawrence Adams KW Sim'oogit Axdiion Akshl Hlyoon	Herbert Morven W Simoogit Keexkw
Chester Moore F/R Sim'oogit Hlayim Wil	Wilma Moore K/W	Jacob Nyce W Sim'oogit Baxkap	Alver Tait E Sim'oogit Gadee'lip
George Nelson E	Audrey McKay K/W	Alice Azak E	Doris Tait F/R

cultural property, or other concerns. Elders were advised that they would have access to the preliminary written report and would be asked to comment upon the findings or clarify the degree of controversy about any ideas. Then, background geographic, historic, and architectural information was presented in a thirty-minute slide show. Included were historic paintings and photographs, drawings and photos of successful Elders' projects elsewhere, and maps of available facilities. Following the slide show, Elders were given the opportunity to discuss issues about their health and housing. Video-tapes were made by research assistant Robert Mackin-Lang as each Elder spoke in turn for about fifteen to thirty minutes. Elders themselves chose the specific course of the discussion, in response to general questions about their health care and housing requirements. The discussions often compared past and present solutions: for example, sustainable architectural solutions found within their traditional wisdom were contrasted with more recent experiences.

Working papers, drawings, maps, histories, and other workshop materials were then put on display in each Village Government Office and at the WWN. This is in keeping with the Tri-council recommendation: "Aboriginal peoples may wish to react to research findings. It is inappropriate for researchers to dismiss matters of disagreement with the group without giving such matters due

consideration. If disagreement persists, researchers should afford the group an opportunity to make its views known, or they should accurately report any disagreement about the interpretation of the data in their reports or publications"[5]. The feedback process is also responsive to the WWN protocol that "All materials and results obtained from the researcher must be disclosed to the WWN and to the relevant Nisga'a institution before any materials are utilized in any way…the WWN reserves the right to review and recommend changes to format and comment on the results of research"[6].

Reaction to research findings began March 31, 2005, with Principal Researcher Nancy Mackin convening with research participants in the "Lower Nass" (Gingolx and Laxgalts'ap) and the "Upper Nass" (Gitwinksihlkw and New Aiyansh). Additional comments or concerns about preliminary research results were subsequently obtained by meeting with individual Elders and community leaders and, when necessary, contacting people by telephone. To complete the feedback process, Mackin presented the research to Nisga'a leaders and housing/ lands organizations later in 2005.

Elders' difficulties with the built environment and recommendations for architectural improvements to housing that assist health and healing were distilled from the Workshops and subsequent meetings. These are summarized in Chapter III, along with solutions found in history, present-day solutions from research or practice, applications successfully used among Aboriginal communities, and range of applicability as denoted by research participants or through research. Conclusions propose a direction for sustainable applications of research results.

1.3 Links between Health and Architecture

> "Recently there has been a reassertion of the importance of place in health not just as a container of health, or as an attribute contributing to health, but as part of the explanation itself"[7]

This section seeks explanations as to how architecture influences the health of Elders living in remote regions of Canada, now and in the past. The interrelationships of architecture and Elder health are studied

at a range of scales – from community planning to building to room design to details within rooms. The influence of place on people's health within the Pacific Northwest Research context is also looked at through different times in history, from earliest memories, to times after Europeans arrived, through to the present.

In looking at place as a factor in Elder well-being, the architectural profession – those who design places – becomes a participant in health promotion solutions. For architects, this may seem like an unusual professional demand: yet considerable health promotion research attests that health is influenced by where and how people live[8]. This is particularly notable in research undertaken with long-resident peoples. "Good health for the Aboriginal people relies on an interconnected system of land and spirit, body and mind … a living relationship of culture (land-language-law) and health (mind-body-place), in which any disturbance of one has a negative impact on the other"[9].

Health promotion also asserts that a range of architectural projects address the "place" component of health (mind-body-place), with housing particularly recognized as an architectural link to health. For instance, evidence-based medical research instigated and developed by an Aboriginal Medical Services Council in conjunction with physicians qualified in general practice, public health, and rural and remote medicine concludes: "although there are clearly important roles for health professionals in the improvement of Aboriginal health, most improvement will come from better *education, nutrition, housing, and employment opportunities*"[10] [italics added]. The four listed health-improving essentials may all be directly or indirectly influenced by architecture. Architects design housing projects and renovation options, influence education through thoughtfully designed schools and colleges, facilitate nutrition-conscious living through culturally workable kitchens and food gardens, and even add to employment opportunities by producing drawings and specifications that encourage local participation in building construction. In at least four ways, architecture can add healthful qualities to the lives of Elders.

A fifth health-giving attribute of architecture is that it can enable Elders to make decisions about one's own surroundings. Participation in decision making about one's own environment is a health-giving action: "…Health is created by caring for oneself and others, *by being able to make decisions and have control over one's life circumstances* and by ensuring that the society one lives in creates conditions that allow the attainment of health by all its members"[11] [italics added].

Five linkages between architecture and health – education, community-led design, nutrition, housing, and employment opportunities – have different meaning depending on the people for whom one is designing[12]. In particular, Aboriginal peoples each have their own distinctive way of building in response to the land and recognizing the importance of Elders[13]. The long history of a people living in their homeland leads to a unique historical, economic, cultural, and architectural context. The present research context, the Northwest Coast of British Columbia, provides a way to understand correlations between architecture and Elder health as they are documented through history.

CHAPTER II: Research context

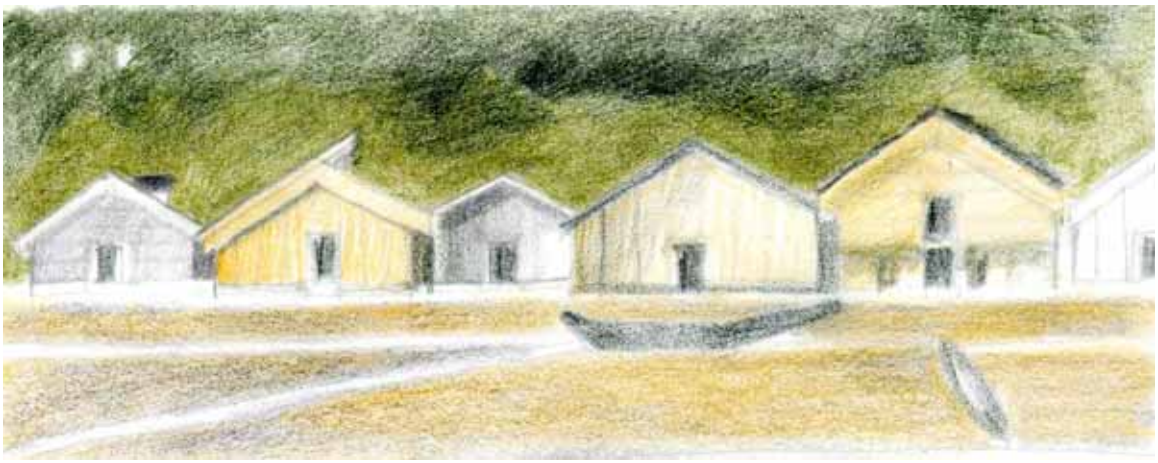
2.1 Nass Valley/ Northwest Coast architectural traditions and health

The Northwest Coast oral record dates back to before the retreat of the Great Ice Sheet: back to time immemorial: time before memory, a concept recognized in Canadian law as an attribute of Aboriginal title[14]. These histories from long ago establish connections between the health of people and the health of the built and natural environment. Throughout Nisg̲a'a *adaawak̲*, collected histories which go back about thirteen millennia[15], a person's actions in the natural world have a direct effect on peoples' well-being. Several oral histories tell of how a momentary lack of respect for the natural word had devastating consequence for human well-being. These stories emphasize that linkages between people's health and the environment are reciprocal. "Countless generations of living with the coastal forest ecosystem had taught the people that the environment was not passive. The wisdom of what had been learned about how to live with the Naas-home [sic] was passed down from generation to generation by the Ayuuk̲hl Nisg̲a'a (the laws of the Nisg̲a'a)"[16]. The expression Nass-home is telling, in that the Nisg̲a'a and other Northwest Coastal peoples saw the house as a box that held spirits of the extended family group, a smaller version of the box of the world that contained all the souls of the universe[17].

Nisg̲a'a permanent dwellings were usually constructed along a river that provided transportation and fresh water. Used throughout the winter and also periodically in other seasons, Nisg̲a'a dwellings were of pole-and-beam construction and were often about forty feet wide by fifty or sixty feet long[18] These houses, archeologically in evidence on the Northwest Coast for at least five thousand years[19], were extended family dwellings that also served as places for teaching, or "Houses of Learning"[20]. To enhance learning and keep memories alive across generations, carved and painted details were added to interior and exterior walls, columns, and furnishings. Black, red, and sometimes blue-green paints described important events, stored knowledge, and evoked family histories[21].

Like the architecture of numerous societies based on hunting, fishing, and gathering, Northwest Coastal longhouses were designed to house Elders and younger generations together (fig. 1a). Cooking was undertaken in the central fireplace of the dwelling, which was constructed at ground level. As Elder Bert McKay describes, "The Nisga'a longhouse…had only one communal fire to do all their cooking, a huge centre. It was in a depression lined with stones. This not only gives warmth, but was also where they cooked their food. This is where the women, like the mothers and grandmothers and the aunties, all worked." [22] Because of the central fire-pit, most houses were constructed at or near grade. There were variations in siting: some house entrances were raised above the ground and stepped down to the fire-pit, while in colder areas the entire dwelling would often be dug into the earth to improve insulation. "One of the forms of building that is known here is the building in which the ground is dug out. They dug into the ground because of the extreme weather conditions here…When they build houses 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, for insulation purposes"[23]. Even when dug into the ground, most houses included an entrance near grade so that food could easily be brought into the main floor cooking area from smokehouses, berry-drying racks, hunting camps, or below-grade storehouses. Elders would be able to move in and out of the house to bring in foods to the plank-floored area surrounding the central hearth, where they could teach and work while the fire kept them warm[24].

Longhouses were constructed from a range of materials primarily derived from plant sources. These materials were selectively harvested depending on the productivity of the habitats of the region and of the particular land owned by a given family. As Elder Hubert McMillan (Ksdiyaawak, Wolf) tells us, "…and they [the old people] were very selective with the types of trees they cut down for whatever purpose. Cedar was cut for building longhouses, because of [its] light weight and length, and making shakes. Never at any time did you see trees just laying about rotting"[25]. Productivity was influenced by management techniques, but "the forests and the rivers set the rules"[26]. For the Nisga'a, rules of how to



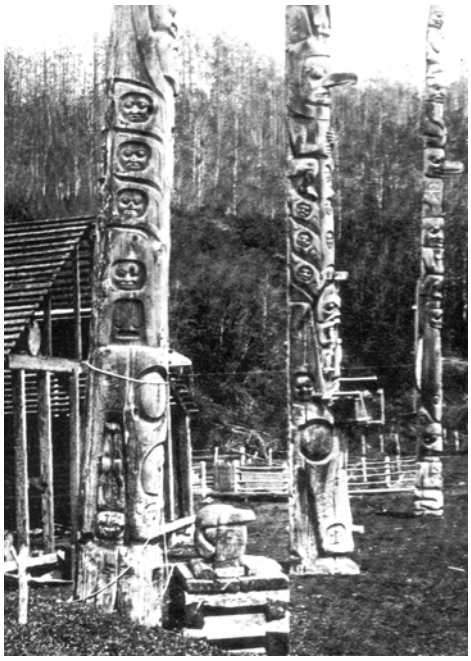


Figure 1a (above): Sketch by N. Mackin of the Nisga'a/ village of Lochanlo’o near Laxgalts’ap (sketch adapted from a painting by Pym Nevins c.1850). There was also a church in this village. Houses of Lochanlo'o were built using hand-split plank construction that had been employed in the region for thousands of years. Many houses were one storey with entrances near street level and would have suited people of all ranges of mobility. This is a form of housing that can be used today (see Figure 11, for example of "Granny flats" built by the Mohawks of the Bay of Quinte).

Figure 1b (Left): Poles and houses in the Nass Valley village of Gitlaxt'aamiks (across the river from New Aiyansh) before the flood of 1917. Stories belonging to families were recorded on the carved poles, and were vital parts of transferring wisdom and knowledge across generations. Photograph from NTC 1998: 27; also courtesy of Canadian Museum of Civilization 70687. The photo was loaned to Marius Barbeau by C.F. and W.A. Newcombe.

Figure 2 (left). Some structures were designed as seasonal shelters, such as this lean-to built from logs and tied planks. The drawing was reconstructed from oral histories, such as the two recorded in 2003 below:

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…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*).*

As indicated in the interviews, lean-to's were constructed with knowledge of the weather, and according to Elders' instructions. Drawing by Nancy Mackin

Figure 3 (right). Horace Steven's ganee'e, Laxgalts'ap is structural evidence of sustainable resource management practices dating back to time immemorial. Like the lean-to, ganee'e were buit with awareness of the powers of sun and wind, and according to lessons offered by Elders. Photograph by Robert Mackin-Lang

construct dwellings were established over many generations of "learning by doing"[27], and were based on the principle of respect for the environment. Construction detailing also demonstrated respect for materials. For example, the vertical cedar planks that clad Nisg̲a'a longhouses were set into grooved grade beams and overhead beams; in this way the valued planks could be taken to seasonal dwellings.

Northwest Coastal peoples also built a diversity of structures to accommodate their seasonal food gathering and preparation activities[28]. Large smokehouses that doubled as summer cabins were part of the seasonal architectural repertoire. Smaller smokehouses were built outside of many houses, often shared by about four families. Wind-resistant hunting lean-tos (*wilba g̲an*[29]) (fig. 2) and sheds (*wilp-doos*) were built high in mountain regions, using large poles and often with living trees as supports. Knowledge of sun and wind determined the size and placement of materials in the lean-tos[30]. Similarly, knowledge of ground temperatures and wind-drying capacity led to the construction of berry-drying racks and underground storage sheds, which facilitated year-round abundance of a variety of foods.

In all cases, Elders were involved in construction and use of the buildings. Over thousands of years, knowledge about construction materials and detailing was conveyed orally and practically, with the Elders teaching young people to build. The same technique of teaching the young continued even into the early twentieth century, as Nisg̲a'a Elder Horace Stevens explained in 2003:

> 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).

Elders also taught how to build *g̲anee*'e or oolichan drying racks, which were a three-poled structure "powered" by a combination of wind and sun (fig. 3). Triangular in plan and open-sided, the structure was

designed so that all the fish strung across between the poles would be accessible to drying winds. Elders' teachings included the practical and spiritual significance of structures for resource management:

> Traditionalists would have all the [oolichan] 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.[31]

Spirituality was also evident in structures built specifically for transferring knowledge across generations. *Wilba y̓askw* (isolation huts), built to teach young women all the skills she would need in adult life[32], embodied particular customs that expressed the interconnectedness between people and the natural world. Elders taught young men to use structures such as fish weirs (and later fishwheels) which were used to monitor and recall patterns of resource abundance over hundreds of generations – much longer than any Western scientific database[33]. The architecture of resource management structures, then, contributed towards maintaining the diversity and abundance within ecological systems. Architecture is one branch of applied science that contributes to a wider knowledge base of long-resident peoples: Traditional Ecological Knowledge and Wisdom (TEKW)[34]. This knowledge and the applied sciences that support it are increasingly recognized worldwide as one of the keys to future sustainability of resources[35].

What was the relationship between the Northwest Coastal architectural legacy and health? The peoples who constructed buildings according to Traditional Knowledge and Wisdom on the Pacific Northwest Coast tended to live long and healthy lives, according to limited archeological evidence[36]. For example, the Greenville excavation, undertaken in the Nass Valley in 1981 to 1983, shows that all people who had lived there some 1500 years ago seemed to have good nutrition, and a number of people lived to be more than sixty years of age[37].

The health/ architecture linkage becomes evident when one looks at the significance of architecture in food production and the importance of nutrition in health. In part because the architecture of the Northwest coast supported seasonal food-related activities while providing a comfortable place for Elders

to live and teach, the people maintained a traditional diet characterized by variety and nutritional excellence. The diverse diets of people whose livelihoods relied mainly on hunting, fishing, and gathering has been consistently found to positively influence peoples' health within those cultures. "Overall, in comparison to typical diets in industrialized agricultural countries, the traditional diets of foragers or simple horticulturalists are lower in fats (especially the saturated type), higher in fibre, higher in mineral content, and lower in sodium content. The traditional diet of British Columbia's coastal First Nations Peoples furnishes an excellent example of this"[38].

Architecture supported diet both directly and indirectly. Structures for resource production were a component of the traditional knowledge that led to the healthy diet of coastal peoples. The buildings also supported a social system that encouraged a healthy diet. Since Northwest Coast Elders are entrusted with transmitting knowledge of how to maintain a rich variety of foods year round, housing that is comfortable for Elders contributed to the overall health and longevity of all generations.

Table 2 outlines architectural forms and materials found in traditional knowledge of the Nisga'a Nation and then correlates them with benefits that contribute to health and well-being of Elders. Although traditional building methods can rarely be completely or affordably duplicated in the present, the table demonstrates principles that continue to be applicable, or adaptable, in current situations. Indeed, indigenous peoples' architecture worldwide often demonstrates diversified and successful ways of living healthfully while adjusting to social and ecological change[39].

2.2 Integrating other traditions: contact, residential schools, decolonization and self governance

For over a century after non-Indigenous peoples arrived on the Northwest coast in about 1770, tradition-based longhouses and resource management structures remained the predominant architectural forms constructed in the Northwest coastal regions. As had occurred throughout pre-contact times, innovations

Table 2 Traditional wisdom, architectural ideas, and health promotion in Northwest Coast Indigenous History

Component of traditional knowledge and wisdom (All from Turner, Ignace, and Ignace 2000.)	**Traditional Architectural response** (All from Mackin 2004 with Nisga'a Elders as advisors.)	**Sustainable materials use**	**Health promotion benefits of the architectural idea**	**Benefits to Elders**
Learning by doing.	Longhouses, smokehouses, hunting sheds, and ganee'e were places where Elders shared their knowledge with the young.	Red-cedar or spruce pole frame was constructed from selectively harvested trees (Turner 1998, Mackin 2004). Construction ties were made from cedar roots, but only a few roots were taken from each tree (Turner 1998); western red-cedar planks were split from standing trees (Stewart 1984).	Buildings were built to assist with food production and storage; nutrition was assured by a varied diet.	Most buildings were at grade or nearly so, facilitating Elders' access.
Knowledge of climate.	Longhouses were built with moveable ventilation systems, or "ala", that could be turned to adjust fresh air intake and exhaust; hunting sheds were built to shelter occupants from prevailing winds; ganee'e were designed to optimize wind blowing through the sun-drying oolichan.	As above.	Healthy interior air, protection from elements.	Elders could stay warm and comfortable near the fire and still have healthy air to breathe.
Knowledge of the landscape.	Buildings were constructed from materials found and manufactured nearby.	As described above, materials were harvested sustainably, so they would be available for future generations.	Community health benefited from local employment; Elder health benefited because Elders had control over their surroundings.	Because of their extensive knowledge, Elders were an integral part of architectural decision-making.

Component of traditional knowledge and wisdom (All from Turenr, Ignace, and Ignace 2000.)	**Traditional Architectural response** (All from Mackin 2004 with Nisga'a Elders as advisors.)	**Sustainable materials use**	**Health promotion benefits of the architectural idea**	**Benefits to Elders**
Oral histories communicate history and technology.	Longhouses have carvings and paintings that remind people of historic events and of knowledge. Buildings are designed for story-telling, with teaching places around the central fireplace.	Red and black Housefront paints were mixed from clays. Copper was mixed with fish eggs to make blue-green paint. Red alder was a source for some red paints (Mackin 2004, as learned from Nisga'a Elders, and Turner 1998).	Paints were from natural materials; poisonous substances such as lead were not used until after contact. Interior finishes were mostly unpainted woods, with paint used mainly for detailing, so there was no poisonous off-gassing from paints.	Paintings helped Elders to remember important stories and events (Emma Nyce).
Inventory and monitoring of resources.	Fish weirs were used in early times, and more recently fishwheels have been introduced to monitor abundance.	Withes and branches of *Amelanchier alnifolia* or red-cedar were pruned from growing trees or bushes (Turner 1998).	Maintain good nutrition throughout ecological cycles.	Elders stayed active through their involvement in resource management.
Reciprocal and Interactive relationships with the environment.	Solar and wind energy were used for fish drying and other food production; ventilation systems on longhouses were adjustable depending on wind direction.			Elders lived close to the places that helped them remember (Lawrence Adams).
Respect for water, land.	Houses were built in close proximity to one another and were sited with access to fresh water as a priority.	Building materials were harvested to as to keep ecosystems diverse; management included how not to pollute waterways or lands (Bert McKay 2003).	Low impact on the environment resulted in continued resource abundance.	Elders taught the young environmental responsibility, and in return received care.

continued to be braided together with architectural traditions. Health protecting cultural characteristics included seasonal changes in residence and long-lasting relationships with the physical and natural environment. Immediately after European contact, as before, lifestyles of Northwest Coastal peoples were simultaneously constant and dynamic, responding to climate and cultural change while maintaining wisdom that had been held for countless generations. Architectural traditions remained in place through the volcano and many other cataclysmic events, including volcanoes, ice ages, and floods. Longhouse construction ceased only after more than a century of contact with European peoples, after Northwest Coastal peoples suffered enormous population losses as a result of smallpox and other pandemics. Smallpox struck the Northwest Coast of British Columbia in the 1770's[40]. By the 1860's smallpox vaccine was widely administered in predominantly European areas of southern British Columbia – but Northwest Coastal peoples did not receive vaccines. In just over one-half century, from 1835 to 1890, Northwest Coastal First Peoples' populations declined as much as ninety percent as a result of smallpox and measles epidemics. Despite their much-reduced numbers, Northwest Coastal First Nations continued to resist the Government surveyors who arrived in the late nineteenth century to carve out tiny reservations made up of Crown land for the Aboriginal people to live on but not own. The remainder of Native peoples' resource areas and homelands were claimed for outright Crown or settler use. In most of British Columbia, there were no treaties to acknowledge the transfer of ownership.

