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**SHELTER:
ECOLOGICAL BUILDING TECHNOLOGIES AND AFFORDABLE
HOUSING FOR OUR DEVELOPING WORLD**


Susan L. Klinker

April 2001

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Thesis/Practicum Report submitted in partial fulfillment of the requirements for
the Master of Arts degree in International Development Studies
Saint Mary's University
Halifax, Nova Scotia

Signatures of the Examining Committee:



Professor Gerald Cameron
Supervisor



Alfred von Bachmayr, Architect
Reader



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**SHELTER:
ECOLOGICAL BUILDING TECHNOLOGIES AND AFFORDABLE
HOUSING FOR OUR DEVELOPING WORLD**

by

Susan L. Klinker

April 2001

Abstract:

Current trends in population growth anticipate that the earth will exceed seven billion inhabitants by the year 2010. (UNCHS, 2000) As much as 97% of this growth is expected to occur in less-industrialized Third World countries, exacerbating the already desperate conditions of the global housing crisis. Most modern construction practices are highly unsustainable, impractical, and inappropriate when applied to the problems of creating safe and affordable structures to house the world's people. Revival of traditional indigenous building techniques, integrated with contemporary scientific knowledge, may provide necessary linkages in the creation of sustainable living environments in the future.

The following Thesis/Practicum Report discusses the utilization of contemporary, ecological building technologies from a social perspective, including relevant discussions on development theory and policy. The report also summarizes the practical application of my field work with Builders Without Borders; a fledgling NGO focused on affordable housing and sustainable building practices. In addition to highlighting the activities of the organization, I present a review and critique of Builder's Without Border's development during its first year. Seeking insight and recommendations for "best practices" in carrying out the work of the organization, I visited two natural building projects in Mexico. The *Casas que Cantan* project and the *Zopilote Permaculture and Natural Building Workshop*, have been included as independent case studies.

Dedication:

*This work is dedicated to the many colorful characters I have met along the way,
who have deeply enriched my life and continue to inspire me
beyond the veil of perceived limitations,
and also to
my family and dearest friends
who sustain me.*

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1.0 Introduction

In 1999 the world population surpassed 6 billion, having doubled in size in less than 40 years. The United Nations Center for Human Settlements (UNCHS) estimates that over 95% of the total population growth in the last decade has occurred in developing countries, and anticipates that over 97% of continued growth will occur in developing countries as the world population reaches a projected 7 billion people by the year 2010. (UNCHS, 2000) “Since the adoption of the Universal Declaration of Human Rights in 1948, the right to adequate shelter has been recognized as an important component of the right to an adequate standard of living.” (UNCHS, 1996, para 61 of the Habitat Agenda) Although over 185 countries have ratified treaties demonstrating their commitment to support their citizen’s right to housing, it is estimated that over 1 billion people worldwide do not have access to safe shelter and a healthy living environment. (UNCHS, 1996) The difficulties of ensuring this right continue to be a matter of much debate raising complex questions and issues such as:

- What is the extent of national government obligation to provide housing for all citizens?
- How do we define “adequate” shelter?
- Can the basic human right to shelter be sustainably realized within the ecological limits of “spaceship earth”?
- What is the role of the international community? and what mechanisms are employed in responding to the current housing crisis?

These essential questions have remained at the core of my graduate study and academic experience. Through course work, independent research, peer dialog, and practical application I have engaged these issues at many levels. Working from an

orientation toward alternative development, my approach has focused on affordable housing potential based on building techniques which utilize local ecological materials and traditional indigenous methods. The experience has allowed me to explore the technical validity of natural building technologies in contemporary society as well as the social and institutional factors which may promote or inhibit the use of these practices.