Late nineteenth/ early twentieth century land ownership and health changes influenced Northwest Coast Aboriginal architecture in complex ways. By this time many lives had been lost to disease. Longhouses were dismantled or burned. To replace the longhouses, people built themselves new houses of essentially Western design, but often much larger to accommodate extended families and traditional gatherings (fig. 1b). Milled lumber for the new houses was easily obtained from small sawmills located within each of the main Nass Valley villages.

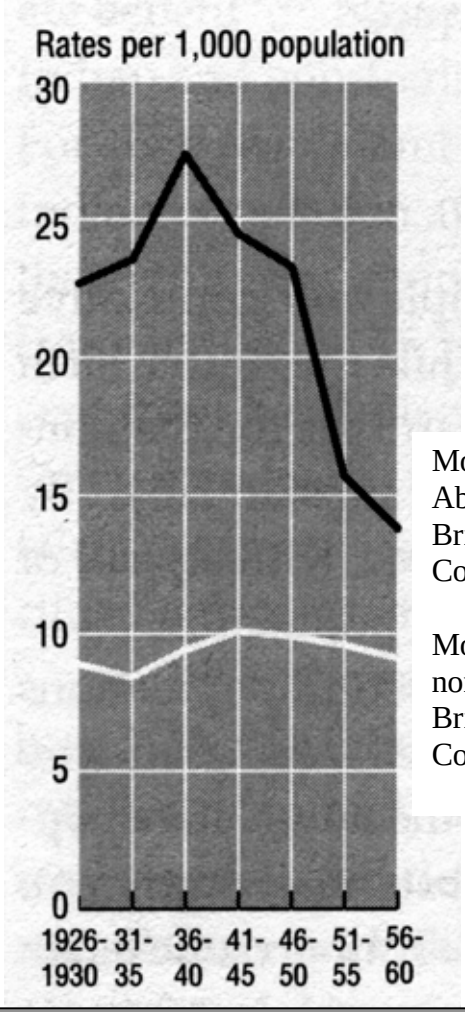
Changes were also underway in the architecture and location of schools for the children of the Northwest Coast. In 1880, the Department of Indian Affairs of the Canadian Government decided to transfer all Native school funding to residential schools, reasoning that residential schools would disassociate Native young people from their families and traditional ways, thereby causing full amalgamation with the non-Native community[41]. Residential school architecture also severed ties with the cultures of children in attendance. Based on European institutional principles, the schools bore little resemblance to the pole-and-beam "houses of learning", or traditional longhouses (fig. 5). Most present-day Elders and the Elders' children of the Northwest Coast attended residential schools.

The health implications of changes to Native British Columbians' home and school environments were profound (see table 3 for a summary of traditional architectural solutions designed from within Northwest Coast Aboriginal communities and the difficulties of imposed architectural solutions). In *Colonizing Bodies*, Mary-Ellen Kelm (1998) analyses place-health connections, verifying that changes in peoples' relationship to place had direct health impacts. High death rates of Aboriginal peoples compared with non-Native British Columbians (table 4) correlated directly with restricted movement of the reservations (people no longer could travel freely to summer fishing or berry grounds) and increasingly poor nutrition as a result of restricted access to resources. Further, crowded conditions in the schools[42] (fig. 6) contributed to outbreaks of infectious diseases. For example, mortality rates from tuberculosis, the main killer, were seven times higher among Native peoples in 1929 and fifteen times higher in 1942. Aboriginal children who contracted TB at school were sent back to their home villages, where the disease then took a further toll[43].

The residential school did provide an opportunity for future Native leaders to combine their ideas so that culturally alienating spatial impositions, specifically reservations and residential schools, would be replaced with healthier solutions[44]. Two notable examples, Nisga'a Elder and treaty negotiator Harry Nyce (who attended Edmonton residential school) and Dr. Frank Calder (who attended Coqualeetza

Table 3. Contrasts between traditional architectural solutions and more recent solutions

Traditional architectural idea:	**Sustainable, healthful design characteristics of the traditional idea**	**Contrasting Examples from more recent times**
		
Traditional idea: most architectural works have their main access at or near grade.	Elders were able to teach young people in nearly all works of architecture.	Most houses in the Nass Valley (and many other Aboriginal communities in British Columbia) have main living on the second level, about thirteen steps up from grade, and unfinished space near grade.
Houses were one or two story, but cooking areas were at grade.	Cooking and transporting foods was eased for people of all ages.	Most kitchens in present day housing are on the second floor, far from backyard smokehouses and ganee'e (drying racks).
Buildings are painted with stories; interiors are mostly natural wood planks.	Interior finishes are healthy for occupants. Cultural sustainability was assisted by the oral histories recalled through house paintings.	Mold and off-gassing are health problems in some houses. Cultural health: When present-day houses were built there were no crest symbols included in construction and many children did not know what crest they belonged to (Deanna Nyce pers. comm. 2003).
Adjustable roof vents called *ala* kept longhouse interiors well-ventilated.	Buildings adapted to wind direction and solar heat gain.	Standard house plans were imported into communities, often without consultation with those who understood site and climate.



Mortality rates, Aboriginal British Columbians

Mortality rates, non-Native British Columbians

Table 4

Table 4 (left) Comparison of Native and non-Native Death rates in British Columbia from 1926 to 1960, based on five year aggregates (table from Foster et al 1995: 48).
Kelm (1998) and Harris (2004) correlate the high mortality rates of Native peoples with factors relating to space and place including restricted movement due to the reservation system, cramped conditions at school, and increasingly poor nutrition as a result of restricted access to resources

After 1960, the death rate dropped dramatically, with Native and non-Native rates being roughly equal: also after 1960, church-run residential schools were closed, legal recognition for Aboriginal title began in Canada, and architectural works based on traditional longhouses were constructed in the Northwest Coast region.

Residential School), were instrumental in having the Nisga'a Treaty, a one-hundred-thirteen year long project, brought into law. Coordinated responses to the Canadian government assimilation policies were also prepared by residential school graduates.[45] "Indian Control of Indian Education" (1972)[46], prepared by the Native Indian Brotherhood – many of whom are now North Coast Elders – was instrumental in bringing schools back into their rural communities. In subsequent years, after attending University or working away from their home communities, many future Nisga'a cultural leaders and their families returned to their home villages. By this time houses that had been built by the people themselves were in need of refurbishment or even rebuilding. The Nass Valley villages voted to work with CMHC to finance new housing for their growing communities.

The loans provided by CMHC were governed by Indian and Northern Affairs Canada (INAC). INAC placed conditions on how the money would be spent. Villagers had no say whatsoever in their housing choices. Designs did not suit the way people cooked (often in large quantities for feasts, yet kitchens were small), the need for alternative heating such as fireplaces (electricity outages of several weeks were not uncommon in winter, yet back-up heat was not provided), the difficulties of bringing several weeks' worth of foods (sometimes even a moose!) into food preparation areas (all living, cooking, and eating areas were on the second floor). Construction quality was often questionable, since the people had choice neither over the contractors nor over the qualifications of inspectors who approved the construction. Maintenance issues, including black mold and other health hazards, resulted from the lack of control over construction quality[47]. These difficulties continue to be experienced in houses belonging to many Nisga'a people today, including some Elders who led the present housing and health research.

Present-day Elders were among those who achieved some control over Health Care delivery in the region. In 1984, with the direction of the Nisga'a people, the Nisga'a Valley Health Board was established to oversee the delivery of health care for the people of the Nass[48]. Clinics, or *Huwilp Haldaakws* (Houses of Medicine) were built in each of the four villages, with the largest in New Aiyansh also including a

diagnostic Centre (fig. 4a). Supplementing the health care system, recreation/ cultural centres and church halls in each village add space where all generations can enjoy the healthful benefits of social interaction. Gingolx even has a small meeting centre for Elders, located in a converted house and shared with village young people.

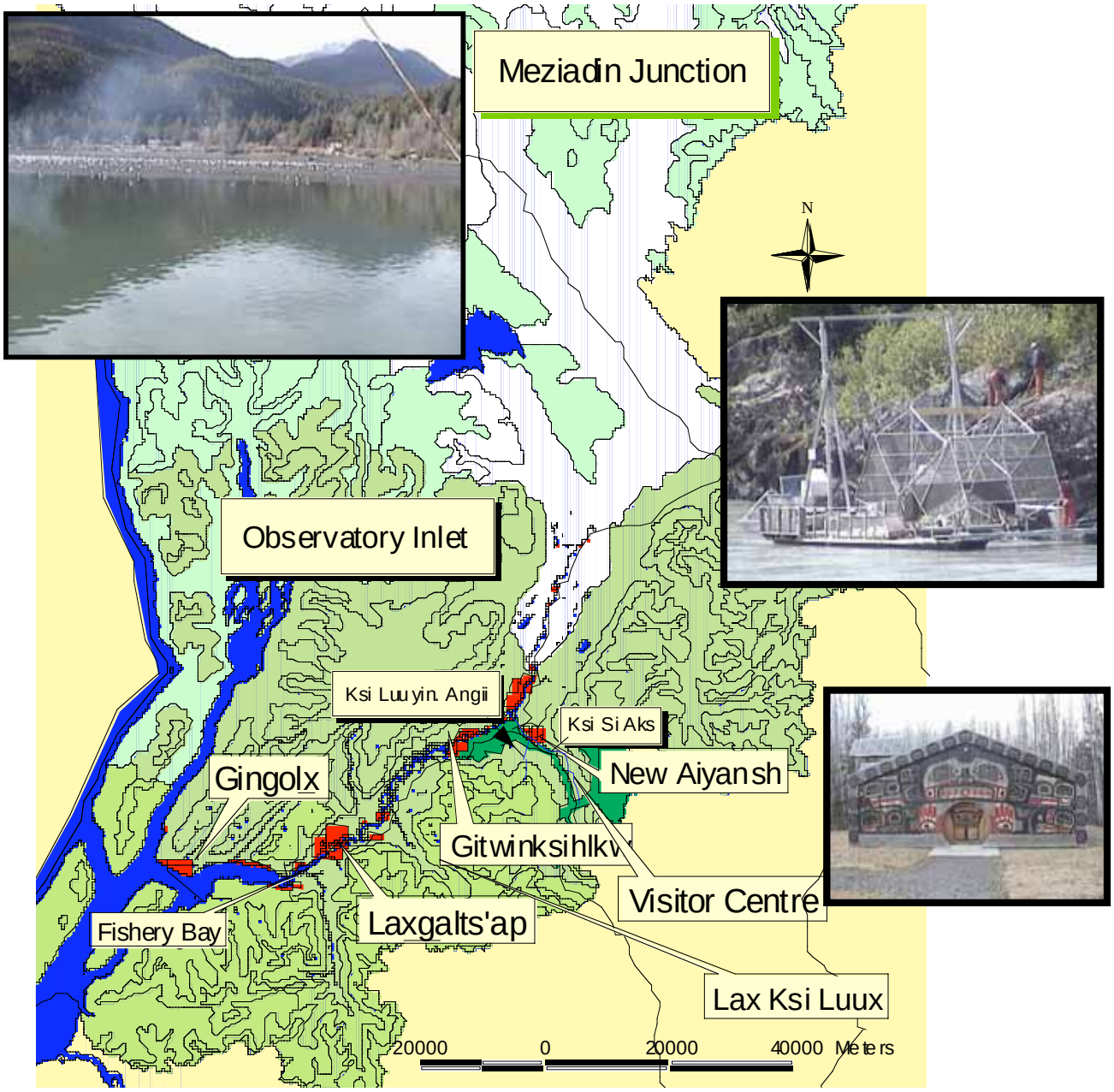
Alongside these architectural improvements, the Nisga'a Nation regained title to traditional lands in May, 2000. Reasserting ownership of traditional lands has meaning to both health and housing, since "access to land is central to Indigenous health and healing"[49] and housing can now be built beyond the lines on surveys that used to read "Indian Reservation Boundary". Whereas architectural projects Nancy Mackin Architects designed for Laxgalts'ap in the 1990's were all limited in size and form by the restrictive IR Boundary, there is now enough land for new subdivisions and improved health promotion services.

Other First Nations in British Columbia are achieving or nearing similar goals. It is to this context of emerging Aboriginal land ownership and self government in Canada that new solutions for Elder housing and health are sought – this time, from Elders themselves. Before asking Elders about solutions and challenges posed by the built environment, a series of maps were prepared to show them what facilities are presently available in the region. These maps are presented in the following section.

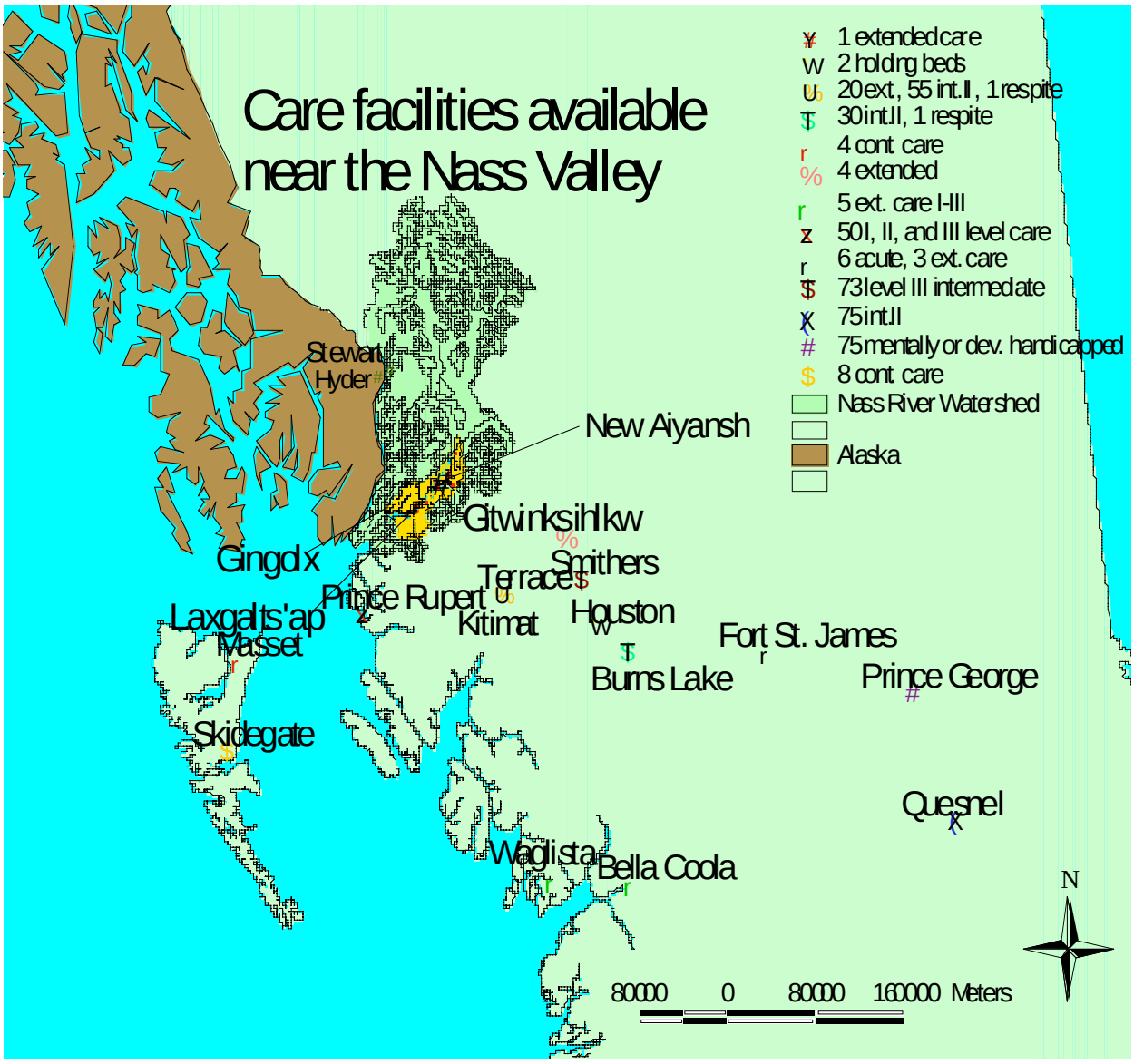
2.3 Geographic context of Elder Care in 2004 Northwestern British Columbia

Where might a resident of a remote Northwestern British Columbian go for assisted or continuous care housing and for government-assisted Elder day programs? Because the geography of North Coast health delivery is constantly changing, the maps can only show what is available at the time of writing. They are useful here mainly as a reference point from which the Elders involved in this research can recommend changes.

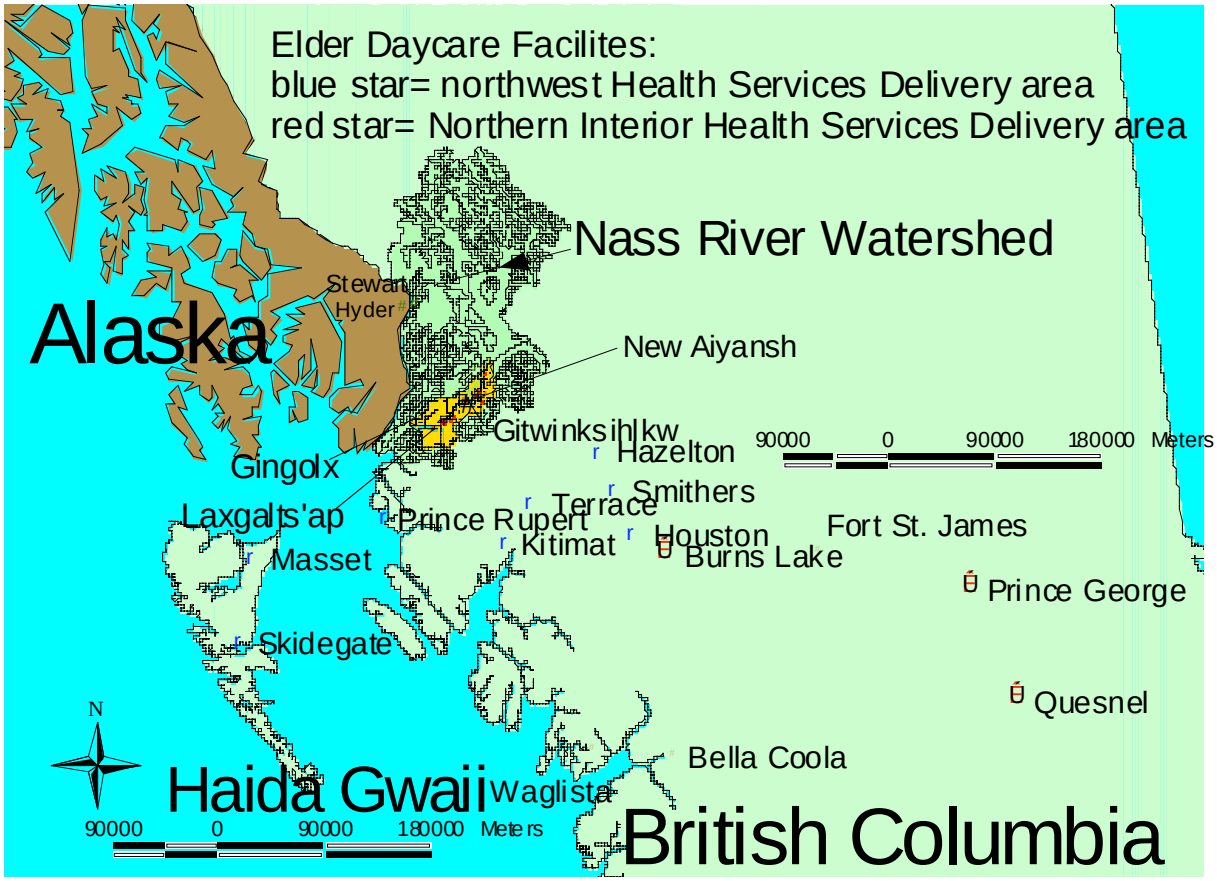
Map 1. The geographic context of this research, which focuses on the Nass River Watershed adjacent to the Alaska Panhandle. Inset photos are by Gary Fiegehen. The photo at top right is research participant Elder Wilma Moore showing her grand-daughter how to string oolichan. The area shaded darker green with black contouring is identified in the Nisga'a Treaty as the Nass Wildlife Area.