Throughout my work, I have also struggled with less tangible issues relative to popular assumptions of progress and development. As society moves forward into the twenty first century, it seems appropriate that we question and reconsider our notions of progress relative to the built human environment. Most modern construction practices are unsustainable, highly impractical, and inappropriate when applied to problems of providing shelter for the rapidly increasing numbers of people inhabiting the earth. Revival of traditional indigenous building methods may provide necessary linkages in the creation of more sustainable living environments in the future. In many cases, however, viable low tech vernacular shelter solutions are rejected in new housing programs because they do not seem to fit with contemporary western ideals and standards. Barriers to the use of traditional natural building techniques are often psychological, based on perceptions of modernization, as well as institutional, wherein government and financial institutions fail to acknowledge the validity of traditional building alternatives for new construction. Therefore, as we enter the new millennium as a global community, the playing field for “development” of more sophisticated and appropriate shelter is equally grounded in both the industrialized First World and the less industrialized Third world. Development programs which

facilitate reciprocal learning and shared experience wherein change is effected in both realms, and human relationships are built which bridge these gaps, may prove to be more beneficial than those focused directly on “technology transfer”.

In addition to academic focus on natural building and affordable housing technologies, I have also concentrated on issues of “process” in development. In studying a range of project models, grassroots initiatives, and organizational relationships I have explored how a project’s “process” relates to ultimate goals of empowerment, community development, participation, and local capacity building. Throughout the work, I have consistently sought to identify specific characteristics or factors relevant to a project’s success.

My practicum experience working with Builders Without Borders (BWB) proved to be fertile ground for more in depth exploration and practical application of my work. By working with this fledgling NGO, focused on issues of affordable housing and ecological building technologies, I was faced with many challenging opportunities to synthesize my academic studies on shelter and development, with my past experiences in architectural project management and community planning, and new exposure to natural building practices. For six months I worked, on a full time volunteer basis, as BWB Project/Operations Manager. My responsibilities involved a full range of duties associated with daily operations, public relations, development strategy and project coordination/management.

The following report discusses important issues relevant to the future development of the Builders Without Borders organization. The first half of the report is dedicated to general discussion of background issues; many of which are applicable to any development effort in the housing sector. Chapter 2 presents current statistics on the extent of the current global housing crisis, introduces concepts of sustainable development and traditional building technologies, and discusses the current natural building revival in the U.S. and the need for greater involvement of the international community in addressing global housing issues. Chapter 3 considers issues of housing within the larger context of development theory. Policy and housing production are addressed in Chapter 4. The non-profit organization Builders Without Borders is introduced in the fifth chapter. In addition to highlighting the projects and activities of the organization, I present a review and critique of BWB's organizational development during its first year. Seeking insight and recommendations for "best practices" in carrying out the work of the organization, I visited two natural building projects currently in progress. The *Casas que Cantan* project and the *Zopilote Permaculture and Natural Building Workshop*, both in Mexico, have been included as independent case studies in Chapter 6. My analysis highlights specific factors relative to project success as it may pertain to development issues currently faced by BWB. The report concludes with a series of recommendations based on my observations while working with BWB, and my field inquiries. It is my hope that these recommendations will be useful to the Builders Without Borders organization, and will support the organization's growth as an effective mechanism for inspiration and sustainable change in affordable housing sectors worldwide.

2.0 Background

2.1 Population Growth and the Global Housing Crisis

As we enter the new millennium, human populations on the earth continue to multiply at exponential rates. Having surpassed a total population of 6 billion in 1999, it is expected that world population will reach 7 billion by the year 2010. (UNCHS, 2000)

At the same time, the increasingly inequitable distribution of wealth and resources leaves larger percentages of the world's people in poverty. Consumption per capita in western countries has consistently increased in the past few decades (approx. 2.3% annually) while growth in the third world has been much slower or declining. (Low, Gleeson, Elander, and Lidskog, 2000). "Globally, the 20% of the world's people in the highest-income countries account for 86% of the total private consumption expenditures - the poorest 20%, a minuscule 1.3%" (UNDP, 1998, in Low, Gleeson, Elander, and Lidskog, 2000). Across the globe, "the absolute poor now number about 1.3 billion people" (Low, Gleeson, Elander, and Lidskog, 2000).

Along with population growth has come increasing trends toward urban migration. At the turn of the century, only ten percent of the world's population, or 160 million people, lived in cities. By 2006, it is estimated that fifty percent of the world's people will inhabit urban environments. (O'Meara, 1999) "In just five years, between 1990 and 1995, the cities of the developing world grew by 263 million people; the equivalent of another Los Angeles or Shanghai forming every three months" (O'Meara, 1999).

Of the fifteen largest urban agglomerations in 1950, four were in developing countries. In 1997, eleven out of fifteen were located in developing countries....The United Nations believes that in 2015, thirteen of the fifteen largest mega-cities will be in developing countries....Just two, Tokyo and

New York, will be located in the developed world. (Low, Gleeson, Elander, and Lidskog, 2000)

The 1996 report of the UN Center for Human Settlements identifies that “already more than 600 million people in cities and towns throughout the world are homeless or live in life- or health- threatening situations” (UNCHS, 1996) “Slums and squatter settlements are now home to an estimated 25-30 percent of the urban population in the developing world”. (Low, Gleeson, Elander, and Lidskog, 2000) Global housing shortages are currently beyond the point of crisis, and circumstances are expected to significantly worsen in coming decades as natural population growth continues unchecked. In dealing with these declining conditions, it is necessary that governments, donor agencies, and the international community increase cooperation and explore new alternatives and solutions to provide for more equitable conditions of shelter for all.

2.2 Traditional vs. Post Industrial Building

As long as humankind has been building shelter, people have resourcefully made use of materials available in the immediate surroundings, and created shelter with their own hands. The diversity in forms of vernacular shelter across the globe illustrates the breadth of human ingenuity in utilizing available resources to fulfill basic needs. (Kahn, 1973) It is only with the advent of modern society, especially after the industrial revolution, that advances in technology have necessitated the use of specialized materials, knowledge, and skills in shelter construction. These advances have come with social as well as environmental costs and have severed our necessary human connections to “place” on a fundamental level.

Prior to the industrial revolution the lack of power tools and engine driven transportation necessitated the use of local materials in building. People creatively utilized whatever resources were available in the immediate environment, such as stone, wood, earth, bamboo, leaves and grasses, animal skins, and even ice. Although construction labor was often specialized by trade, many common folk were also familiar with basic building techniques and were skilled in the types of repairs necessary to maintain their own home. In many cases families and whole communities would cooperate to pool labor necessary for large building projects, such as the “barn raising traditions” common in Amish communities in Pennsylvania. In this way, knowledge was passed down from one generation to the next, and communities could be relatively self reliant in their provision of shelter.

With the advent of the industrial revolution, a variety of resources outside of the local environment became readily accessible and available at favorable prices.

Manufactured products such as kiln fired bricks, roofing tiles, cement and metal products for a variety of applications were easily transported to once remote locations. The increased diversity of materials available on the market necessitated increased specialization in various trades. No single man could be expected to manage the increasing complexity of options available for building. Little by little, industrialized societies gave over their knowledge of local building, and self reliance in providing shelter. Consequently many societies’ institutions, standards and planning regulations have further compromised individual freedoms and abilities to provide housing in pre-industrial traditional ways.

As people continue to become further detached from the physical creation of their homes and living environments, they not only relinquish power to “professionals” and political planning authorities, but also forfeit a unique opportunity for creative expression and personal connection to “place” which is often considered to be an primary component of human self identity. Most current processes of shelter “allocation”, are entirely based on how much cash an individual or family is able to pay for their shelter. Emphasis strictly on capital outlay tends to limit the potential for community development in a social sense, and alienate people from the creative process and psychological links to local ecology. In many ways contemporary processes of shelter creation and distribution can be thought of as dehumanizing. The process reduces people’s self view as true stakeholders in a community, and limits their perceptions of ongoing responsibility for shaping and maintaining their places of inhabitation.