Map 2 Many Nisga'a villages, like those of other North Pacific Coastal peoples, were seasonal places relating to the yearly rounds of fishing, hunting, and gathering. Fishery Bay is an early March fishing village renowned for its oolichan fishery (inset photo top left). Lax Ksi Luux is an ancient village, one of the four Nisga'a villages that was destroyed during the volcano of about 1750; Elder Chester Moore proposes rebuilding Lax Ksi Luux as a cultural village that includes Elder housing and meeting space. The four modern villages, recognized in the Nisga'a Treaty, are Gingolx, Laxgalts'ap, Gitwinksihlkw (with fishwheels, inset top right) and New Aiyansh. New Aiyansh is about one hundred kilometers north-north-west of the nearest hospital in Terrace BC. The visitor centre (inset lower right) is a traditional longhouse.



Map 3.Seniors' intermediate care, extended care, or continuous care housing facilities in Northern British Columbia, as enumerated within the 2004 "Guide to Canadian Healthcare facilities, 2004". The area shaded darker green with black contouring is identified in the Nisga'a Treaty as the Nass Wildlife Area.



Map 4 Elder day programs supported by Northwest Health Services Delivery Area or Northern Interior Health Services Delivery Area. In Northern British Columbia (2005), Prince Rupert, Masset, and Skidegate offer both Elders' day programs and continuous care housing.

The provision of both is necessary if one considers the principle that "Good health for Aboriginal peoples relies on an interconnected system of land and spirit, body and mind ... a living relationship of culture (land-language-law) and health (mind-body-place)" (Elliott and Foster 1995: 96).

Figure 4. Photograph of a large house built near the beginning of the twentieth century by the family of Nisga'a Elder and research participant Lawrence Adams, Sim'oogit Axdiion Akshl Hlyoon of Gitwinksihlkw. The main floor has cooking, dining, and entertaining areas. The large Nisga'a-built houses of the early twentieth century also included places where extended family members could stay (Joe Gosnell 2003, pers. comm.), In houses with this type of layout, Elders are able to rest, cook, and dine without going to the second floor. At the time this house was built, electricity for Nass Valley villages was supplied by local power plants and lumber for houses was milled in local sawmills. Photograph by Nancy Turner

Figure 4a. Wilp Luuli Mootkw, House of Healing, was built in Laxgalts'ap in 1991(left), Wilp Lam Jax (James Samuel Gosnell Health Centre) is the diagnostic centre and clinic in New Aiyansh.

Figure 5. This residential school at Alert Bay, BC was attended by First Nations children from many places in British Columbia, including the Nass Valley. The old school is now being revitalized as a cultural centre for the Namgis First Nation. The U'Mista Cultural Centre to the left of the old school exhibits artifacts of the Kwakwaka'wakw people. Courses in language, art, and history are taught at U'mista. In contrast, lessons taught in twentieth century residential schools forbade First Nations children from speaking their languages. Photograph by Robert Mackin-Lang.

Figure 6. Crowded conditions at residential schools contributed to health declines and the spread of infectious diseases among Aboriginal peoples on the Northwest Coast. This sketch by N. Mackin is based on a photograph entitled "The little boy's dormitory at the Coqualeeza residential school" which shows a room with only a pennant and a single mirror for decoration, furnished with three rows of beds spaced about two feet apart. Mary-Ellen Kelm (1998) details how funding cuts for residential schools led to increasing crowdedness and declining health among the student population.

Map one gives an overall geographic context of the Nass Region. Map two locates the modern villages and some of the seasonal villages in the Valley. Elders' Care facilities within a six-hundred kilometer

radius of the Nass Region are shown in map 3. Since Shortt (1984) observes that most Elders prefer a combined facility that allows continuum in care (care that extends across many levels so the person does not have to move if mobility or health decline, and couples with differing care needs can live in the same facility), the map highlights the three communities near the Nass Valley that offer continuum care facilities: Prince Rupert, Skidegate, and Masset. Terraceview in Terrace BC is the closest facility to the Nass Valley, but since Terraceview only extends to level two intermediate, people who become disabled must move further away[50].

Map four shows Elder daycare or recreation facilities that are supported by Northwest Health Services or Northern Interior Health Services, two of the three Health Service Delivery Areas of the Northern Health Authority of British Columbia. As shown on the map, eight communities in the Northwest and four in the Northern Interior have Elder Day Centres: Masset and Skidegate on Haida Gwaii, Prince Rupert, Kitimat, Terrace, Hazelton, Smithers, Houston, Prince George, Burns Lake, Vanderhoof, and Quesnel[51]. Group and individual recreational activities are provided at the centres, along with on-going health assessments and medical condition monitoring, referrals to health care professionals, education and treatments recommended by physicians, assistance with tasks such as bathing, and daily lunches and snacks[52].

It is notable that village size does not seem to deter health services from funding such centres. Indeed, several of the communities listed above have similar populations to those in the Nass. Skidegate, for example, has a population of about seven hundred people – approximately the same size as New Aiyansh. While Kitimat is larger than the Nass Villages, its adult day centre serves about seven Elders per day; a community like Gingolx could possibly demonstrate an equivalent number of Elders interested in day services.

Communities that have both continuum care and health-services supported Elder care facilities would seem, at least geographically, to best meet the requirements of Elders. Three Northwest communities have

both continuum care and Elder day services: Skidegate, Masset, and Prince Rupert. Of those three, Masset and Skidegate are similar in remoteness and population size to the Nass Valley villages and to numerous other First Nations villages in the region. Architectural support for Elders is therefore achievable in remote regions, and it is important to find out what form these facilities should take from the Elders' viewpoints.

Another concept for Elder care that has recently received political support in BC is "Assisted Living": that is, personal care provided in an Elder's own home or other residences that have received Provincial Government licensing to provide care. Ideally, assisted living enables Elders to stay in a non-institutional setting and to remain independent as long as possible. The difficulty, however, lies in ensuring Elders needing care receive enough quality assistance to be safe and comfortable. Gerontologist Yuriko Akari explains the political timeline, provisions of assisted living in British Columbia, and the difficulties of matching care needs with provisions: "In November 2002, the Community Care and Assisted Living Act (the *Act*) was assented to by the BC legislature. The *Act* along with the Independent Living BC program was heralded as 'a new era' in the housing-care continuum in BC. It was designed to: (1) include the 'assisted living model' as part of the continuum of care, (2) increase access to housing and service for those who have care needs and difficulty with the tasks of daily living, but who do not require 24 hour nursing care in licensed care facilities by reducing regulations for offering personal care services, (3) promote a 'social model' of care by increasing 'choice,' (4) increase the possibility of 'aging in place', and (5) reduce the demand for publicly funded community care facility placement. The major policy assumption underlying the *Act* is that given the strong preference of seniors for 'independence' and remaining in the community and potential cost-savings of providing care in a 'non-professional environment,' [Assisted Living] would become an important part of the continuum of care and reduce the demand for publicly funded community care facilities. This requires a match between the needs of clients who otherwise would go into care facilities and the services offered. If clients' care needs are not met, Assisted Living may be just a short stop before placement in a licensed community care facility"[53 54].

As Akari explains, political policies must also be ready to change in response to Elders' needs. Architects must also adjust to the needs of those using their designs. Participatory research and design affords architects and policy-makers the opportunity to hear what Elders have to say about past, present, and future programs and facilities. The next section summarizes participatory research results from Elders' workshops and interviews. From Nisga'a research participants, we hear about the challenges faced and the architectural responses favored by Elders in representative First Nations communities of remote British Columbia.

CHAPTER III: Nisga'a Elders' Insights for Housing and Health

The primary research undertaken here is a collection of Nisga'a Elders' insights into how architecture has positive and negative influences on personal and cultural well-being. In this chapter, those insights are summarized and expanded into a discussion about how the ideas might become buildable and workable solutions. First, a specific challenge or attribute of the built environment as it relates to health and well-being is summarized from the workshops and interviews. (Quotations used in this chapter are from the February 14, 2005 workshop held at Wilp Wilxo'oskwhl Nisga'a, unless noted otherwise). Secondly, solutions are proposed that bring together participants' recommendations, Nisga'a and/ or Northwest Coast First Peoples' traditions, and some potential present-day solutions found in literature and practice. Thirdly, one or more examples are given from First Nations communities across Canada who met the architecture/ health challenge. Fourthly, the range of applicability of each idea is established through research participant comments and a range of bibliographic sources.

To further organize workshop results, workshop participants' comments are divided into two main sections. The first group of comments identify architectural impacts on "population health" – cumulative, multiple, overlapping factors acting over lifetimes or generations that influence health of identifiable groups[55]. (Although architecture's role in population health has received relatively little research attention[56], the Nisga'a Elders spoke at least as much about the influence of the built environment on community well-being as they did about their personal architectural/ health needs.) The next group presents built environment effects on individual health – the physical well-being of a person.

3.1 Elders' challenges and solutions: the built environment and population health

Architecture and cultural strength

At the beginning of the interactive workshop held February 14, 2005, speakers stressed that architecture is an important component in traditional land management and other long-held practices. Some participants brought forward ideas about how architecture could assist them, as cultural leaders, to keep cultural wisdom and knowledge in active use. Elder Jacob Nyce (Sim'oogit Ba<u>x</u>k'ap, Wolf, Gitwinksihlkw) reminded everyone present of their role in retaining the practices that are an on-going source of strength:

> We are the survivors of this land. We have gone through the floods, we survived; we have gone through the volcano, the lava flow: we survived. The contact with the Europeans spread the smallpox among us, and a lot of them died, but some of us survived. We survived the residential school where they tried to get rid of our culture and who we were: we survived. You people who are here today: you are the survivors of our land. You were put here for a purpose: I really believe that. We have gone through so much, and yet we are still here, and the culture is starting to come back..

Buildings of the past, explained Jacob, influenced the way Elders shared their cultural wisdom with future generations. In Nis<u>g</u>a'a history, a house was an expression of extended family crests (see also Chapter 2). Each house or *wilp* was both a physical structure and an extended matrilineal family group. The house and the families within owned stories, designs, names, and other sources of cultural memory and strength (Ayuu<u>k</u>hl Nis<u>g</u>a'a III: 25). Importantly, the unique design of the Northwest Coast longhouse enabled Elders to live comfortably while transferring family-owned knowledge across generations. Jacob Nyce continues his analysis of the linkage between physical architecture and social strength:

> The cultural part of our people: the longhouse. Why did they build those longhouses? There were big families. There was so many in one family that they created another chief. We think about the longhouse after they are gone, about how people still continue to make homes. Although the new houses in Aiyansh were different from the longhouse, they used the same idea that they had, living together. That is the reason why they were strong: because they looked after themselves. We are gradually going away from that. Sometimes they neglect the parents. They neglect the grandfather and grandmother.

Several workshop participants commented that the two-story single family dwelling that is now standard in the Nass Valley does not successfully accommodate extended family groups, and that this housing design alters traditional knowledge dynamics. However, Deanna Nyce explains that, with some modifications in the types of housing provided, the village now serves as the longhouse!

> …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, Sigidimnak' Gyaks Sgiihl Anluuhl Kwhl Psda'y, Killerwhale, Gitwinksihlkw 2003).

Potential solutions exist that could ensure that housing within villages adapts to the needs of people at different times in their lives, just as a longhouse changed form to suit changes in family structure. If housing could be reconfigured to accommodate change, the villages would function even more like a longhouse. Villages could be made up of structures wherein components could be re-configured to suit a new baby, a needed workspace, or a secluded space to accommodate specific people or cultural activity. As a possible guide, individual houses could be built following the principles of Flexhousing™, which includes design features that emphasize adaptability. "Adaptability means that the space is designed to evolve easily and with minimum expense as the needs of the people living in it change"[57]. Using ideas from Flexhousing™, modern village housing would accommodate changing lives of individual and family groups, in a way not unlike the traditional longhouse.

How might this idea of adaptable housing within an Aboriginal village work in practice? One built example is found within the Seabird Island First Nations demonstration housing project. In the project, constructed in conjunction with Indian and Northern Affairs Canada and CMHC, seven housing units are contained within a triplex, a duplex, and two single family homes. As family configurations change, five more units of housing can be obtained by converting each unit in the triplex and each detached home into two self-contained suites, resulting in five additional housing units. In this way, the project can

accommodate family and individual changes, such as an Elder needing an accessible home adjacent to relatives or a young couple's need for space and privacy[58]. Within Seabird Island, demonstrates the videocassette "In a Sacred Way We Build" (2004), Elders teach the young people about culture within spaces that, like the longhouse, help to recall the First Nation's cultural history.

Through their discussions of the longhouse and its importance in knowledge acquisition and transmission, workshop participants identified an architectural challenge with worldwide applications: that housing forms influence traditional knowledge dynamics and social systems. One way of meeting this challenge, noted participants, is found in the traditional longhouse, a design solution which adapted readily to the changing needs of multiple generations.

If housing is one component of keeping the cross-generation communication linkages strong, then with thoughtful design solutions the cultures themselves may be strengthened. The corollary also holds: a number of factors –some of them connected to architecture – are jeopardizing the knowledge base for traditional knowledge and wisdom. "Indigenous people are uniquely positioned in their close and long-standing environmental relationships, yet the survival of many indigenous cultures is severely threatened by insensitive economic development, by coercive education systems, by assimilation into the modes of production…of the dominant society, and by and by the escalating ecological destruction of peoples' homelands and resources"[59]. Architectural decisions participate in all four listed threats to indigenous cultures: economic development (the form of housing and other land-use projects), education (the physical form of schools), modes of production (materials and systems specified for construction), and ecological destruction (impacts resulting from unsustainable building fabrication methods and maintenance regimes). Built form decisions must therefore be made with a deep understanding of the way peoples' lives can be affected by design and process.

There are no solutions that work for all cultures, however. Ethno-biologist Nancy Turner (2000) warns, "Indigenous peoples are diverse, and cannot be treated as a single entity, in opposition to industrial or post-industrial society. Each indigenous people has its own unique practical, spiritual, political, and historical relationships to its homeland"[60]. Workshop participant and cultural researcher Nita Morven (Sigidimnak Ksim Sook', Frog/ Raven, New Aiyansh) echoes that architectural decisions, particularly the form of housing and the relationship of houses to one another, must be carefully designed to suit the particular cultural and spiritual traditions of each individual First Nation. To illustrate, Nita tells us of research undertaken by anthropologist Frank Esber Jr. with Aboriginal peoples of the Apache Nation. The study demonstrated that existing government-built housing was unsuited to the Apache custom of having large groups of people over to stay and of speaking so everyone could visually participate. After extended research into the spatial implications of Apache tradition, new housing was designed in a more open way that permitted people to interact in the culturally acceptable way[61]. Nita compared the Apache experience with that of the Nisga'a:

> That's similar to how we are, although for a number of years we haven't been practicing like that and that is part of the change in our lives. But maybe had our government did that for our people, if we had the housing [we would have kept the practice going]. It is true after contact, if you go across the river and see the Victorian houses there, they were fairly big, and they were built big for their families [see fig. 4], to follow the same concept as living in the longhouse but they were newer style housing. This is one of the important things for our people, that our people are family oriented. That has changed, and I think part of the change has to do with the family dwellings that we have today. It has eroded all of that over the years, and then there are all the other distractions.

Nita's example further emphasizes that architects need to deeply understand the spatial implications of traditions before designing long-resident peoples' housing. Design decisions can influence family life and particularly the lives of more vulnerable individuals, including Elders. Architectural design may even impede an Elder's choice about where to live. "The overwhelming majority of seniors wish to continue to live in their own homes for as long as possible. However, many homes are not well designed to meet our changing needs as we age."[62] The Elders of this research emphasized the link between Elder presence and cultural strength, adding that long-resident peoples worldwide would benefit from culturally sensitive, adaptable housing[63].

Elders' housing close to the centre of village life

Design decisions also relate to the siting of a project: often, architects influence where and how new projects are sited. Workshop participants noted that the built environment poses challenges when Elder housing or other facilities are located away from meaningful landscapes or social opportunities. Elder and Anglican/ Nisg̲a'a Minister Herbert Morven (Simoogit Kee<u>x</u>kw, Wolf, New Aiyansh) worries that Elders seem to become old very quickly in distant licensed care facilities. Institutionalized Elders' loss of independence and growing inactivity in turn leaves home communities short of leaders knowledgeable about traditional ways.

> I went to an Elders' facility in Lytton where the old residential school used to be. It was a place to bring people, like Terraceview [an Intermediate Care Facility in Terrace, one to two-hundred kilometers from the Nass Valley villages]. I asked what ages are these Elders? And they said "fifty-three", some of them. And it disturbed me, because I was fifty-six at that time and I was looking at these people who looked like they were ninety. How do we begin to develop an independence that is so much part of an Elder's life?

In contrast to the practice of sending Elders to distant institutions, traditional Nisg̲a'a and other Northwest Coast cultures enabled Elders to stay closer and closer to home as they aged. The increasing proximity of one's lands to the winter village was a sign of honour and respect. An Elder's hunting lands were a part of identity and recognition of that person's contribution to the society as a whole. They were also a responsibility: rights to the land included the right to remember and recall the *adaawa<u>k</u>* or oral history that helped people to be good stewards of the land.

> In Baxk'ap's time the chief hunts on the closest lands and the younger guys hunt on the more distant lands from home. As they got older or moved up they moved closer to the winter village. Different areas were assigned to different sub-chiefs. As you assumed the name, you moved up, you would start using the sub-chief's territory within the chief's territory (Robert Moore, Niis<u>x</u>bakhl, Killerwhale, recorded in Ayuu<u>k</u>hl Nisg̲a'a IV: 19).

To be able to fulfill leadership tasks, Elders needed to retain ancestral knowledge and combine that legacy with direct and active experiences within his homelands. The Elder could not live far away and still make beneficial decisions! While living with extended families on their own land, usually on a river or stream and encompassing several ecosystems, Elders would guide younger people in many matters, including the management of resources.

Alas, a man cannot be knowledgeable by sitting around. He has to be around, to gain experience and to know his territory (Rufus Watts, Gade'elibim Hayatskw, Eagle, recorded in *Ayuukhl Nisga'a* IV: 18-19).

Present-day solutions to the needs of Elders can be derived from this ancient knowledge about the importance of Elders remaining active and involved with the land. Lawrence Adams (Sim'oogit Axdiion Akshl Hlyoon, Killerwhale, Gitwinksihlkw) had an inspiration of where Elder housing could be built right in the heart of his village, along the river where the oldest chiefs would once have gathered.

I think it [building housing to suit Elders] is very important, and the planning has to be done: what kind of building you want and where it is going to be. In Gitwinksihlkw there is a good spot by the river. On a sunny day you could go out on a sun deck and look at the river, which brings back memories.[Elders would] get more strength, they feel right at home, they won't be lonely. When a person is in the hospital they have a hospital bed, and when you go there just imagine how their heart feels, they are so happy to see you and haven't seen their people for a long time.

The siting of Elder housing was a major concern to several Elders. Being close to the water was important, as well as being close to the centre of village life. Chester Moore, chief of the Council of Elders (Sim'oogit Hlayim Wil, Frog/ Raven, Gingolx) envisioned a site for Elders' housing which would be adjacent to Elder-centred social facilities suitable for modern as well as traditional pastimes. Chester believed that the best site for Elder architecture would be near the centre of Nisga'a lands, midway between Gingolx and New Aiyansh, at Lax Ksi Luux (see map 2).

My suggestion for our future would be that we should have a little village built for the Elders where people will look after them well. Our heritage goes back to Lax Ksi Luux, one of the prime places to build

a place for the Elders, and they would be right at the edge of the river where they can see the fish and get salmon and they like to be here by the river [see map 2 for location of Lax Ksi Luux]. That is the dream I have: a village there for the Elders, where they have their own Bingo halls: a place to get together.

Chester's choice of site has historic precedence, since before the great volcano that erupted in the Nass Valley over three hundred years ago, Lax Ksi Luux was an important centre for governing chiefs and Elders[64]. The Elder village he proposes would have access to fishing for those who are able to get around, and views of the river for those whose lives are less active. The decision to site an Elders' village closest to the historic and geographic heart of Nisga'a homelands also follows the traditional wisdom related by Robert Moore (page 29) that as people get older they hunt on the closest lands. Locating housing in the right place is vitally important to well-being, since places link people to memories, to history, and to cultural identity.

Several First Nations communities have successfully constructed housing and social facilities for Elders near the centre of their communities and with views of key resource areas or places of cultural significance. Seabird Island First Nation housing is designed to include suites for extended family members. At the centre of the housing is a wellness garden where traditional plant uses can be passed on to future generations[65]. Similarly, the Mohawks of the Bay of Quinte have built ground level housing for Elders near the centre of their villages[66], on the banks of the Salmon River where the Elders can appreciate traditional resource areas.

Elder Hubert Stevens (Sim'oogit Wii Laxha, Killerwhale, Gingolx) says that the idea of siting Elder housing as close to the heart of cultural activities would work for Aboriginal people anywhere in the world. An important idea is brought forward here by Nisga'a research advisors: maintaining Seniors' independence may have as much to do with where housing is located as with the nature of the housing itself.

Elders' teachings and the cultural village

Another challenge posed by present-day built environments is that the villages no longer have ceremonial areas for teaching young people the wisdom and skills needed to adapt to unexpected change, noted workshop attendees. Nita Morven explained after the meeting that many people are now searching for strength and focus that had been taken away by the reservation and residential school system. In the past, people's strength came from one's extended family which was structured around caring for the children and everyone who looked after the children (including Elders), The source of focus and strength diminished when children were taken into the residential school system. With many children no longer present in the villages, the reservation system became the focus[67]. As one architecture-inspired antidote to this difficulty, Elder Herbert Morven wondered:

> Why don't we have a green area to have a *walbay'askw* [coming of age place for young women] in the village so that it would be a place for mothers to go to speak to their daughters about the changes in their lives that are happening as they come to puberty? What about a green area in the village as a place for the men to go? This is what we really lack as Nisg̲a'a: we don't know how a young boy becomes a man. We need to have that so that the values of our culture can be actually part of our community.

Emma Nyce (Sigidimnak Hlguwil Ksi hlgum Maaskgum Hlbin, Eagle, Gitwinksihlkw) concurs:

> That is another thing. I heard that *walbay'askw* was mentioned. We need that too. We need someone to sit and help them [the young women]. They used to tell us in Gitwinksihlkw, what you put on your hair and your body while you are going through that one year. It is far away where that virgin cave came from. It is way out, a very sacred thing. When young ladies get to that age they put them away [in a *walbay'askw*]. There are two elderly widows that take turns looking after them. Today, nobody talks about it and you see all the strollers. I don't have hate for the babies but I think they [the young people] should be careful. Where are these kids going to be put in the next twenty-five years?

Nearly all research participants recommended the "cultural village" solution as an architectural and planning decision that would address the needs of young people while enabling Elders to continue being active participants in the communities[68]. In the Nisg̲a'a speakers' vision, the cultural village would include

buildings for producing food in the traditional way as well as housing and educational facilities for people of all ages. Alice Azak (Eagle, Gitwinksihlkw) added that the village would enable young people to experience a part of traditional life that was enjoyable as well as culturally important.

There is another thing I remember and it with my Granny again. In the summertime we used to go off to the smokehouse. My Mum was there with my Granny because they were going to start smoking fish. One thing I remember, I don't know how old I was, is that each family had a corner in this big smokehouse… The beach was not very far from the smokehouse, a beautiful beach! And there was no such thing as skiffs in those days, they were all canoes. So I saw part of that life. And I thought it was so beautiful, it keeps coming back to me. And then I watched them cutting the fish and putting them up in the centre of the smokehouse. When young people come into the smokehouse now they try to choke (everyone laughs). But in those days we breathed that air.

The cultural village concept may also address another problem: remote Northern villages far from urban centres often have relatively few recreational, athletic, or cultural facilities where young people can use their time meaningfully. The severe shortage of facilities for young people is a problem that has been recognized by Nisga'a village and central governments, and is also a concern for Elders[69]. Research participant and Elder Hubert Stevens worries that the well-being of young people in the communities must be addressed, and adds that the construction of places where Elders and the young can interact is part of the solution.

How many of our young people have been lost to alcohol and drugs? And this is another thing we talked about [in our Council of Elders' meetings]: a wilderness camp for the young people where they can have an instructor who is still trapping today and earn their own money. There is Horace Stevens there: he is the man who traps and he would be a good instructor. They would be away from drug dealers and will be with people who will look after them. We talked about this. We have it on our agenda every time we meet, every time we get together… So I will try my best as a Council of Elders' member to see that what we are talking about is fulfilled, especially for the Elders and the young people who abuse alcohol and drugs. I don't know how many years now we have been losing young people. We have been losing young people. We just lost one in this village a few days ago. And that wilderness camp I am talking about: we want one that will be built way out there where an instructor can teach them how to trap. Sometimes a fur can be worth eighty dollars. That is a lot of money, and the young people can learn to live off the land. I have seen this out in Bella Bella: they have an island where they send their young people to learn to provide for themselves, and there is one adult that looks after them.

Meaningful employment for the young can be addressed architecturally through wilderness camps, in Hubert's analysis. Responding to the traditional division of knowledge and tasks within Nisga'a culture, Elder Wilma Moore added a woman's viewpoint to the vision:

> The idea that Hubert brought up, an area to bring the youth and teach them to fend for themselves: there are a lot of people who can teach that. This could be across at the old village, at Old Aiyansh. There are some women too that are still alive that can teach our children how to preserve their own food.

Young people are also essential to Elders' housing because, as present and future caregivers, they offer the potential for independence among people who are ill, disabled, or very old.

> They [Elders living at home] will need young people who will look after them. It is no use having homes for the Elders if you don't have someone there to look after them (Hubert Stevens).

In Nisga'a tradition, longhouses were built to accommodate large families that took care of one another. In the Elders' vision, caring for one another can continue in the modern context, particularly in sharing skills with young people so they can find employment that is rewarding and meaningful. Wilderness camps and food preservation areas are still viable employment in the modern world, and require one type of educational facility that can be constructed with the Elders' as guide. Other types of employment also help young and old generations to look after one another. Locally-based training facilities that educate citizens in a range of medical and health promotion professions would facilitate Elders' desire to remain in their homes even if they lose their physical strength.

In this research, Nisga'a Elders stressed that good health will come from having places where they can teach the young about traditional practices. Aboriginal communities elsewhere in Canada have rediscovered similar linkages between health and places for Elder-child interactions. For example, in

"Issues in Health Management promoting First Nations Wellness in times of Change", author Simon Read writes: "Strengthening of Nuu-chah-nulth culture [on Vancouver Island] is important not only for its intrinsic value and applications, but more importantly because it carries with it a framework for establishing the place of each individual with respect to self, family, community, and the physical and spiritual environment. *The lack of this framework for interpreting the world…is considered to underlie many of the health problems which are faced by the Nuu-chah-nulth and other colonized peoples* (italics added)"[70]. Also on Vancouver Island, a Cowichan Elder appealed for places to help the young people of his community. "He said that the Elders do not have the opportunities they once had to teach the young people about respect and responsibility… His concern and comments, which are shared by many Elders, are the valuable input that helps to keep our [Aboriginal Health] programs community driven[71].

Place, then, is an important ingredient in reinstituting a healthful social framework that focuses on children and on the Elders who teach the children. Built works also support the premise that health is promoted by places that facilitate the sharing of Elder-held knowledge and practice. In present-day Aboriginal homelands across Canada, "cultural villages" have been constructed that include Elder housing and other facilities close to the centre of village life. One recent example is the tradition-based village constructed by the Oujé-Bougoumou Cree Nation on Lake Opemiska, PQ. Built from proceeds of the First Nation's 1992 Federal/ Provincial land claims agreement[72], the Ouje-Bougoumou village includes Elders' housing, sited in a prominent position close to cultural and recreation facilities. The Elder housing is a single level building that includes a circular design element that is based on Cree tradition.

The success of Ouje-Bougoumou village is at least partly due to architectural design processes, which include design with nature and community-led design. "The sandy conditions [of the new village lands] allow for cost-effective construction, and the southern exposure allows passive solar heating of buildings. Service infrastructure has been designed to conform with the natural land to reduce construction and operating costs. A master plan was created by building on the vision developed in community meetings

and as articulated by the Elders. All of its parts contributed to a common theme – to create a social living environment that is compatible with the natural environment "[73] (fig. 7).

The beauty inherent in traditional building forms that recall cultural memories encourages people to work towards goals that benefit the Cree Nation as a whole, attests Planner Paul Wertman. "Architecture is extremely important to a community. It can create a visual landscape that speaks to a people's cultural background. *It can generate a feeling that inspires people to shape their lives to match* (italics added)"[74]. Like Nisga'a Elder Alice Azak, Wertman identifies a sense of well-being that comes from recalling one's history through architecture, and stresses that this well-being – health – gives people the strength to revitalize culture.

The Nisga'a Nation also has plans for a cultural village that is a centre of education. Wilp Wilxo'oskwhl Nisga'a, the Nisga'a House of Wisdom that delivers post-secondary education in the Nass Valley, has plans for an integrated centre of education that includes a place for Elder teaching. Building designs are based on the traditional longhouse and other structures for resource management and ceremonial teaching. Facilities for Elders are integrated with education, health, social, and cultural services (fig. 16).

Elder-suited buildings, apprenticeship programs , and economic well-being

Depending on the processes of design, construction, and funding, a cultural village concept could provide meaningful employment opportunities for the young while acknowledging Elders' importance to the community. All facilities – Elder housing, educational centres, wilderness camps – could be built by the local people, with youth apprentices forming a key part of the work force. With an apprentice system,

Figure 7. Ouje Bougoumou, PQ, has Elder housing within a newly constructed village that includes a cultural village.

building construction itself will follow with the Nisga'a historical solution of generations looking after one another, and of learning by doing.

The Seabird Island First Nation adopted the apprenticeship approach to housing construction with the intention of helping their young people learn new skills and gain valuable employment experience[75]. "The Seabird Island First Nation…employs their own members and members from other First Nations communities in the area. They are very eager in training their own people so they can build their own houses[76]. Larry Pete, a young construction apprentice and member of the Seabird Island First Nation, adds humorously, "It [working on the demonstration housing project] is pretty interesting. You learn a whole bunch of stuff about different building aspects, like having to deal with architects who keep sneaking around!"[77]

The idea of involving young people in construction and other apprenticeship and training programs has been proven to have widespread applications for First Peoples across Canada[78]. Nation-wide training programs have been established, including the Housing Internship Initiative for First Nations and Inuit Youth (HIFNIY). Similar programs also have applications to indigenous peoples worldwide. Ideas about educational experiences that involve apprentice-style learning by doing, within one's own community, are now being shared with indigenous peoples in The United States, New Zealand, and Australia[79].

Housing shortages, costs, and local employment

Nisga'a co-researchers reported that demand for new Elder-suited housing is extensive, not only for the people who live in the communities but also for people who have had difficulties in the urban environment and need to reconnect with their homelands. Two factors have led to a cumulative shortage of housing in the Nass Valley region (and in many areas of remote British Columbia). First, land was often in short supply since the Indian Reserve boundaries restricted buildable land. In the Nass Valley, all

four Nass villages combined provided only seventy-six square kilometers of land for the Nisga'a people (and high water tables rendered much of that land difficult to build upon). Secondly, throughout the twentieth century the high cost of building housing in remote regions contributed to the inadequacy of residential options for Elders and others in Aboriginal villages. Because labour and building materials are brought in from urban locations, construction costs average at least thirty percent higher in remote regions than in nearby cities[80]. Yet homelands offer healthier living opportunities for Aboriginal peoples marginalized in cities, says Elder Horace Stevens (Sim'oogit Nii'ysts'ool, Frog/ Raven, Laxgalts'ap).

> We want to bring our people home. They [our people in the cities] have been writing and having a hard time out there. They live on reserve. We don't have as hard a time here because we live off the land (Horace Stevens).

Architectural systems need to respond to the expanded housing need in remote regions, possibly by returning to the within-village creation of some construction materials. Local production of raw materials has historic precedence: sawmills existed in each Nass Valley village until the early twentieth century. Wilma Moore tells us of her personal experience building housing with locally produced lumber:

> Horace and ours were the last houses that used the sawmill in Greenville before the flood washed it out. We bought all our rough lumber from there (Wilma Moore).

Emma Nyce reminds everyone that building houses using one's own hard work is a lesson her ancestors lived by, and that is one reason they were strong.

> My son kept talking to me, "You can do that yourself", he said."Remember what you always talked to us about, when you were brought up by your granny: Whatever you make now when you are young, it will be there for you when you get old. You can't ask for this and that. This is how people lived a long time ago: there was no council; you were on your own. I saw that happen to my grandparents: they had a big house there, three levels, and yet there were no roads there! We used to wonder, how did they do that? How did they get all the windows, and boards, and doors? It was their work (Emma Nyce).

Labour costs in remote regions could also be addressed by taking a Habitat for Humanity® approach, including hiring local youth as apprentices. "Habitat for Humanity® is known throughout the world for housing families. This movement actually houses something else: knowledge"[81]. Architects can facilitate gain of construction knowledge within remote Aboriginal villages by drawing buildings so clearly that inexperienced tradespersons can understand what is intended. Simpler detailing, less complex terminology, no obscure abbreviations – these are among the essentials of drawing buildings so that young Aboriginal citizens can train "on the job" with the assistance of experienced builders.

The Mohawk of the Bay of Quinte in partnership with CMHC have built Elder housing that successfully demonstrates how maximizing community materials and labour lowers housing costs, adds essential housing for Elders, and improves opportunities for local employment. To fill a need for Elder Housing, accessible freestanding homes or "Granny Flats" were constructed. "The design (of Mohawk Bay of Quinte Granny Flats) had to be buildable by local crews and suppliers, maximizing benefit to the community"[82]. On-the-job training has helped the First Nation to assemble a skilled construction workforce that has become renowned for excellence and competitiveness[83]. Meanwhile the Granny Flats have solved an Elder housing need common to many remote regions[84]. Importantly, the Granny flats are not so large as to be unaffordable: units are each eight hundred and seventy eight square feet. In this way the flats supply a form of housing that is small enough to work for people on a fixed income: a form not readily available in the Nass Valley and many other remote areas of Canada[85].

International successes in training local builders and suppliers to build affordable, much-needed housing in remote regions suggests that the Habitat for Humanity® approach can also work in many regions of Canada. Nationally, partnerships with CMHC include "seed funding" (to develop skills, establish housing need, and obtain resources to build housing) and "sweat equity" allocations (equity resulting from work rather than capital)[86] can help Aboriginal communities to optimize their own knowledge and skills in

constructing housing for Elders, including those presently living in urban regions who would like to return to their homelands.

Using "Social capital" to resolve Elder housing shortages

Apprenticeship programs and local manufacturing of construction materials are two ways of increasing "social capital": that is, to improve active connections among people, thereby facilitating sustainable development and financial self-sufficiency[87]. Affordable Elder housing is yet another possible benefit of designing to utilize local materials and labour. Nisga'a research participants observed that affordable housing suitable for Elders is a serious difficulty for people living in the Nass Valley, and for friends and relatives living far from the Nass Valley homelands who would like to come home to live.

A range of affordable Elder housing solutions are needed, says Elder Emma Nyce. No single solution will solve difficulties of inadequate Elder housing, but a within-village Elders facility offering twenty-four hour care would benefit those who have had to move away because of poor health or advanced age.

Elders are not all the same. I know because I have friends, like this lady here [indicates Alice Azak]. I know how she is: independent. I know we are not too strong. But I like the idea [of Elders' housing in the villages] on account of the other Elders (Emma Nyce).

Alice Azak adds that Elder facilities close to home would make life richer for the Elders who live in the valley as well as for those who have had to move away. A bonus, she adds, will be access to delicious foods that are part of their homelands.

To have a home for the Elders or a get-together place for the Elders – it would be so nice. I live by myself and I have one grandson, he comes in every week to chop my kindling. I can't chop wood any more, so he comes in and I talk to him about a lot of things. I really appreciate it: I might not be in that Centre, but it would be so good. I've my Uncle living in Terraceview, Hubert McMillan, and my niece Phyllis (she used to be Phyllis Azak), I've got a cousin in there, Laurie Clark, and I've got another Uncle down in Prince Rupert, that's where he is because he is disabled. It would be so nice to have them closer. My nephews

come and pick me up and we go to visit and bring them our own food and sit there and talk to them. If there could ever be a Centre built here in the valley, I don't know where it would be, but it would be great if it could be right on top of the hill where there are lots of mushrooms! (Alice Azak).

Architecture and Elder independence

Elders' knowledge and energies are important to maintaining healthy communities, testified numerous research participants. For villagers to benefit from the hard work of Elders, housing and other facilities need to allow Elders as much independence as is physically possible, we learn from Elder Emma Nyce. Emma teaches us that personal independence has long contributed to the historic resilience of Nisga'a people and Northwest Coast traditional life.

Our ancestors…struggle on their own. They live off the land like what we are talking about. Right now they would be waiting for oolichan. And that is when it [harvesting resources for the coming year] started. It goes a long way and comes the summertime: they never missed it…My grandfather was a trapper, and it is a very long story, and my granny was right there with them. My mother used to say, "You never see Mum sitting around. I don't know if my mother ever gets tired or gets sick. She went out with Uncle Jordan in winter time, in ten feet of snow on snowshoes. Sometimes they would be out for two nights. Then they would come back and talk about all they get from trapping. At this time of the year they get beavers, smokehouses just full of hanging animals. I remember that. They went from one animal to the other, skinning them. They put lots of work into these animals, skinning. I am always telling my sons and daughters about this.

Despite the cultural recognition that "struggling on their own" is part of strength, present-day architectural flaws may stand in the way of personal independence for Elders. Grace Nelson explains that many Elders want to and need to stay active, but family members worry about safety – particularly since so many Elders have to go up and down stairs to undertake traditional food processing practices such as stringing oolichan. Also, since facilities are not available in the Nass Valley to take care of those who become ill or injured, Elders worry that if they need intensive care for awhile it may be hard to come home and resume earlier levels of independence. Emma Nyce describes how maintaining one's independence despite advancing age means overcoming architectural barriers and convincing one's family that doing so is a safe and healthy choice.

I don't want to talk to [my daughters] about my health because they want me to move to Vancouver. Right now I am trying my best to do what I can with my house [a two story dwelling in Gitwinksihlkw]. I agree with what this *Sim'oogit* [Alver Tait] said about his Mother Sadie. She likes to be private. She does a lot a crafts, beautiful things. She hurt her foot and her doctor said, 'You should get someone to stay with you', and she said, 'I will, but when I am better I am going to stay by myself"…I am very private too. It is not that I am doing something bad, or what, it's just the way it is (everyone laughs) (Emma Nyce).

The tendency Emma mentions, to hide one's infirmities so as not to have to move away from home, has been documented in other Aboriginal-led health-related research. The lack of twenty-four hour care in remote regions takes away Elders' sense of control over where they will live if health difficulties arise. "People living on reserve [or within non-reserve Aboriginal homelands, such as the Nisga'a villages] are often not eligible for the services they would receive off-reserve [or in cities] such as the personal and in-home care from which many seniors benefit…our Elders suffered in silence because they were afraid of the threat of being sent to a nursing home off-reserve. So when they weren't well, they quietly coped. Several of the Elders who lived like this are assessed at the extended care level, so you can understand how great was their need"[88]. In traditional Nisga'a society, by contrast, Elders were influential in community planning and design decisions[89]. Longhouses were built with Elders' instruction, in places selected by those with the most experience with the land[90].

Elders and Community-led design

In contemporary architectural practice, it is both possible and prudent to involve Elders in all levels of site planning and design decisions that influence their lives, noted workshop participant Nita Morven. Without the active involvement of people who use buildings, the designs often fail. Elder and cultural researcher Nita Morven advocated community-led architectural design, offering examples from her experience.

I know one of the first complaints of our women in the building of our recreational centre is the size of the kitchen. This [small kitchen] is largely because the women weren't consulted on the size of the kitchen, even though the women work in the kitchen for our feasts. I noticed in Gitwinksihlkw you have a big kitchen, and that is really handy.

By contrast, culturally responsive design can be achieved when people in a community are consulted about their needs. Architect Gino Pin, referring to his design for Elders at Rae-Edzo, Northwest Territories, writes, "The real essence of good design is to consult with people you're building for—take their ideas and gel them into a building"[91]. Demonstrating the effectiveness of Pin's approach, the Rae Edzo project demonstrates unusual sensitivity to the materials and forms of traditional architecture. For example, privacy fencing between units looks somewhat like the woven cloths of traditional partitions and construction details resemble forms used in basketry and other Native technologies.

How can an architect best work with Elders to produce a design? Nancy Mackin's own experience, with a non-Native community of seniors in a suburban area (fig. 15), verifies that interactive design implies many hours of presenting clearly-drawn ideas and then bringing the seniors' ideas into the next design iteration. Over fifty hours of meetings, dozens of perspective sketches, and a working model that could be torn apart and rebuilt to fit Elders' requirements all added consulting time – but resulted in a project that the seniors themselves attest adds greatly to their health and well-being. Mackin also explored community-led design and research when working with the Nisga'a Nation on the Laxgalts'ap Daycare Centre, and to a lesser extent on housing for Elders and young families in Laxgalts'ap.