2.3 Sustainable Development and the Built Environment

Today, popular building technologies of the western industrialized world inefficiently utilize natural and synthetic materials manufactured of resources from across the globe. Rich countries continue to build and “develop” their nations, aggressively consuming disproportionate amounts of the world’s natural resources, and projecting their “standards” and ideals for contemporary lifestyles. “Highly developed cities can import all the necessities - and luxuries- of life from far afield and export most of their wastes” (Low, Gleeson, Elander, and Lidskog, 2000). Simultaneously, living conditions for the majority of the world’s poor continue to decline. Lifestyles and patterns of architectural development perpetuated by first world societies are

ecologically unsustainable and socially inequitable. When considering near future projections of population growth and the impenetrable boundaries of “spaceship earth” it seems clear that more sustainable shifts in technology development are necessary. Reconsideration of traditional vernacular architectural solutions may provide a vital link to the development of new or modified housing technologies for the future.

In 1983 the United Nations General Assembly appointed the World Commission on Environment and Development to ‘propose long term environmental strategies for achieving sustainable development by the year 2000 and beyond’ (World Commission, 1987). “The publication of the Brundtland Report...was hailed as a landmark and stimulated renewed discussion of alternatives...with a focus on sustainability” (Friedmann, 1992). The commission defined sustainability as “those paths of social economic and political progress that meet the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission, 1987). Wolfgang Sachs, who has been a strong proponent of environmental sustainability and a primary critic of over consumption in the north, notes that humankind has already “consumed as many goods and services since 1950 as the entire previous period of history.” (Sachs, 1997) These intensified patterns of consumption in industrialized countries can be seen as the root cause of sustainability problems today. He states, “If all countries successfully followed the industrial example, five or six planets would be needed to serve as mines and waste dumps. It is obvious that ‘advanced’ societies are no model at all; rather they are most likely to be seen in the end as an aberration in the course of history” in other

words, “a blunder of planetary proportions” (Sachs, 1997). “Sustainable development, then, is about the achievement on a global scale of three principles: economic development, social justice, and ecological responsibility” (Low, Gleeson, Elander, and Lidskog, 2000).

In many ways, traditional societies have been true leaders of sustainable development over time. “What distinguishes the 250 million indigenous peoples that remain in more than 70 countries in which they have managed to survive is their approach toward the land.” (Steele, 1997) “For most indigenous peoples, land is not viewed as a commodity which can be bought and sold in impersonal markets, but rather a substance endowed with sacred meanings which defines their existence and identity” (Davis, 1993). Out of necessity and tradition dwellings were constructed from locally available materials, which are often provided free of charge within their natural surroundings. Indigenous materials such as earth, bamboo, thatch, wood, and stone, are combined by methods which have proven over time to be durable, inherently efficient, and effective in providing viable and comfortable shelter. Natural building author and advocate Athena Steen describes her views about building at their family house at Santa Clara Pueblo in northern New Mexico. “Like the rest of the pueblo, Grandmas house was constantly in flux. Walls would go up and then come down. Spaces forever shifted in order to meet changing demands. Not only the needs of the individual, family and community had to be met but the larger needs of nature as well. Houses, like people, were allowed to be alive. Structures were built and respected as over time they grew, flourished, and eventually died” (Steen, Bainbridge and Steen, 1994).

As contemporary 'development' reaches further into the isolated corners of the earth, it often destroys traditional ways of living in harmony with the environment. The Brundtland Commission acknowledged that "indigenous groups are repositories of vast accumulations of traditional knowledge, and that destruction of these societies will lead to the irretrievable loss of generations of wisdom associated with managing and living in harmony with complex eco-systems" (Steele, 1997). As time moves forward into the twenty first century, it is appropriate that we reconsider outdated notions of progress which have proven to be intemperate and unsustainable. "In times to come, we will have to find a responsive and sensitive balance between the still useable skills and wisdom of the past and the sustainable products and inventions of the 20th century" (Kahn, 1973). Relearning traditional ways integrated with contemporary scientific knowledge can provide necessary links in the further development of viable ecological building solutions to fit a range of urban and rural needs. Accessing the current knowledge of traditional builders is a key component in that link. Alternative building author Bill Steen suggests, "we set aside our conventional preconceptions of how things ought to be done" and consider "how much more can be done when people come together"(Steen, Bainbridge and Steen, , 1994, pgxvi). By concentrating on cooperative efforts and reciprocal learning across cultural, economic and political boundaries, new and innovative construction technologies will likely emerge to create the sustainable architecture of our future.