Research participants agreed that community-led design is an important process for Aboriginal peoples worldwide. When Elders can make decisions about the form and location of their own environments, the result is often a safe and sensible solution that facilitates independence.

3.2 Elders' challenges and Architectural Solutions: Individual Health

While most research participants expressed their concern for the well-being of their culture and communities, many also offered solutions for how their own dwellings might enhance their own or their spouse's personal health. Even while speaking of their personal needs, participants often looked simultaneously to the future of others. By explaining challenges within their private housing situations, research participants stressed that enhanced health of individual Elders leads full circle back to communal well-being. Active Elders are needed within communities, since they are often the individuals who sustain traditional knowledge while looking to the future, thereby reinforcing community health by strengthening values, roots and a sense of identity (Modeste et al 1995: 353). For Elders to remain active within their own villages, housing improvements are needed.

Stairs to houses cause injuries

Within Nass Valley and many other remote villages, access to the front door is problematic. Elder Hubert Stevens explains the problem from his viewpoint as member of the Gingolx Housing Society, "If we are going to build homes for the Elders, or upgrade their homes – some of them have homes – or renovate them, they will need wheelchair access, a ramp." The majority of houses in the villages have their main living areas on the second floor, which necessitates considerable climbing which can lead to increased accidents as people arrive home laden with groceries or other burdens. Make entrances accessible, urged Elders, in order to minimize the dangers of coming home.

Difficulties bathing

Accessibility of bathrooms was also a frequent topic of discussion during the Elders' workshop. Participants noted that the Nisga'a Council of Elders is committed to improving bathing facilities for Elders, so much so that the issue was brought before the central Nass Valley government.

… we even drafted a resolution to the Nisga'a Lisims Government so we can get better homes for our Elders, so their bath will be easily accessible; their bathtub will be fancy so all they do when they take a shower is close the door or close the curtain and take a shower, when they finish the water will be still running through the drain and they open the door and just walk out. I have seen those among our white friends all over the world today, Even the Japanese people have them. The Japanese baths are really fancy: that shower can be rolled over to your bed and you get off and go to bed! (Hubert Stevens).

In the quotation above, Hubert Stevens referred to design ideas from other cultures as examples of better solutions to bathing than the standard "five-foot-by-eight-foot" layout built in most housing developments. Several Elders mentioned that the usual bathroom design, with the toilet right in front of the bathtub, leaves little room to maneuver beside either fixture. Also difficult are sinks within enclosed cabinets, since the millwork keeps a person seated in a wheelchair from getting close enough to manage the faucets.

Grace Nelson agreed that accessible bathroom designs are vital, and added that the location of the bathroom relative to the bedroom is also important.

All new Elders' housing facilities should have a bathroom right in the bedroom. They need a bath you can just walk into, like my brother Hubert here talked about, you can sit down and take a bath and then walk to your bedroom.

Alver Tait, himself not an Elder but invited to the gathering as a world-renowned carver, artist, and planner of spaces as well as a descendent of the famous Nisga'a architect Oyee, adds that having the bathroom immediately adjacent to the bedroom enhances quality of life. This is particularly true when an Elder lives in a facility that is shared with non-relatives: privacy issues do not disappear simply because one is of advanced age.

My mother likes to take a bath every morning. She doesn't have that: she has to go for a walk down the corridor. She lives in an Elders' home (Nisga'a cultural leader Alver Tait).

Traditional Nisga'a housing did not have the problem of institutionalized bathing facilities, since extended families lived close together in longhouses that were sited in close proximity to fresh water. Some families also enjoyed bathing in hotsprings found in several locations on the Nisga'a Lands.

Present-day solutions to the difficulties posed by typical bathrooms in today's Nass Valley houses can be found within the guidelines of FlexHousing™. One of the recommendations is a shower unit that has a slight slope for water drainage, but otherwise is level with the floor. Extra space beside the bathtub is necessary for easier access, and non-slip floors help with balance. FlexHousing™ recommends that all new housing or extensive renovations include plywood in bathroom and shower walls to facilitate the installation of future grab bars.

Across Canada, Aboriginal communities have experimented with bathroom designs that suit Elders. Not far from the Nass Valley, Skidegate Elder Housing on Haida Gwaii includes many FlexHousing™ recommendations. Toilets are placed with a clear space beside them, so getting onto the toilet is not impeded by the bathtub. The tub/ showers have grab bars to make climbing in easier (fig.11). Further north in Deline, Northwest Territories, architect Gino Pin elected to keep the bathroom relatively small, but located the sink beside the bathtub so that an Elder would have more room to swing his or her legs over the front of the tub (fig. 8). In Eastern Canada the Mohawks of the Bay of Quinte built Granny Flats that also work within FlexHousing™ recommendations: the layout of the bathroom permits easy movement around the toilet and the bath. None of the referenced projects includes the level shower (fig. 13b); possibly, a bath permits therapeutic soaking of tired muscles and joints. The Nisga'a tradition of bathing in hotsprings suggests that the optimal bath might be either nearly level with the floor, as with a traditional Japanese bath (fig. 13a), or a bathtub with the opening front section as referred to by Hubert Stevens (fig. 13c).

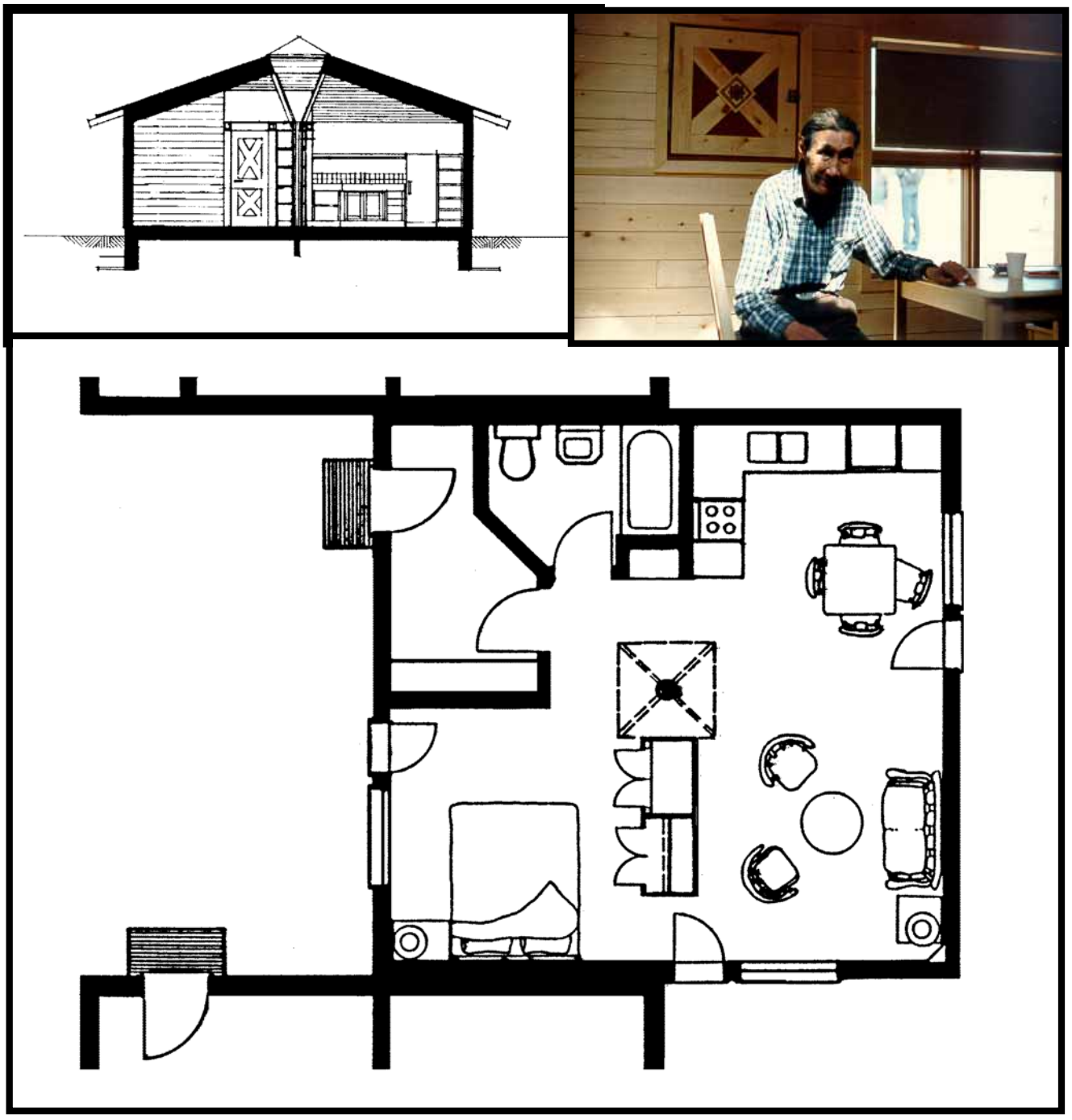


Figure 8. Elder Housing in Deline (formerly Fort Franklin), Northwest Territories has wood walls and a skylight bringing light into the centre as in traditional dwellings. Photographs and plans for Figures 8 and 9 courtesy Gino Pin Architect

Deline (Fort Franklin) Elders' Housing

Figure 9. Fourteen-unit Elder Housing in Deline, NWT. Clockwise from top left: view of entrances; wood finishes and central skylight recall traditional dwellings; Deline landscape; aerial view; floor

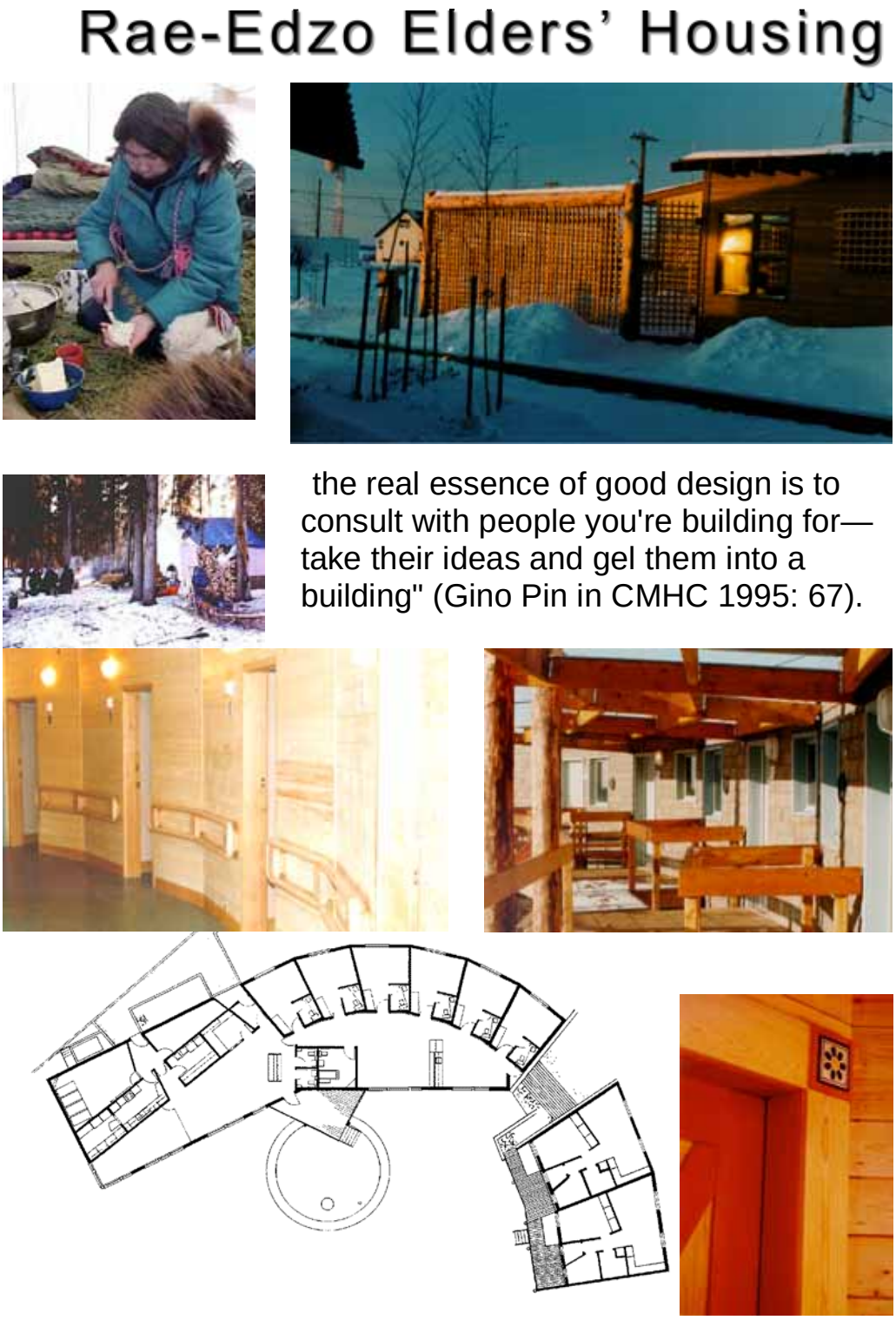


Figure 10. Some views of Rae-Edzo Elders' Housing, Northwest Territories, designed by Architect Gino Pin in close consultation with Elders.

Asthma and respiratory problems

Increasingly, materials used in housing are recognized as contributors to occupant health. Conventional construction methods use a number of products that emit harmful gases long after installation (formaldehyde in cabinetry, shelving, or insulation), trap dust and pollen (carpet), contain lead (faucets or paints), and/ or permit mold to grow (conventional drywall, carpet underlay). Emma Nyce drew attention to the importance of healthy alternatives in housing.

Right now I am doing renovations in my house in Gitwinksihlkw, because there are things in there that are not suitable for my health. I have a bad asthma case. About two years ago the doctor said, 'There shouldn't be any rugs in this house, it is not good for you'. My son told me, "You have to take those rugs out", so that's why I wanted to renovate the house.

Until sometime in the nineteenth century, the Nisg̲a'a and other Northwest Coastal First Nations employed materials and construction systems that had undergone thousands of years of experimentation and testing[92]. "Plant products, and trees in particular, were the essential building materials of the Nisg̲a'a elaborate material culture. Each tree was valued for the unique characteristics of its wood, and used accordingly…The versatile red-cedar was the prince of trees in the Nisg̲a'a world. Its bark and straight-grained rot-resistant wood were put to a plethora of uses" (*Ayuu̲khl Nisg̲a'a* IV: 83). Throughout the Ayuu̲khl Nisg̲a'a, the ancient oral wisdom of the people, woods are analyzed for their durability, hardness, and usefulness. Bark (from cedar, woven into rope), pitch (for glue), roots (from cedar, for tying), and wedges (from crabapple, planks from yellow-cedar) had uses in construction. Paints were often ground from rocks, and were used sparingly. None of the materials threatened the health of occupants, and all were used to maximize the lifespan of a structure. Importantly, no one material was studied by itself: the *Ayuu̲khl Nisg̲a'a* demonstrates that builders understood how different materials worked together as an integrated system.

By contrast, many construction materials still used in current practice and common in the recent past have a high level of toxicity (especially many paints, some insulations), and many (such as many sealants and plastics) degrade relatively quickly, leaving buildings unprotected from leakage and susceptible to hazardous molds. FlexHousing™ describes in detail how to avoid toxic products in buildings, keeping interiors free of gasses and fungi that cause or exacerbate health problems.

A First Nation that met the "healthy materials" challenge is Seabird Island. As with traditional builders' knowledge, the design considers materiality as a component in building systems. Because the project uses solar collectors on the roof, Tyvek™ supro roof sheathing was used as an air barrier on the solar roof to keep interior air healthy for occupants. Radiant heating was used to keep floors warm so that dust-trapping carpets and toxic carpet glues could be completely eliminated. To circumvent molds, rainscreen technology was used in the walls and fans remove excessive moisture in the air. Lead-free plumbing products, low-emission paints, and formaldehyde-free insulation further facilitate occupant health.

Worldwide, agencies such as LEED Canada and LEED in North America, HK-BEAM in Hong Kong, Greenstar in Australia, and BREEAM in the United Kingdom provide systems for rating building performance that include healthful air quality standards. Each organization emphasizes the universality of the goal to construct healthier buildings and the necessity of understanding local cultural and environmental conditions when seeking to meet air quality goals.

Going from hunting or smokehouse to the kitchen involves stairs

During the Elder's workshop, Elder Grace Nelson added her own personal testimony about the importance of access to the front door. She also informs us that unless accessible entrances are provided, Elders may find it difficult to keep up Nisga'a practices of smoking or drying fish. In Nisga'a and other Northwest

Coast tradition, foods are prepared in separate structures such as smokehouses or ganee'e. Women often go back and forth from smokehouse to kitchen (most of which are on the second floor, in Nass villages) while practicing the long-held traditions of "putting up" fish for the winter months. The skills needed for fish-drying are learned over the course of a lifetime, explains Grace.

I spent most of my childhood in an old cannery called Aarondale. A lot of my friends used to live there. We went through a lot of training [in fish preparation]. I still put up fish in the summertime, although my son says not to, so I do it when no-one is around. I like to work and do things around the house. I can't just sit around. But I find it really hard to get around the house now. When I sick a while ago I couldn't get up without help. I have two sons here to help me. So I am really glad you are here, and I hope everything goes well.

Grace explains that asking relatives for help is sometimes counterproductive, since the relative may well tell the Elder not to work so hard or to stop practicing traditional technologies. Neither option suits research participants, who all expressed pride in their ability to use and teach ancestral practices. Elders need to be able to move independently. Even as age reduces mobility, the built environment has the potential to offer the independence Elders need to continue their role as practitioners of traditional knowledge.

Using a grab bar at entrances or in washrooms

Houses that have many stairs to their entrances are not ideal for Elders, but if stairs are inevitable then landings, rise-and-run, railings, and grab bars must be designed and placed to ensure maximum safety. Elder Grace Nelson teaches about stair design using a story from her own past. Within the story we hear about how entrances must be designed so people can manage the complex intermingling of modern life, with its distracting sounds and impending changes, with long-used practices still used in remote communities.

I'll tell you what happened one evening just before New Years' Eve when we first had the road come in. It was the first year the road was in [2003]. I was cutting a whole load full of wood in the shed. I was so excited, I heard on the CB [citizen's band two way communication that most Nass Valley houses use to keep in touch with others in the village] that a truck was coming in, the first truck that was going to make it into the village. What happened is that just as I was going to go into the door, it is about that much [gestures about nine inches] to lift my leg up to go into the door, I saw the truck go by and I fell back. I was lucky I didn't get hurt, I let the woodpile go. My sons all came running up. They gave me a bar now to get myself in the door. I still need it around the house, and to go into the bathroom.

Remote places, especially those with extreme weather conditions, place particular demands on building entrances. In Grace's community of Gingolx, with a single power line and very recent road connection, people need to be able to move heavy bundles of wood in and out in case power is interrupted or villages are snowed in and imported fuel supplies run low. In many ways, people living in remote communities such as Gingolx must be prepared to be self-sufficient in the way of their ancestors. Standardized modern housing designs, however, may not recognize regional or non-urban activities and demands. By contrast, traditional longhouses were designed to work within specific climates and cultural settings. All were constructed around at-grade firepits, to which wood could be carried without too much difficulty. Longhouses that had interior platforms stepping down into the firepit offered weighed handholds in the form of heavy boxes placed at level changes[93]. Because extended families or *huwilp* (the plural of the Nisga'a word *wilp* or house) lived within the longhouse, the building was designed to address the needs and activities of Elders as well as those of younger generations.

The principles of longhouses living are not dissimilar from those of present-day, FlexHousing™, which also accommodates all generations and recommends that housing have no stairs. Further, all housing should have plywood installed near entrances and bathroom fixtures at the time of construction so that grab bars can be installed as needed over the life of the dwelling.

Several present-day housing projects built within Aboriginal communities illustrate the use of rails and grab bars within a culturally sensitive environment. Rae-Edzo Housing in the Northwest Territories has two levels of interior grab bars: a lower bar to suit people who are in wheelchairs or not very tall and a

higher bar to assist Elders at average standing height. For the outside entrances into each unit, wood rails provide a safe entry solution (fig. 10). Skidegate Elder Housing (fig. 11) has grab bars installed to make bathrooms safe.

Accessible design features such as grab bars are increasingly recommended as good building practices, and are recommended for extensive use worldwide. So widely encouraged is accessible or barrier-free design that it is often called "universal design"[94].

The importance of traditional food, such as smoked fish

In Nisga'a communities, buildings for preparing traditional foods, such as smoked fish, are still common. Particularly ubiquitous behind houses of the region are smokehouses, some with ancient tied-connection detailing and others accented with modern features such as skylit anterooms. Yet new housing may not immediately include smokehouses, which causes Elder Jacob Nyce (interview 2003) to worry that some of the younger people did not understand the design principles behind smokehouse construction, and as a result did not always have success with fish smoking. As an antidote to this concern, present-day housing solutions can continue to include smokehouses in the design. Importantly, smokehouses that are associated with Elder housing units will help young people to learn design features and successful strategies for smoking fish. Alternatively, community smokehouses, like the one described by Alice Azak in this research, can be constructed for a group of about four families.

The Laxgalts'ap multi-family housing units designed by Nancy Mackin Architecture in 1996 were intended to have smokehouses, but at first the housing loans would not cover the cost and the smokehouse portion of the design was not built. Later, however, a community smokehouse was added behind the housing units (fig. 14).

"Granny Flats" — accessible, affordable and energy efficient.

Typical Floor Plan
36' x 24'

Figure 11. Mohawks of the Bay of Quinte Granny Flats. Photographs from "Building Houses, Building Community: Better Building in First Nation Territories (1998): 1.

Fig. 12. Three photographs from the Skidegate Elders' Housing. The central photograph shows that toilets are placed with a clear space beside them, so getting onto the toilet is not impeded by the bathtub. The tub/ shower has grab bars to make climbing in easier.

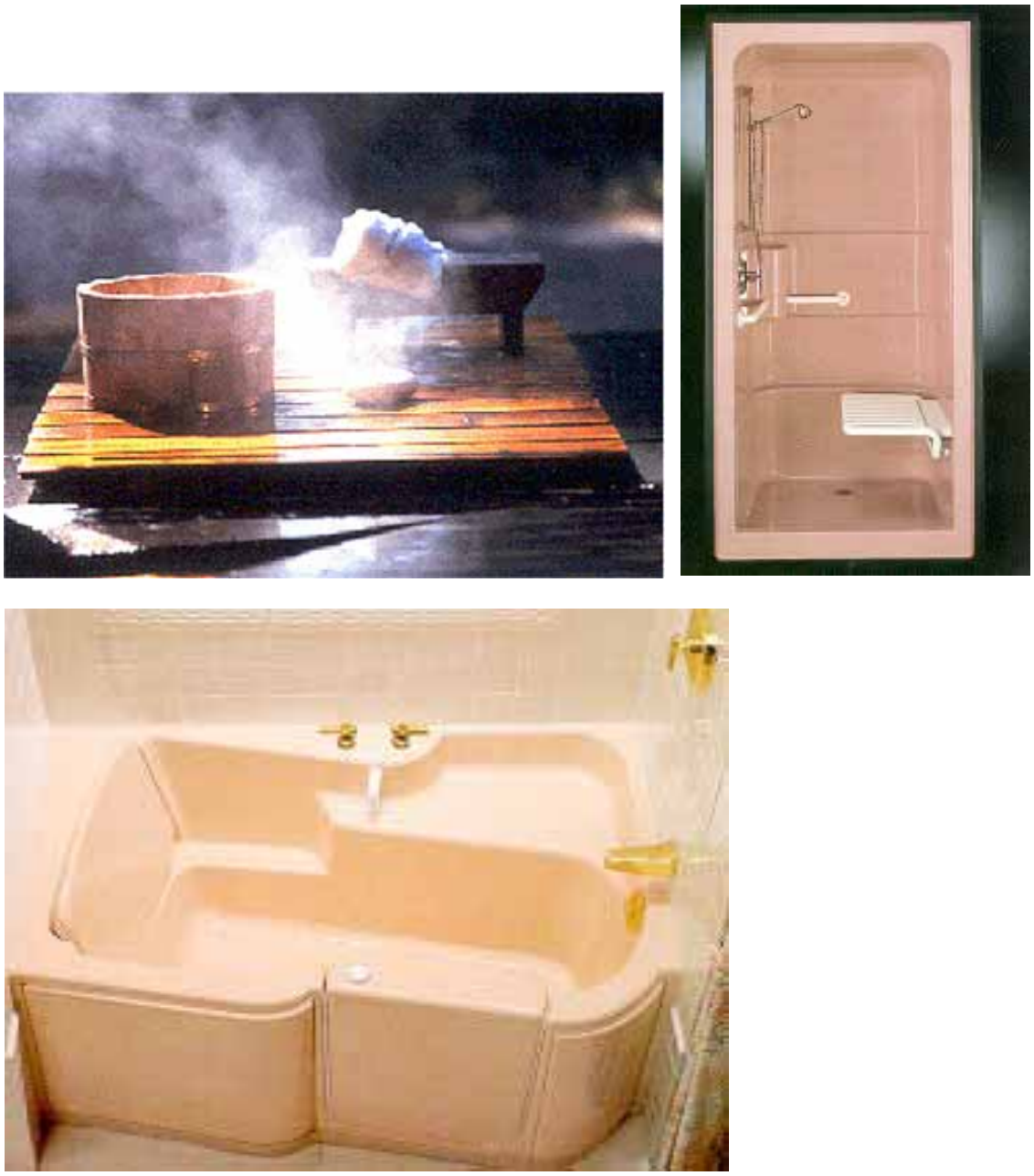


Figure 13. Three types of baths that work with Elders' recommendations (clockwise from top left): 13a: A Japanese bath that opens on one side and then is filled after the person steps in (image from http://www.traveladventures.org/continents/asia/images/onsen02.jpg) ; 13b: a shower designed to be installed flush with the finished floor of the bathroom; 13c: a bathtub that has a door on the front, a series of seats at different levels, and taps that can be easily managed by a person with arthritis (the latter photographs are from Universal Design bathtubs and showers www.nahbrc.org/.../ Seniors/images/.)

Elders are healthier when they eat traditional food

In Nisg̲a'a tradition, food preparation skills were taught from generation to generation, and the diet was varied and healthful (see page 14 of this research). A potential present-day solution is to build a community kitchen in the schools and invite Elders in for meals. Students could do the cooking (and even the gardening and fishing!) as a high school credit course.

A non-First Nations example of community gardens and kitchens in schools is the work of chef Alice Waters in "The Edible Schoolyard" project[95]. "The Edible Schoolyard, in collaboration with Martin Luther King Junior Middle School, provides urban public school students with a one-acre organic garden and a kitchen classroom. Using food systems as a unifying concept, students learn how to grow, harvest, and prepare nutritious seasonal produce. Experiences in the kitchen and garden foster a better understanding of how the natural world sustains us, and promote the environmental and social well being of our school community"[96]

At the post-secondary school level, Wilp Wil̲xo'oskwhl Nisg̲a'a, the Nisg̲a'a House of Wisdom, has plans to build a campus that integrates traditional sciences, including culinary arts and resource management, into the program. The design, by Nancy Mackin, includes traditional resources structures as well as a "community" of longhouse buildings arranged like a village (fig. 16). Elders will be an integral part of the educational programs.

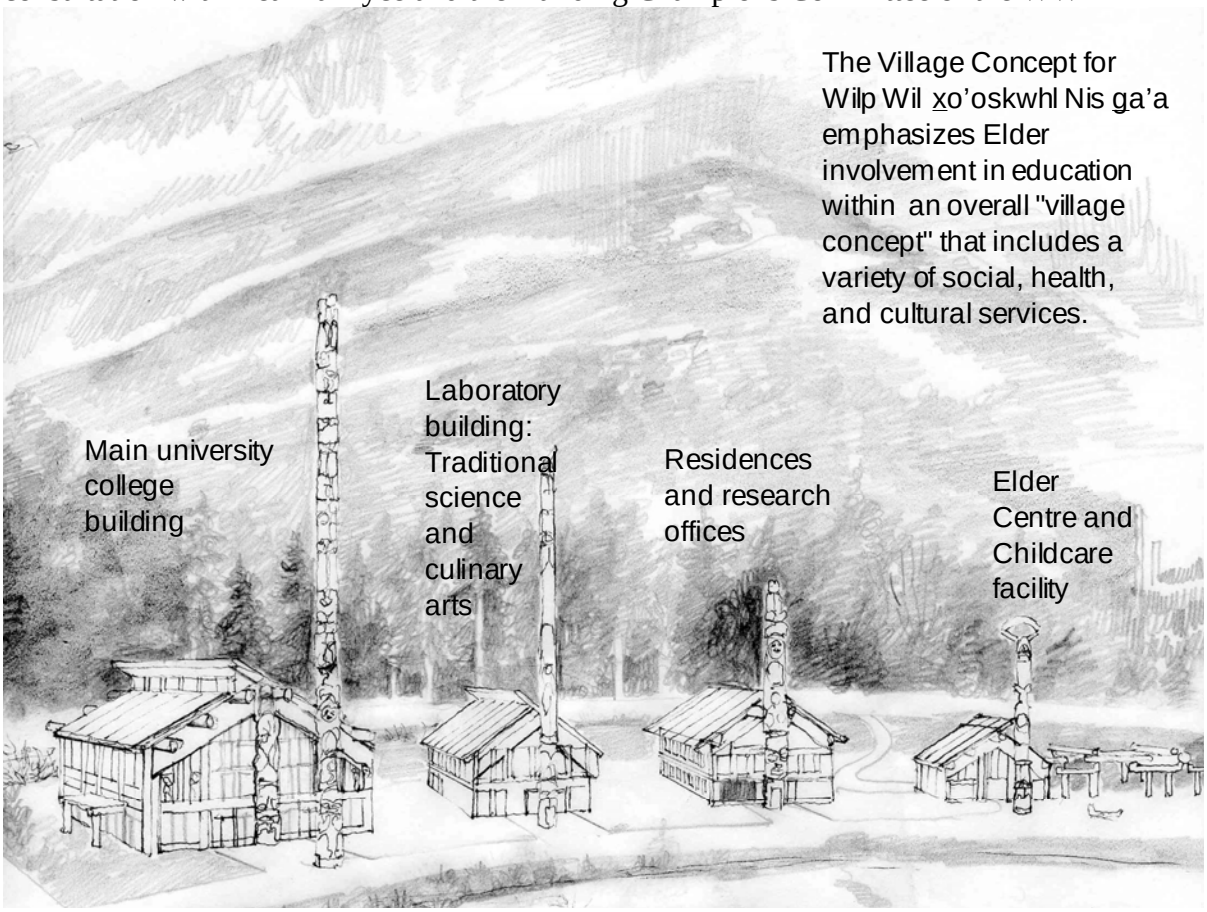
Elders stay strong by remembering their connection with the land

In Nisg̲a'a tradition, Elders stay strong by remembering their connection to the land. In the past, longhouses and smokehouses would be built near the river, a key source of food, a transportation link among villages, and the centre of Nass Valley life. "The people [of the Nass] lived on the edge of that water. The reason why we lived on this river is because of the source of transportation. The source of livelihood was the salmon. That is why we lived there" (Sim'oogit James Gosnell, Hlee<u>k</u>, quoted in *Ayuu<u>k</u>hl Nisg̲a'a* II: xxii).

Figure 14. Smokehouse (at left) added behind Elder/ family housing designed by Nancy Mackin Architecture (portion shown at right), about six years after the main project was completed. Photograph by Robert Mackin-Lang.

Figure15. The West Vancouver Seniors' Activity Centre Expansion, designed in 1994 by Nancy Mackin Architects, is included here because it illustrates four of the connections between health and architecture that were outlined in Chapter two of this document (architecture/ health connections shown in italics). The project optimized *community-led design*: Mackin held over fifty meetings with the Seniors' themselves to achieve the optimal level of user participation and integration of health with architecture. Clockwise from top left: Health is addressed in the relationship between outside and inside spaces, activity spaces (gymnasiums and sports facilities) that promote physical health, expanded spaces for *education* (woodworking, art, music, sewing, cooking), and *nutritional benefits* of a full-service cafeteria in a social setting. *Employment opportunities* are also offered: the seniors themselves fill most of the staff positions at the centre. Following the design through its subsequent use has been an important part of participatory design. By interviewing seniors and staff at the Centre, Nancy Mackin learned that health is considered to be one of the most lasting benefits of the design and spatial programming. Photographs by Simon Scott, drawing by Nancy Mackin.

Figure 16. Wilp Wilxo'oskwhl Nisga'a campus design by Nancy Mackin Ph.D. MAIBC in consultation with Deanna Nyce and the Building Champions Committee of the WWN



Many Native communities across Canada identify with a particular river or waterfront. For those communities, a river-fronting (non-flooding!) site for Elder housing would express the peoples' relationship to the water and land. Chester Moore and Lawrence Adams noted that ideal sites for Elder housing were on the river (although expert gardener Alice Azak preferred a hilltop with mushrooms: an alternative food production site). As a successful First Nations example of building Elder housing near places of traditional food sources, the Mohawk of Quinte Bay built their Elder housing on the Salmon River, named for its importance to food.

Emotional and physical problems with being alone

"It is very lonely sitting here by myself." Everyone [Each Elder sitting at home] has the same story: very lonely sitting here by myself. (Chester Moore).

Workshop participants worried about those who are living in care facilities several or more hours' drive from their home villages, because many residents of care facilities lose opportunities to be part of cultural activities. Alver Tait (Sim'oogit Gadee'lip, Eagle, New Aiyansh) speaks out strongly against moving Elders away, adding that the problems with doing so include loss of opportunities for Elders to speak their Native language.

Our Elders would like to participate and contribute to our culture. Having Elders' housing like this [in the communities] is a great idea, because taking our Elders and sending them outside the village where they cannot participate in our culture every day is taking their lives away. It's almost like sending them away to die, putting them in a home where they are not familiar with the culture especially if they don't like to speak English but prefer to use their own language all the time.

In the longhouse, extended family members were in close contact, preventing loneliness. In the present, the longhouse idea could be adapted to housing forms that are attached and have one or two units available for a caregiver. The caregiver positions would in turn provide much-needed youth employment

and housing. Elder Hubert Stevens (Sim'oogit Wii Laxha, Killer Whale, Gingolx) agrees that a form of housing and a training concept for caregivers are crucial to Elder well-being.

I am really concerned about what is happening today with our Elders. Some of them are alone in our homes, and some of them need caregivers we call them. Caregivers: people paid to look after the Elders in each individual village. We had one in Gingolx but they laid her off. We need more than one. We need three in each village, to go to the Elders and ask them what their needs are.

Duplex-style housing has also proved successful in the Nass Valley communities, as a way for Elders to live adjacent to family members who can provide attention and care. In duplexes, as with other forms of housing, single storey living provides the accessibility Elders need.

I know we took one of our Elders home from Rupert who was in Acropolis Manor [the Seniors' Care facility in Prince Rupert] and then he moved out of there because they weren't looking after him well. So they moved him into an apartment, and the apartment was upstairs! How can he get down to the main floor? It has to be at floor level, ground floor. So we built duplexes [in Gingolx] and his grandson lives next door and goes over to see what he needs (Hubert Stevens).

Elder Chester Moore noted that Elders also like to have the companionship of other Elders who speak the same language and enjoy similar pastimes. A built-form solution used successfully in Metlakatla, Alaska is the "Elder Hostel", a place that serves food and has organized activities as well as spaces for informal social events. Chester relates:

I saw a place in Metlakatla Alaska, an Elders' Hostel there. They also have a café every afternoon for Elders who don't live in the hostel, so they can eat together. I used to go there every year. I brought some fish for them: they were very happy about that. What I saw there is the Elders need a place to get together, to talk to their friends. In Gingolx, even though we live in the same village, we hardly see each other.

In other First Nations communities, architectural solutions have been adopted to free Elders from the emotional isolation and physical dangers of living alone. Notably, projects for Elders by architect Gino Pin are located within homeland villages and include caregiver housing (figs. 9 and 10). Elders the world over can benefit from this idea, confirmed research participants during follow-up telephone interviews.

Table 5. Elders' Challenges and Architectural Solutions. summarizes challenges of the built environment and solutions as found in history, in the present, and First Nations communities that have met each challenge.

Elders' challenges and architectural solutions: population health

Challenges	Nisga'a historical/ cultural solution	Potential present-day solution(s)	First Nation community that met the challenge
Physical architecture	A house is an expression of extended family crests.	The village is the longhouse, although trained health workers and Elder-suited housing is missing.	Seabird Island First Nation Sustainable Community Demonstration Project is designed in a manner that provides sustainable housing for the extended family unit. 
Elderly friends and relatives sent to distant care facilities appear to lose their cultural links and mental faculties.	Elders lived with extended families on their own land, usually on a river or stream and encompassing several ecosystems; Elders guided resource management.	Integrated communities that address cultural, educational, social and health needs of Elders. Many Elders recommended the construction of a traditional village that would enable Elders to be well looked after while maintaining connections to the land and their communities.	Wilp Wilx̱o'oskwhl Nisga'a campus is a total village concept that involves Elders in teaching while providing cultural, health and social services for all generations. Mohawk Bay of Quinte built a community that includes ground-level units for Elders.
Elders worry that the diminished importance of large extended families lead to loss of cultural independence and strength.	Longhouses, and then large Victorian houses, permitted generations to support one another.	The village is the longhouse, with housing close to the centre of village life and places where Elders can teach the young.	Seabird Island First Nation Sustainable Community Demonstration Project is designed to include suites for extended family members and a wellness garden where traditional plant uses can be passed on to the next generation.
No ceremonial areas available for teaching young people, who Elders worry are having children before they are ready.	Elders used to teach children the values of the community in specially designed locations.	Make an integrated "Cultural village" that includes Elders in Education and includes buildings that facilitate the teaching of traditional practices and values.	Wilp Wilx̱o'oskwhl Nisga'a includes Elders in campus design and teaching. 
Young people are lost to drugs and alcohol.	Longhouses were built to accommodate large families that took care of each other.	Build community camps where youth can be instructed in trapping and hunting, such as the one in Bella Bella. Assist youth by involving them in housing.	Seabird Island First Nation took on youth apprentices in the Community Demonstration Project.
Elders' have concerns for Aboriginal people in cities who want to move back to their homelands but cannot find housing due to the high cost of housing.	Families would combine their efforts to build a longhouse. Early twentieth century villages had sawmills, and people volunteered their time for public works projects.	Take a Habitat for Humanities approach: hire youth as apprentices. Community creation of some of the materials, maybe with a portable sawmill.	Oujé-Bougoumou Elders' Housing conforms infrastructure to natural land to reduce construction and operating costs. 
Elders' knowledge leads to healthy communities. Elders' health improves when given some control over their surroundings.	Elders were influential in community planning and design decisions.	Involve Elders in design. 	A non-Native example is the West Vancouver Seniors Activity Expansion of 1994, by Nancy Mackin Architects, which included over 50 meetings with the seniors whose ideas were summarized in dozens of perspective sketches and models. The Mohawks of the Bay of Quinte First Nation (Tyendinaga) involved Elders in the design of the community's Granny Flats.

4

Elders' challenges and architectural solutions: maintaining health of Elders

Elders' challenges	Nisga'a historical/ cultural solution	Potential present-day solution(s)	First Nation community that met the challenge
Stairs to houses cause injuries.	Many longhouses were constructed with ground level entrances.	Build houses with the FlexHousing™ feature of making the entrance at street level.	The Mohawks of the Bay of Quinte First Nation Elder housing is single level.
Difficulties bathing.	Traditional bathing in hotsprings: Elders could walk into pools from the ground level.	FlexHousing™ has a shower unit that has a slight slant for water drainage but is level with the floor.	Elders' housing by the Mohawks of the Bay of Quinte First Nation have a self-draining shower level with the floor and large bathroom doors that can accommodate a wheelchair.
Asthma and respiratory problems.	Orally conveyed traditional landscape knowledge informed builders about healthy building materials.	FlexHousing™ recommends the use of non-toxic products and paints in buildings and no carpets.	The Seabird Island First Nation Sustainable Community Demonstration Project uses non-toxic building products and radiant heat to keep floors warm instead of carpet.
Going to and from the smokehouse to the kitchen involves using stairs.	Kitchens were at ground level.	FlexHousing™ recommends no stairs with a kitchen at ground level and an exit from the kitchen to the yard.	Apache housing designed with anthropologist George Esber has ground floor kitchens designed to suit traditional cooking approaches.
Using a grab bar to get into the house or the washroom.	Houses were at ground level. Traditional bathing in hotsprings.	FlexHousing™ recommends that houses be at ground level and that grab bars be installed during initial construction.	Rae-Edzo Elders' housing has grab bars at several levels and in strategic places where Elders need them.
The importance of traditional food, such as smoked fish.	Smokehouses were built so that approximately four families could share them.	Build community smokehouses or build a smokehouse on the back of Elder housing units where they can teach young people how to smoke fish.	 Laxgalts'ap Elder housing, by Nancy Mackin Architecture, has a smokehouse behind the house.
The Elders stay strong by remembering their connection with the land.	Longhouses and smokehouses used to be built near the source of much food, the river.	Site housing in a manner that expresses people's relationship with the land.	Lax Ksi Luux and Gitwinksihlkw are traditional river-fronting village sites that are proposed for Nisga'a Elder housing.
Elders are lonely and sometimes at risk when they live by themselves or far from their extended family.	Longhouses allowed extended family members to be in close contact.	Design houses that are attached and have one or two units available for a health caregiver(s). This could provide much-needed youth employment and housing. Build Elder hostels where Elders can get together.	Rae-Edzo and Deline Elder Housing are both within the traditional village boundaries and include caregiver housing. In Metlakatla, Alaska there is an Elder Hostel that has a café with organized activities.
Elders are healthier when they eat traditional food.	Food preparation was taught from generation to generation, and the diet was varied and healthful.	Build a community kitchen in the schools and have Elders in to eat. Students could do the cooking (and even the gardening and fishing) as a high school credit course.	A non-First Nations example is Alice Waters' work in American schools, where children help grow, harvest and cook fresh foods.