2.4 Natural Building Revival

Over the past few decades, within the U.S., there has been a movement toward sustainable development which has caught the attention of many within the American planning, design, and development community. The natural building revival in the U.S. generally supports self-built or owner-built housing and seeks to re-legitimize traditional forms of vernacular architecture, which are currently “under attack by the ideology of progress” (Bourgeois, 1996).

Because of its abundance of resources, natural building has sound history in Northern and Central America. Indigenous people living in widely varying climates and ecosystems built incredibly diverse housing forms to support their lifestyles. Plains Indians constructed portable frames covered with animal skins to support their nomadic ways. Other societies built significant homes and communal buildings with timber, sod, and local long grasses. Highly structured societies of Mexico and other areas built stone temples and housing systems to accommodate dense populations within complex urban settings. In what is now the U.S. southwest, the oldest continually inhabited city in the Americas is built of adobe at Taos Pueblo, New Mexico. (Taos Guide, 2000)

Early European settlers in the US were also resourceful in utilizing materials at hand in providing for shelter. Homesteaders in the timber poor regions of the Mid-west discovered that bales of hay stacked like bricks provided stable and warm protection against winter cold and driving winds as well as the hot summer sun. Earthen plasters and substantial roofs were applied to make the structures more permanent. Several of

the earliest straw-bale structures built in Nebraska are now over 100 years old, and remain in stable, habitable condition. In 1974, an article by Rodger Welsch called, “Baled Hay” was published. “That article probably did more to initiate a revival of bale building than any other factor, and there was a resurgence of bale building in the late 1970’s and early 1980’s.” (Steen, Bainbridge and Steen, 1994).

Today, many forms of natural building labeled “alternative methods” are being utilized within the U.S. In addition to straw-bale, adobe, cob building, rammed earth and straw clay, are popular techniques. Alternative structures are also being built of recycled materials such as tires, aluminum cans, and bottles, often combined with cement or earth binding agents. Articles and profiles on natural building technologies, especially straw-bale, have been highlighted in popular media such as *‘Good Morning America’*, and *‘This Old House’*, journals such as *Architectural Digest*, *Fine Home Building*, *Natural Homes Magazine*, and *Designer/ Builder*, and in news papers such as the *Wall Street Journal*, *NY Times*, and *LA Times*. This popular coverage has done much to increase public awareness and build interest in natural building since the late 1990’s.

Advanced natural building solutions which provide for all of the comforts and aesthetics associated with modern housing are applicable in nearly all geographic regions and climates. Straw bale building, as well as earth shelter technologies are especially appreciated for their high energy efficiency in both hot and cold climates. A

well built straw bale home can provide a typical R-value¹ of R-54, which is “two to three times better than the wall system of most well insulated homes, and often five to ten times better than older houses” (Steen, Bainbridge and Steen, 1994).

The popularity of natural building technologies in the U.S. has become increasingly “trendy” for custom built middle and upper class homes. As only a limited number of professional architects and builders have expertise in this field, there is a high demand for their services. High cost, luxury natural homes are being built in many places in the U.S. based on the conscious environmental choices of consumers as well as for their beauty, comfort and hand hewn aesthetic qualities.

Others chose natural building for reasons of affordability, health (individuals intolerant to many of the chemicals in manufactured building products), principles of non-consumerism, or simply based on a desire for a sustainable lifestyle in closer harmony with nature. A small but growing group of owner-builders in the U.S. have explored the advantages of low-tech natural building and have created cost effective, and comfortable housing, built with their own hands. Many have found great satisfaction in the process, including a strengthened sense of ownership of their home, connection to place and their role within the existing eco-system, and a renewed sense of community.