Elders' challenges and architectural solutions: maintaining healthy ecosystems (people are part of the land)			
Challenges	**Nisga'a historical/ cultural solution**	**Potential present-day solution(s)**	**First Nation community that met the challenge**
Traditional respect for water.	Houses were sited with access to water as a first priority.	Use low-flow showers.	The Seabird Island First Nation Sustainable Community Demonstration uses water-efficient plumbing fixtures.
Traditional respect for the land.	Longhouses were built in close proximity to one another.	Design higher density housing and make efficient land use to express peoples' relationship to the land.	Laxgalts'ap housing was created with community-led design to reflect cultural values. A non-Native example is West Vancouver Seniors' Activity Centre which was co-designed with the Seniors.
Traditional respect for the resources the land provides.	All parts of trees were used; construction materials were harvested so they would be plentiful for countless generations. Selective harvesting and value for a variety of species ensured future abundance.	Use recycled products. Use building products in a manner that they remain durable for a long time.	Seabird Island First Nation houses have a projected life cycle of 100 years.

Chapter 4: Summary and Conclusions

4.1 Possibilities for Future Research

In this research, Elders of the Nisga'a Nation have contributed their wisdom to our understanding of how architectural decision-making influences health challenges faced by ecosystems, communities, and individuals. Further research with Elders of other First Nations will offer still more explanations of how architecture and health interact within and across cultures. Widening the cultural focus of research will also help explain how to adapt architectural solutions to mesh with distinctive cultures, places, and societies. Because a characteristic of architecture is that it expresses culture and personality (Glassie 1975: vii), finding the interface between architecture and health means looking at the ways housing is an integral part of individual, family, and community life.

Secondly, the architecture/ health interface invites further cross-disciplinary research that brings together medical and health promotion expertise with that of architecture, landscape architecture, planning, and landscape ecology. Data collection methods used by health researchers and practitioners will enable a qualitative approach to documenting changes in community health relative to radical changes in architectural style. For example, researchers in health promotion might investigate the historic coincidence of diabetes, changes in physical activity and diet, and suburban housing introduction on reserves. Qualitative research might also help to tease out what influence building design might play in the complex lives of people. This is important information for design professionals, since it is increasingly evident that architecture and landscape architecture are being held partially accountable for how much people exercise (see RAIC 2001, Fiillingham 2005, RAIC 2001) and how and what people eat (see Edible schoolyard 2005). Overall, attention to architecture/ health linkages is increasing. Architectural coalitions such as the Royal Architectural Institute of Canada (RAIC) warn members that "We [architects] must be alert to the health benefits, including less stress, lower blood pressure, and overall improved physical and mental health, that can result when people live and work in accessible,

safe, well-designed, thoughtful structures and landscapes" (Richard Jackson MD MPH in RAIC 2001: preface). It must be stressed, however, that however anxious architects and medical practitioners may be to undertake research with First Peoples, such investigations must follow the Aboriginal community's invitation and must be undertaken by working within protocols of the First Nation.

A third further enquiry might seek to clarify gender influences on relationships between housing and health. As Lee and Reinhardt (2004) assert, "We know relatively little about the differences between men's and women's relationships to their housing". Within Nisga'a architectural traditions, for example, certain domestic structures were used primarily by men (e.g. hunting sheds), others mainly by women (oolichan and berry drying structures, *walbay'askw*) and others equally by both (houses, smokehouses) but with different tasks allocated to each gender. How was health of men or women affected by each dwelling type? How do First Nations oral histories teach about the interconnections between dwellings, health, and gender?

The fourth area needing more research energy is the one recommended by the Elders themselves. How can research ideas be implemented quickly and meaningfully, in time to resolve problems that are troubling people on a daily basis? How does remoteness inhibit access to the political attention that may be necessary to fund construction projects? What leadership qualities are needed to complete the arduous task of fund-raising, design and construction management, commissioning and post-occupancy maintenance? How can educational opportunities be enhanced so that architectural challenges can be resolved soon, within the lifetimes of today's Elders?

4.2 Key architectural ideas for Elder health

Nisg̲a'a research participants and forward-looking Aboriginal communities across Canada have shown that architecture that is designed to strengthen reciprocal relationships among generations and between Elders and the land contributes to ecological as well as cultural health. The ideas that follow summarize the ways that architecture acts as a catalyst in Elder health as well as in the long-term well-being of families, communities, cultures, and landscapes.

Worldview of interconnectedness links Architecture with Ecological Sustainability

The [Nisg̲a'a and other Northwest Coast] people were famous for ceremonies, they were famous for their spirituality, because they believed they were part of the land (Nisg̲a'a Elder Dr. Bert McKay in the 1992 video "As Long as the Rivers Flow").

The worldview that people are part of the land translates into an understanding that the health of people and health of ecosystems are interconnected. Interconnectedness – which includes respect for water, trees, and resources as ancestors and co-inhabitants of the world (Corsiglia and Snively 199, Berkes 1999, Turner, Ignace, and Ignace 2000) – brings forward lessons in architectural design. Since Traditional Ecological Knowledge teaches that reciprocal and spiritual relationships exist between people and other inhabitants of the ecosystem, it follows that design decisions benefiting health of biotic and abiotic communities will also enhance the health of people and their communities.

The worldview that human health and ecosystem health are interconnected is an idea that can be translated into practical architectural solutions for Elder housing. For instance, architecture that respects water might specify low-flow showers and dual flush toilets. Such technological solutions meet the dictum from the *Ayuuk̲hl Nisg̲a'a* that "you take what you need to survive and leave the rest" (Nisg̲a'a Tribal Council 1993: 66). Similarly, respect for the land is architecturally demonstrated when we design

higher density housing and demonstrate efficient land use, thereby echoing principles in traditional coastal architecture wherein longhouses were built in close proximity to one another. Employing building products in a manner that they remain durable for a long time echoes the law of traditional respect for trees. Use of recycled products demonstrates respect for the resources the land provides. Seabird Island housing and the Mohawk of the Bay of Quinte Granny Flats show that all four of these ways of designing with respect are buildable and affordable within present-day First Nations communities (Table 6).

The First Nations worldview that integrates architecture with the health of people and the environment is both ancient and innovative. The worldview is also timely, and is increasingly relevant to present-day challenges within the built environment. The American Institute of Architects has recently commissioned research into the influence of design on public health. LEED Canada (Leadership in Energy and Environmental Design of Canada) is bringing health issues into the next version of sustainable design criteria. The Royal Architectural Institute of Canada is urging architects to think about the connections among architecture, health, and sustainable design in projects of all scales (Fillingham 2005). First Peoples' wisdom not only predated these directives, but also has substantiated the idea of architecture/ environment/ health connectivity with thousands of years of accumulated knowledge and practice (Corsiglia and Snively 1995, Mackin 2004).

Cultural/ Ecological sustainability and Community-led Design

Ecological sustainability, argues restoration ecologist Eric Higgs (2003), relies on the active participation of people as well as an understanding of history. "Any given place changes over time as a combined function of cultural and ecological processes. Narrative continuity is assumed from the past to the future. To act effectively in restoring something for the future, we must take account of cultural memory and ecological history" (ibid: 261-2). As shown in this research, Elder involvement enables designs to be based upon the cultural memory of those for whom a project is designed. Community-led processes bring

forward culturally specific needs that must be included if a design is to work within a people's social organization and social use of space. Further, asking people about how they like to use space brings forward concepts of how spaces can be altered, and therefore help to design projects that work for the future as well as the present. As an additional benefit, community-led design often enhances the self-knowledge of a community and helps people to more clearly identify their own needs[97] while keeping traditional wisdom and knowledge in active practice. In summary, cultural sustainability results when communities, especially Elders, are included in all aspects of architectural and landscape design.

Fostering self-determination and cultural strength are two additional benefits of community-led design and research processes. To successfully undertake culturally-responsive community-led design, the design professional must have background knowledge of the people for whom (s)he designs[98]. It is vital to understand the features of social, political, and economic life that influence spatial use and pattern[99]. To achieve the necessary level of understanding, it is important for design teams to work closely with First Nations governing bodies (band councils, village governments, First Nations central governments) and to participate with those governments in meetings with housing committees, Council of Elders, and communities.

Long-resident peoples' knowledge provides technical as well as cultural guidance to design teams. People who have lived in a region for a long time know about climate and climate change, about materials that are durable and healthy, about what elements of architecture are truly important now and in the future. Traditional knowledge about building design sets a new standard for environmental and cultural sustainability.

Building economic well-being through Elder housing

Elder housing has the potential to catalyze economic and cultural strength from within a community, not only through participation in design decision-making but also through construction projects that involve apprenticeship, local materials production, and other community-engaged practices. Through Elder housing and other construction, opportunities emerge for a revitalized "homegrown" local economy that runs upon initiatives from within remote communities. With local jobs comes a strengthening of peoples' connection with their homelands by offering young people employment alternatives close to home.

Elder housing projects that are designed for community involvement at all stages of construction contribute to what Higgs (2003) references as a "two-tier economic system. At one level is an artisanal economy comprising local autonomous practices. At the other would be economic institutions that would permit desirable goods that would be deemed too complicated and intensive to be produced through decentralized processes…Pragmatic choices would be made to lessen our dependence on mass-produced goods, seeking to use and support local ones" (ibid: 258). Housing construction is an important part of building strength from within a community, and illustrates how remote communities might develop stronger, healthier, more diversified economies. For example, while the occasional steel beam would be imported from far-away places, the majority of framing and finishing lumber might be produced locally in a one- or two-person sawmill. Local construction-related businesses are part of First Nations history in Canada, and are re-emerging as a source of renewed well-being in communities from Seabird Island, BC to Bay of Quinte, PQ.

As demonstrated within this research, several remote communities have found Elder housing to be a significant part of rebuilding economically sustainable, locally-based construction industries. There are several reasons why Elder housing is optimal for apprenticeships and local materials production. Elder housing is optimally single story construction. Elder housing units are seldom large, and simple designs

prevail in the interests of affordability. Healthy materials, such as those using locally-sourced wood, are ideal. Thus, Elder housing can be seen as a step towards economic sustainability within remote communities.

Ecological, cultural, and economic sustainability: Keys to architecture for Elder Health

This Elder-led research verifies that Elder housing and health facilities are definitely needed in remote Aboriginal communities. Sending Elders away to urban centres for care and housing takes an enormous toll on cultural strength, and may damage links between youth and Elders. The distant institutional "home" for seniors is, in some ways, analogous to the residential school many Elders attended as youth in the way it fractures family relationships. Unlike children, frail or disabled Elders who must go to institutionalized living away from their homelands rarely return. This scenario can, however, change if new facilities for Elders are constructed in home villages.

Nisga'a Elders also teach us that the needed housing must enhance health and well-being not only of the Elders themselves but also of other members of their remote communities. If housing is to contribute to well-being of communities, it must be sustainable: that is, it must last a long time and work well within the context of the culture, ecology, and economy of the people and their homelands.

Sustainability works on a number of interconnected levels. Cultural sustainability applies to buildings that think ahead to the future while retaining important connections to the past. Participatory decision-making is a key to making the programming, design, and construction of Elder housing responsive to both traditional wisdom and to future needs. Housing that works well into the future considers the ecological conditions of a place: understanding how a building will respond over time to climate, soils conditions, and landscape pattern is crucial to building longevity. Buildings that are culturally appropriate and built to last are also economically more sustainable than most short-term buildings, since they need fewer

renovations and intensive maintenance. Economic sustainability also depends on expanding cultural capital including within-village expertise, employment opportunities, and Elder-youth knowledge exchange.

Elder housing that is economically, culturally, and ecologically sustainable has the best chance of bringing lasting opportunities for health and well-being into remote communities. If architecture is to facilitate Elder health, the important task for design professionals is to work within communities and with Elders to create a participatory framework so that communities themselves can create the housing.

APPENDIX I: Questions and Forms for Elders' Housing Workshop February 14, 2005

The meeting opened with a prayer said in Nisga'a by Elder Jacob Nyce. Then Elders volunteered to speak. Then, Mackin gave a thirty minute slide show summarizing health and housing options currently available in the region, some recent projects built in other parts of Canada, and some ideas from Nisga'a architectural history that might provide clues to new sustainable solutions. Then, four questions were posed for consideration. Elders were invited to speak to the questions as well as to other housing and health issues relating to their own concerns and experiences.

- What new Elders' housing choices are needed in your communities?
- How can you, as Elders, influence health and housing improvements?
- How can communities like yours that are now two to four hours' drive to a hospital become safer places for Elders to live?
- Should Elders' and youth facilities be combined? How can new Elders' facilities also improve conditions for young people e.g. employment and training?

Before discussions began, research participants each signed and returned the following consent form.

Consent Form

Sustainable Elder health and housing in remote British Columbia: Nisg̲a'a-led architectural research

Principal Investigators: Nancy Mackin PhD MAIBC tel. (604) 720-6413, and Professor Deanna Nyce, CEO Wilp Wilx̲o'oskwhl Nisg̲a'a (House of Wisdom, or WWN).

Co-Investigator(s): Mineo Tanaka MAIBC; Dalia Gottlieb Tanaka Ph.D. student.

Purpose: This research is funded by CMHC External Research Grants. The research question is: What tradition-based solutions for housing and health of elders can be documented, and adapted to present-day needs of Aboriginal elders in remote British Columbian communities? The intention is to provide a review of existing Elder care in Northwestern British Columbia, and to listen to Elders of Nisg̲a'a communities to determine how housing and health can be amended to meet the wishes and desires of the Elders themselves.

Study Procedures:

Housing and health Facilities available to Nisg̲a'a Elders from Ging̲olx, Laxg̲alts'ap, Gitwinksihlkw, and New Aiyansh are studied in three interrelated stages. Firstly, geography of existing housing, recreational, health, and cultural facilities for Aboriginal elders in Northwestern British Columbia British Columbia is summarized on GIS maps and other visual and text records. A variety of housing and health options available to Aboriginal Elders elsewhere in Canada are also summarized and presented visually. This initial research is used to inform the second stage of research, wherein a workshop is held with sixteen Elders from the four selected communities to discuss Elders' experiences of interrelationships among health, housing, and other architectural/ landscape facilities. Finally, Elder-led recommendations for architectural improvements to health, healing, and housing are presented in a written and illustrated document for publication by CMHC. In these three tasks, the research intends to demonstrate the need for improved elder facilities, the importance of self-determination with respect to health and housing improvements, and the legacy of sustainable architectural solutions that thrives within Elders' memories.

Confidentiality:

Participants will be identified by name only if they agree to be identified. For participants who wish participate without being identified by name, results will be kept confidential: identified only by code number, and kept in a locked filing cabinet. If confidential data records are kept on a computer hard disk, they will be in the researcher's personal computer with password protection. After publication, confidential results will be downloaded onto disk or CD and stored in a locked filing cabinet.

CF version: Jan 1, 2000

Contact:

If I have any questions or desire further information with respect to this study, I may contact Dr. Nancy Mackin or one of her associates at 604-720-6413.

If I have any concerns about my treatment or rights as a research subject I may contact Professor Deanna Nyce, CEO of Wilp Wilxo'oskwhl Nisga'a, at 250-633-2292.

Consent:

I understand that my participation in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at any time.

I would like copies of tapes or other materials as follows:

_____

I have received a copy of this consent form for my own records.

Personal notation: _____

I consent to participate in this study.

_____

Subject Signature Date

_____

Signature of a Witness Date

APPENDIX II: Wilp Wilxo'oskwhl Nisga'a research protocols

Note: as indicated within the protocols themselves, the provisions below need to be used in conjunction with other covenants and with the written and oral laws of the Nisga'a Nation.

RESEARCH:

Research and teaching of Nisga'a Language and Culture will be developed in accordance with Nisga'a and Western principles of scholarly integrity consistent with our joint commitment to pursue the highest standards in teaching and research. The following provisions are drafted and are to be interpreted and applied in accordance with the provisions of the Ayuukhl Nisga'a [Nisga'a Law].

In accordance with this mandate the WWN has received regarding Nisga'a Language and Culture, the WWN outlines the following provisions regarding approval of research in the Nass:

RESEARCHERS

Subject to covenants with NTC [Nisga'a Tribal Council, now Nisga'a Lisims Government or NLG], the WWN may approve research in the Nass. Before any research can commence in the Nass, the researcher must comply or agree to the following:

1. Submit proposal to WWN for approval
2. Submit proposal to the relevant Nisga'a community or institution for approval
3. All the materials used and results of the research remain the sole property of the WWN or appropriate body claiming ownership of the research materials.
4. The researcher will distribute one copy of all materials and results of the research to the WWN and, where applicable, one copy to the relevant Nisga'a institution.
5. All materials and results obtained from the researcher must be disclosed to the WWN and to the relevant Nisga'a institution before the results are utilized in any way, whether for research, publication, or any other purpose. The WWN reserves the right to review and recommend changes to format and content on the results of research.

6. The researcher must agree to and execute an agreement with the WWN and relevant institution regarding purpose, methodology, results, use, publications, and confidentiality to any information obtained as a result of the research.

Suggestion for future legislation governing protection of artifacts which could be defined to include "stories" as artifacts with exceptions for research authorized by WWN in accordance with its rules and regulations.

NOTES

[1] See Table classifying Aboriginal communities in Canada by region, found in Elliot and Foster 1995: 116
[2] Responding to changes in the degree of isolation experienced by aboriginal communities, Health Canada (2000) defines Rural and Remote Communities as communities of less than 10,000 population that are at considerable distance from many urban services and resources.
[3] Architect Gino Pin, quoted in CMHC 1995: 67.
[4] Frankish et al 1997, Mackin 2004.
[5] MRCC, NSERC, and SSHRC 2003: 6.4.
[6] WWN n.d. See appendix II for the WWN protocols used Dr. Mackin's team
[7] Elliot and Foster (1995): 95. See also Eyles (1993) and Jones and Moon (1993)
[8] See Rosenberg, M., Hanlon, N., and McDermott, M. (1994)..
[9] Beaton, N (1994), Aboriginal Health and a New Curriculum for Rural Doctors (*The Medical Journal of Australia* 160: 185-6)
[10] Shultz, Rosalee on-line review of Couzos, Sophia and Murray, Richard, *Aboriginal Primary Health Care: an Evidence Based Approach* (Melbourne: Oxford University Press, 1999).
[11] World Health Organization, Nordic Council of Health Ministers and the United Nations Environment Program (1991). Sundsvall Statement on Supportive Environments. Third International Congress of Health Promotion., 9-15 June 1991, Sundsvall, Sweden.
[12] See CMHC 2002 and Esber 1987 for different ways of understanding how the characteristics of a population influence decisions about the built environment.
[13] Turner, Nancy, Ignce, Marianne, and Ignace, Ronald, 2000. Traditional Ecological Wisdom of Aboriginal Peoples in British Columbia: 1276, 1280.
[14] Tennant, Paul (1995 and 2003), Mackin (2004).
[15] 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).
[16] Ibid: 237.
[17] Nisg̲a'a Tribal Council 1998: 32.
[18] Dr. Bert McKay, Interview "Longhouses as House of Learning" March 2003 with Nancy Mackin.
[19] See Hebda and Matthewes (1995) for a detailed discussion of the evidence of longhouses on the North Pacific Coast, and the corresponding ecosystems that show longhouses became more evident as red-cedar increased in abundance in each region.
[20] Dr. Bert McKay interview March 2003.
[21] See McLennan and Duffek 2000: 109 for analysis of the intellectual framework found within housefront paintings.
[22] Elder Dr. Bert McKay, interview 2003. See Mackin 2004: 100.
[23] Elder Dr. Joe Gosnell interview 2003. See Mackin 2004: 110.
[24] Nisg̲a'a Elder Emma Nyce, Sigidimnak Hlguwil Ksi hlgum Maaskgum Hlbin, Eagle, Gitwinksihlkw, pers. comm. August 2003. Dr. Bert McKay explained the plank flooring around the hearth in the March 2003 Interview.
[25] Ayuu̲khl Nisg̲a'a IV: 237.
[26] Ibid.
[27] Interview with Dr. Bert McKay, Nisg̲a'a Elder, conducted by Nancy Mackin in March 2003.
[28] Dr. Bertram McKay, Lax̲g̲alts'ap, in an interview with Nancy Mackin March 2003.
[29] All italicized words in the document are Nisg̲a'a, which is one of the Tsimshian languages and is closely related to Sm'algyax (Tsimshian) and Gitk'san.
[30] See caption relating to fig. 2 of this research.