International agencies, such as the UNCHS, also value the potential for natural building techniques in resolving housing shortages worldwide. “Vast strides have

¹ R-value is a rating system for insulation based on a materials resistance to heat flow. A rating of R-54 is typical of a three string bale laid flat at 23” wide. (Steen and Steen, 1994)

been made in First World consciousness about this issue; what were once thought of as 'primitive' mud buildings are beginning to be valued more highly for their appropriateness and simple beauty"(Steele, 1997). "The continuing growth of knowledge in the science of soil mechanics, better and proper soil selection and the specification of appropriate stabilizing agents" (Murison, 1979) has helped to diminish myths about natural built homes and has enhanced their viability in many applications. "Prejudices against earth house construction must be dispelled by demonstration and example, an exercise which could be profitably financed and undertaken by housing and construction agencies, of governments; an exercise which should aim to show clearly the advantages of constructing ones own house, with little or no assistance and at relatively little cost" (Murison and Lea,1979).

2.5 Need for Private and International Involvement

Although the right to adequate housing is universally recognized as a basic human right, no country has yet succeeded in completely meeting the shelter needs of all of it's citizens. (UNCHS/Shelter, 1990) Housing deficiencies, at varying levels of crisis, pervade regardless of political or cultural boundaries. In many third world countries, the problems of shelter provision, compounded by rapid population growth, far exceed the capacity of national and urban governments which already face some of the most complex problems of urban planning known in history. These issues, dovetailed with concerns about environmental degradation and the need for further development of practical and sustainable housing solutions, have drawn the

international community into a more active role in addressing housing issues on a global level.

Although responsibility for shelter provision resides primarily with national governments, it is also important to consider issues of shelter from a global perspective. Because secure shelter “is fundamental to people’s physical, psychological, social, and economic well-being”, inadequate shelter is often linked with declining conditions of social and political stability and impediments to economic development. (UNCHS/Shelter, 1990) Supportive policies can feed-back into many types of community and economic development initiatives, whereas inappropriate policies can significantly undermine development objectives at the national level. In this sense, global housing conditions are intimately linked with balanced development and “the achievement and maintenance of world peace and economic stability” (UNCHS/Shelter, 1990).

“In the context of global population growth and the earth’s finite resources, the way in which human beings are accommodated or sheltered is a major and integral part of the imperative to maintain a global environmental equilibrium. We have entered an era in which no country is isolated and secure from the impacts of the conditions of its neighbors. All countries have a stake in each other’s present and future well being.”

(UNCHS, Shelter, 1990)

The UNCHS’s Global Strategy for Shelter calls for “a combination of international and national efforts, but at the same time it stresses that shelter goals can only be met by the individual efforts of each government acting in its own political, social, economic, and cultural context.” (UNCHS/Shelter, 1990, pg3). The Global Strategy for the Year 2000 supports “increased and sustained mutual research and technological cooperation among countries” (UNCHS/Shelter, 1990) further

integration and coordination with national development plans, and a concerted international effort toward communication and the exchange of innovative ideas and experience in all aspects of human settlement management. (UNCHS/Roles, 1990) In many cases, processes of shelter development in varying regions reveal similar trends regardless of cultural or socio-economic context. Lessons learned from individual case studies can provide meaningful information on principles, criteria, and approaches which may be applicable in a diversity of situations. By pooling our knowledge and learning from one another across cultural and political boundaries, we may collectively progress more rapidly and effectively toward the achievement of sustainable and affordable housing for greater percentages of the world's people.

3.0 Development and Theory

3.1 An Alternative Development Approach

As “mainstream development has gradually been moving away from the preoccupation with economic growth toward a people centered definition of development” (Pieterse, 1998), utilization of an alternative development approach in addressing issues of housing and human settlements has also become more widespread in recent decades. An alternative development approach focuses on civil society as the main facilitator of development. As such, it functions outside the sphere of formal political systems to support the “strengthening of autonomous local communities as both a means to promote human well being and an end in itself” (Martinussen, 1997). Beyond physical and environmental planning issues, utilization of an alternative development approach in housing schemes seeks to facilitate the aspirations of civil society at the grassroots level, promoting community social development, the use of local resources, and the empowerment of both individuals and communities. At the national and international level, alternative development seeks to “rebalance the structure of power in society by making state action more accountable, strengthening the powers of civil society in the management of its own affairs, and making corporate businesses more socially responsible” (Friedmann, 1992).

The household is the fundamental starting point for alternative development.