[31] The sustainability of traditional wisdom is evidenced by the consistent oolichan harvest still maintained by Nisga'a managed fisheries. By contrast, Fisheries and Oceans Canada-managed oolichan stocks in the Fraser and Skeena Rivers have been blue-listed—expected to become extinct or nearly so unless management practices are changed (Oolichan conservation society 2004).
[32] Elder Emma Nyce explained that these structures were often far from villages.
[33] See Corsiglia and Snively 1995.
[34] See Turner, Ignace, and Ignace for an explanation of TEKW and its ongoing importance.
[35] See Berkes 1999 and Turner, Ignace, and Ignace 2000.
[36] For discussion of increasing political and ethical problems of non-Native scientists analyzing Aboriginal skeletal remains see Hopkinson, Stevenson, and Turner ((1995): 131.
[37] See Cybulski 1992 Chapter 7 and Appendix A.
[38] Hopkinson, Stephenson, and Turner 1995: 133.
[39] Further examples of innovative traditional architecture that create comfort even in severe climates can be found in Reinhardt, Gregory and Molly Lee 2003, *Eskimo Architecture* (Fairbanks: University of Alaska Press).
[40] Acheson (1995): 12.
[41] (DIA 1880).
[42] Kelm, Mary-Ellen (1998). *Colonizing Bodies.* Vancouver: UBC Press
[43] Ibid. and Harris 2004: 290.
[44] Tennant 1995: 81.
[45] Ibid.
[46] See National Indian Brotherhood 1972.
[47] Information about housing is provided by Harry Nyce Jr., CEO of Gitwinksihlkw Village Government, and by Deanna Nyce.
[48] The Board is one of the original two health care service delivery systems in British Columbia that is managed by an Aboriginal Nation. By 1990 a total of eight similar health transfer agreements had been agreed to by Canadian government, who acknowledged that Native health and access to health services were poor compared to those of non-Native Canadians.
[49] Clarkson et. al 1992: vii. See also Beaton 1994 and Jones and Moon 1993.
[50] In British Columbia, licensed care facilities are grouped by levels of care according to the residents' case-mix: intermediate care only (IC), intermediate and extended care (IC & EC) also known as continuous care, multi-level care, or extended care only. IC facilities provide care for people with relatively more functional ability, whereas extended care facilities accommodate the most functionally dependent people. Intermediate Care provides care in long-term care facilities for people requiring professional nursing care and assistance with activities of daily living. The three levels of Intermediate Care — IC1, IC2 and IC3 — involve progressively more care and assistance.
[51] Information provided February 11, 2005 by Mona Kelley, executive assistance of home and community care in Prince Rupert, BC.
[52] Northern Health increases funding to northern adult day centres. Accessed on-line May 12, 2005 at http://www.northernhealth.ca/phs/news.asp?articleid=1074&zoneid=1.
[53] Araki 2004: 1
[54] In an effort to make sure the standard of care is met, the British Columbia established the Assisted Living Registrar in May 2004 to regulate non-Government care facilities and programs.
[55] CMHC 2002: iii.
[56] Ibid.
[57] Indian and Northern Affairs Canada, Seabird Island First Nation, and CMHC (n.d.): 8.
[58] See Ibid. and "In a Sacred Way we Build" 2004 (videotape).
[59] Turner, Ignace, and Ignace (2000): 1276.
[60] Turner, Ignace, and Ignace 2000: 1276.
[61]The paper Nita refers to is probably Esber 1987.

[62] CMHC 2003: introduction (not paginated).
[63] In a telephone interview with author Nancy Mackin May 2, 2005, Elder Hubert Stevens reiterated the worldwide importance of the workshop results that relate physical architecture to health. He also reviewed the ideas with the Gingolx housing director, who concurred about the widespread applicability of adaptable housing based on long tradition.
[64] See *Ayuukhl Nisga'a* Volume 4, page 223.
[65] See CMHC 2004 "In a Sacred Way we Build" for details of the Healing Garden and its uses.
[66] See CMHC 1998a.
[67] This idea is distilled from discussions with Deanna Nyce (WWN), Marcelle Gareau (CMHC), and Nita Morven (cultural researcher of the Nisga'a Nation). A similar idea was voiced by Nisga'a Elder Dr. Frank Calder, who spoke of the reservation system and its drain on peoples' focus and strength in October 1998, at the opening of the Laxgalts'ap Village Government offices (a building designed by the author, Nancy Mackin).
[68] Unlike the "Coming full Circle" initiative based in Ontario, whose approach emphasizes assisting CHRs and family caregivers in motivating elder Aboriginal people to become more active by encouraging activities that include traditional lifestyles, Nisga'a Elders testified that they themselves are motivated and need support in establishing programs so they can share their knowledge of traditional lifestyles with young people.
[69] Nisga'a Lisims (Central) Government (NLG) President Nelson Leeson is committed to developing youth programs in the Nass Valley, adding "Any input and resource allocation NLG puts forward toward today's youth is an investment in our future". Nisga'a Lisims Government Newspaper February 2005: 1.
[70] Read 1995: 325.
[71] Modeste et al 1995: 345.
[72] "{Ouje-Bougoumou] is one of the few "Indian Settlements" that made a precedent of obtaining a tax exemption status such as a recognized Reserve in Canada without any formal recognition of the community pursuant to the Indian Act or other legislation. It is most likely the only community which has a village, tax exemption status, and government funding without having surrendered any lands or given up jurisdictional authority. In an agreement signed with the Quebec government in 1989 after a road block and subsequently with the Federal Government in 1992, the community explicitly reserved the right to sue for past damages while receiving funding to build a new village. There is still an outstanding claim for compensation, compensation for all the damage of the land, destruction of previous village sites and disrupting the Oujé-Bougoumou Cree way of life" (Councilor Freddy Bosum 2005).
[73] Government of Canada 2000: 40.
[74] Government of Canada 2000: 40.
[75] INAC, Seabird Island First Nation, and CMHC n.d. "Building a Sustainable Future: Seabird Island First Nation Housing Demonstration Project.
[76] CMHC 2002. In a Sacred Way we build: commentator quotation.
[77] Ibid, quotation by Larry Pete.
[78] See Aboriginal Partnership Development, contact cgrant@cmhc-shcl.ga.ca
[79] INAC n.d.
[80] The thirty percent figure is substantiated by contractors in the region as well as by architect/ author Nancy Mackin's experiences in various communities of Northern BC
[81] Habitat for Humanity accessed on-line May 11, 2005 at http://www.habitat.org/
[82] Mohawks of the Bay of Quinte. "Building Homes, Building Community". Videocassette c. 2002.
[83] Marcelle Gareau May 2005 pers. comm.
[84] Mohawks of the Bay of Quinte. "Building Homes, Building Community". Videocassette c. 2002.
[85] The range of housing types available in urban areas and in other parts of Canada is not available in the Nass Valley at this time. Affordable housing is missing in the remote communities, unlike in nearly urban areas. "The housing that you are talking about [Elder housing built in remote communities elsewhere – see Section 2.4], we never had that…Some of the homes in Terrace and Rupert where my brothers are

staying, two hundred and some per month, one-hundred-and-ninety per month—the low rental units: we don't have that" (Horace Stevens). At the same time, if units are too small the Elders are unhappy because there is not enough space for storage, as Mackin learned when discussing housing units in Laxgalts'ap with Elderly residents.

[86] CMHC-SCHL (n.d.). Partnerships: Home to Canadians. Ottawa: CMHC.

[87] World Bank 1999. In "Social Capital", Infed Encyclopedia Accessed June 14, 2005 at http://www.infed.org/biblio/social_capital.htm

[88] Modeste et al 1995: 352.

[89] See Mackin 2004 for history of community-led design among Nisga'a people

[90] *Ayuukhl Nisga'a* IV: 18-19.

[91] Gino Pin in CMHC 1995: 67.

[92] See Corsiglia and Snively 1995.

[93] Dr. Bert McKay, Nisga'a Elder, in Mackin 2004.

[94] Universal Design bathtubs and showers www.nahbrc.org/.../ Seniors/images/.)

[95]The Edible Schoolyard. Accessed on-line May 17, 2005 at http://www.edibleschoolyard.org/homepage.html

[96] Ibid.

[97] Esber 1987, Mackin 2004.

[98] Esber 1987.

[99] Mackin (2004) came to this conclusion through the Nisga'a peoples' guidance. Esber (1987) advocated self-determination with respect to the design of a community to meet the needs of Apache people.

BIBLIOGRAPHY

Acheson, Steven (1995). Culture contact, Demography, and Health in Aboriginal Peoples. In *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia* (Victoria B.C.: University of Victoria): 2-42.

Akari, Yuriko (2004). *Assisted Living Settings in British Columbia: Policy Goals and Gaps*. MA thesis, Department of Gerontology, Simon Fraser University.

Ayuukhl Nisga'a Vols. I-IV (1994). New Aiyansh: Wilp Wilxo'oskwhl Nisga'a Publications.

Azzolini, Luciano Secondo (1993).*Too much time and the days are long: housing native elders in a small northern community*. Vancouver: University of British Columbia Press.

Barman, Jean (1995a). Schooled for Inequality: the Education of British Columbia Aboriginal Children. *Children, Teachers, and Schools in the History of British Columbia*. Calgary: Detselig Enterprises: 57-80

Beaton, N (1994). Aboriginal Health and a New Curriculum for Rural Doctors. *The Medical Journal of Australia* 160: 185-6.

Berkes, Fikret (1999). *Sacred Ecology: Traditional Ecological Knowledge and Resource Management.* Philadelphia, PA: Taylor and Francis.

Bosum, Freddy (2005). History of Oujé-Bougoumou. Accessed on-line at http://www.ouje.ca/content/our-story/history.php.

Brooks, Ina Mae (2004). Look Who's Cooking: Six secrets to a wheelchair accessible kitchen. In *Abilities* 61: 30-31.

Canada Green Building Council (2005). LEED Canada rating system. Accessed on-line at http://www.cagbc.ca/building_rating_systems/leed_rating_system.php

Casselman, Joel (2004). Visitability: Housing that fits everyone. In *Abilities* 61: 24-26.

Clarkson, L. Morrissette, V., and Regallet, G. (1992). *Our responsibility to the Seventh Generation: Indigenous people and Sustainable Development.* Winnipeg: International Institute for Sustainable Development.

CMHC (Canada Mortgage and Housing Corporation) (1991). *Housing for seniors: the challenge in Northern and remote communities: conference proceedings.* September 29-October 1, 1991 Yellowknife, Northwest Territories. Ottawa : Canada Mortgage and Housing Corporation.

CMHC (1995). *Sharing successes in native housing: highlights of the CMHC housing awards symposium on aboriginal housing*. Ottawa: CMHC.

CMHC (1998). Addressing special housing needs in First Nation Communities. Ottawa: CMHC.

CMHC (1998). Building Houses, Building Community: Better Building in First Nations Territories. The Mohawks of the Bay of Quinte. Ottawa: CMHC.

CMHC (2000). FlexHousing: The Professionals' Guide. Ottawa: CMHC.

CMHC (2002). The Population Health Approach to Housing: A Framework for Research. Ottawa: CMHC.

CMHC (2003). Maintaining Seniors' Independence Through Home Adaptations. Ottawa: CMHC.

CMHC (2004). Building a Sustainable Future: Seabird Island Housing. Accessed on-line http://www.cmhc.ca/en/Region/bcyu.

CMHC (2004). Housing for Life: FlexHousing Adapts to Life's Changes. In *Abilities* 61: 28-29.

CMHC-SCHL (n.d.). Partnerships: Home to Canadians. Ottawa: CMHC.

Corsiglia, J. and G. Snively (1995). Global lessons from the traditional science of long resident peoples. In G. Snively and A. McKinnon, eds. *Thinking Globally about Mathematics and Science Education.* Vancouver: Center for the Study of Curriculum and Instruction, University of British Columbia: 25-51.

Cybulski, J.S. (1992). A Greenville Burial Ground: Human Remains and Mortuary Elements in British Columbia Coast Prehistory. Hull: Canadian Museum of Civilization.

DIA (Department of Indian Affairs) (1880). *Annual Report*.

Dunn, James R. (2002) *The population health approach to housing: a framework for research.* Ottawa: CMHC.

Edible Schoolyard. Accessed on-line May 17, 2005 at http://www.edibleschoolyard.org/homepage.html

Elliot, Susan J. and Leslie T. Foster (1995). Mind-Body-Place: A Geography of Aboriginal Health in British Columbia. In Stephenson, Peter H., Susan J. Elliot, Leslie T. Foster, and Jill Harris, eds. *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia* (Victoria B.C.: University of Victoria): 95-128.

Esber, George S. Jr. (1987). Designing Apache homes with Apaches. In Robert Wulff and Shirley Fiske, editors, *Anthropological Praxis* (Boulder: Westview Press): 187-196.

Eyles, J. (1993). From disease ecology and spatial analysis to…? The challenges of medical geography in Canada. *Health and Canadian Society* 1 (1): 113-146.

Fillingham. Christopher T (2005). Taking the lead in health as design factor. *Journal of* Commerce May 16, 2005: 2.

Foster, L.T., Macdonald, J., Tuk, T.A., Uh, S.H., and Talbot, D. (1995). Native Health in British Columbia: A Vital Statistics Perspective. In Stephenson, Peter H., Susan J. Elliot, Leslie T. Foster, and Jill Harris, eds. *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia* (Victoria B.C.: University of Victoria): 43-94.

Frankish, C. J., A. George, A., Daniel, M. & Walker, M. (1997). *Participatory health promotion research in Canada, a community guidebook.* The Health Promotion Development Division, Health Canada.

Glassie, Henry (1975). *Folk Housing in Rural Virginia*. Knoxville: University of Tennessee Press.

Gottleib-Tanaka, D., Small, J.A., & Yassi, A. (2003). A program of creative expression activities for seniors with dementia. *Dementia, The International Journal of Social Research and Practice.*

Government of Canada (1999). Aboriginal Social and Economic Development: Lessons Learned. Accessed on-line May 10, 2005 at http://www11.hrsdc.gc.ca/en/cs/sp/hrsdc/edd/reports/1999-000376/page06.shtml.

Government of Canada (2000). *Experiences in First Nations, Inuit, and Northern Communities: Comprehensive Community Planning.* Ottawa: Government of Canada.

Guide to Canadian Health Care Facilities (2004). Ottawa: Canadian Healthcare Association.

Habitat for Humanity. Accessed on-line May 11, 2005 at http://www.habitat.org/

Hańiimagoonisgum Algaxhl Nisga'a (Nisga'a Dictionary) (2001). New Aiyansh: Wilp Wilxo'oskwhl Nisga'a publications.

Hansard, British Columbia, Vol. 27 no. 2 (February 9, 2005). Accessed on-line at http://www.legis.gov.bc.ca/hansard/37th6th/h50209p.htm

Harris, Cole (2002). *Making Native space: Colonialism, Resistance, and Reserves in British Columbia*. Vancouver: UBC Press.

Health Canada (2000). Rural and Remote Health Innovations Initiative. Accessed on-line March 4, 2005 at http://www.hc-sc.gc.ca/english/ruralhealth/funding.html

Hebda, Richard and Rolf W. Mathewes (1984). Holocene History of Cedar and Native Indian Cultures of the North Pacific Coast. *Science* 225: 4663 (Aug. 17, 1984): 711.

Higgs, Eric (2003). *Nature by Design: people, natural process, and ecological restoration.* Cambridge: MIT Press.

Hopkinson, Jennifer, Stevenson, Peter H., and Nancy J. Turner (1995). Changing Traditional Diet and Nutrition in Aboriginal Peoples. In *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia* (Victoria B.C.: University of Victoria): 129-165.

Indian and Northern Affairs Canada, Seabird Island First Nation, and CMHC (n.d.). *Building a Sustainable Future: Seabird Island First Nation Sustainable Community Demonstration Project.* Ottawa: CMHC.

Indian and Northern Affairs Canada (n.d.). Youth. Accessed on-line at http://www.ainc-inac.gc.ca/ch/rcap/sg/si45_e.html

Infed Encyclopedia: "Social Capital". Accessed on-line June 14, 2005 at http://www.infed.org/biblio/social_capital.htm

Jones, K. and Moon, G. (1993). Medical geography: taking space seriously. *Progress in Human Geography* 17 (4): 515-524.

Kelm, Mary-Ellen (1998). *Colonizing Bodies.* Vancouver: UBC Press.

Legislative Assembly of the Northwest Territories (2005). Community profile: Fort Franklin. Accessed on-line at www.assembly.gov.nt.ca/VisitorInfo/ NWTMapandHistory/Deline.html.

Mackin, Nancy (2004). *Nisga'a Architecture and Landscapes: Ecological Wisdom and Community-led Design.* Ph.D. dissertation. Vancouver: University of British Columbia.

Marsden, Susan, Margaret Seguin Anderson, and Deanna Nyce (2002). Tsimshian. In Paul Magocsi ed. *Encyclopoedia of Canada's Peoples* (Toronto: University of Toronto Press): 264-291.

Modeste, Diane et al (1995). A journey through the Tsewultun Health Centre. In Stephenson, Peter H., Susan J. Elliot, Leslie T. Foster, and Jill Harris, eds. *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia* (Victoria B.C.: University of Victoria): 330-357.

MRCC, NSERC, and SSHRC (2003). Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. Accessed on-line at http://www.pre.ethics.gc.ca/english/pdf/TCPS%20June2003_E.pdf

Nairne, David (1989). Housing Indian Elders on reserve. Ottawa: CMHC.

National Indian Brotherhood Policy Paper (1972). Indian Control of Indian Education. Policy Paper presented to the Minister of Indian Affairs and Northern Development.

Neel, David (1991). *Our Chiefs and Elders.* Vancouver: UBC Press.

Nisga'a Tribal Council (1998). *Bringing our Ancestors Home: the Repatriation of Nisga'a Artifacts.* New Aiyansh: Nisga'a Language and Culture Centre.

Northwest Territories Literacy Council: Rae-Edzo. Accessed on-line at http://www.nwt.literacy.ca/comdevel/nln/combuild/report/16.htm

Pecarski, Randy, Margaret Eberle, David Hulchanski (1989). *Housing Indian Elders on-reserve.* Ottawa: Canada Mortgage and Housing Corporation.

Read, Simon (1995). Issues in Health Management promoting First Nations Wellness in Times of Change. In Stephenson, Peter H., Susan J. Elliot, Leslie T. Foster, and Jill Harris, eds. *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia* (Victoria B.C.: University of Victoria): 297-329.

Rosenberg, M., Hanlon, N., and McDermott, M. (1994). Housing and Health. Paper presented at the S*ixth Annual Symposium in Medical Geography* July 11-15, University of British Columbia, Vancouver, BC.

Royal Architectural Institute of Canada (RAIC) (2001). Creating a Healthy Environment. Accessed on-line June 20, 2005 at http://www.raic.org/resources_archives/newsletters_bulletins/2004/marebroadcast04_e.pdf

Shortt, Carol E. and CMHC Scholarship Program (1984).*Providing housing for dependent seniors in native communities. Masters* of Environmental Design thesis. Calgary: University of Calgary.

Shultz, Rosalee (2005). on-line review published by eMJA (Medical Journal of Australia) accessed May 3, 2005 at http://www.mja.com.au/public/bookroom/2000/schultz/schultz.html of Couzos, Sophia and Murray, Richard, *Aboriginal Primary Health Care: an Evidence Based Approach* (Melbourne: Oxford University Press, 1999).

Smylie, Janet (2001). A Guide for Health Professionals Working with Aboriginal Peoples. Journal SOGC No. 100.

Tennant, Paul (1995). *Aboriginal People and Politics.* Vancouver: UBC Press.

Tennant, Paul (2003). The Calder Case in historical Perspective. Address to the Calder Conference, University of Victoria Nov. 14, 2003.

Turner, Nancy J., Marianne B. Ignace and Ronald Ignace (2000). Traditional Ecological Knowledge and Wisdom of Aboriginal Peoples in British Columbia. *Ecological Applications* 10 (10) special issue, edited by Jesse Ford and Dennis Martinez: 181-193.

West Vancouver Seniors' Centre (n.d.). Accessed on-line May 10, 2005 at http://www.westvancouver.net/article.asp?a=2304&c=638

Wickman, Ron (2004). Accessible Design: Prepare for the Payoff. In *Abilities* 61: 23-24.
World Health Organization, Nordic Council of Health Ministers and the United Nations Environment Program (1991). Sundsvall Statement on Supportive Environments. Third International Congress of Health Promotion., 9-15 June 1991, Sundsvall, Sweden.

AUDIO-VISUAL REFERENCES

CMHC, INAC, and Seabird Island First Nation. In a Sacred Way We Build: documentary on the Seabird Island First Nation Sustainable Community Demonstration Project. Video-cassette, 20 minutes produced by Omni Film Productions contact www.omnifilm.com

Mohawks of the Bay of Quinte. "Building Homes, Building Community". Videocassette c. 2002. Contact 613-996-3424.

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