Households are composed of individual human beings with wants, needs and desires including “psycho-social needs of affection, self-expression, and esteem, that are not available as commodities but arise directly from human encounter” (Friedmann, 1992). An alternative development approach supports ‘human flourishing’ and the

right to social and political conditions which make it possible. On a fundamental level, an alternative development approach requires us to consider what it essentially means to be a “full human being living up to his or her capacity” (Friedmann, 1992). As such, alternative development supports individual self-development and can often raise the social and political standing of dis-empowered groups among the larger community.

Martinussen, as well as other alternative development proponents, views the household as the core of civil society in a social, political, and economic sense. (Martinussen, 1997). Households engage in a daily process of joint decision making, production, and consumption. They engage in market and non-market relations, and interact with other households in the community. From the perspective of alternative development the poor are “no longer regarded as wards of the state but as people who, despite enormous constraints are actively engaged in the production of their own lives and livelihood” (Friedmann, 1992). “This understanding of households as an economy contrasts with the model of neo-classical theory by which production typically takes place outside the home, in factory, field, or office” (Friedmann, 1992).

For most low income families, the household economy is central to the struggle for survival. Informal work, which is broadly defined as “work which is not controlled by the state and which takes place, so to speak, without the state’s knowledge” (Friedmann, 1992) is often a significant component of the household economy. Informal work may include the sale of legal products and services, such as home based cottage industries, artisans, street vendors, or construction trades, or illegal

activities such as gambling, prostitution, or drug trades. In less industrialized countries, significant percentages of the labor associated with building of houses falls within the informal sector. Working at a local scale, and at the household level, alternative development seeks redefinition of the relationship between civil society and the state, and views development as “not only a genuine and lasting improvement in the conditions of life and livelihood , but also as a political struggle for empowerment of households and individuals” (Friedmann, 1992).

Within the framework of civil society, Nabeel Hamdi emphasizes the participatory process in low income housing development, and suggests an interdisciplinary, community oriented approach which works toward the resolution of social, political, and economic issues with regard to housing. Hamdi stresses the need to look beyond the physical, material needs of the poor, and support the implementation of planning schemes which will empower peoples lives at multiple levels. Within the planning process, Hamdi reconsiders the role of the architect as an important actor in the process of social change in low income communities, supporting the creation of a community vision as an expression of opportunities. (Hamdi, 1991) By involving the community in establishing priorities and decision making, members become stakeholders in the settlement. During the participatory process, community members from varying social and ethnic backgrounds are often able to establish common goals and objectives and find new understanding of each other and new common ground in moving forward as supportive neighbors.

Individuals seeking information and action on their own problems, converge with other individuals with similar needs for research and action...The convergence of interests...establishes a special phase of participant

commitment and involvement which is continuously drawn upon and further developed as the process proceeds. (McGill and Horton 1973, in Hamdi, 1991)

A well planned community design and planning processes can facilitate a growing sense of communal pride, ownership and responsibility for creating and maintaining a healthy environment for all members. Supporting relationships and partnerships within the community is also a means to strengthen local capacities and ensure the sustainability of the community once planners or support NGO's withdraw upon project completion.

Amos Rapoport's criticisms of standardized and institutionally based self help schemes in housing development also support an alternative development approach. He calls for more in depth analysis of the specific social, cultural, and psychological needs of specific user groups in community planning in order to create supportive environments comprised of both appropriate settlement form and dwelling form. He states, "the specific components, relationships among them, and how these support activity systems, groups and institutions in different and highly culture specific ways need to be discovered" (Rapoport in Tipple and Willis, 1991). His writings caution against ethnocentric assumptions in all phases of design and planning, and stress the linkages between physical settings and the unique social/cultural structures and institutions which are part of each community. (Rapoport in Tipple and Willis, 1991)

Rapoport has been referred to as a "traditional environment theorist" and is one of very few academics who have addressed the study of squatter settlements as a contemporary equivalent to vernacular architecture. (Kellet and Napier, 1995)

Alternative development demands consideration of the human and environmental costs associated with economic progress rather than solely focusing on increased production and profits. Consistent with this paradigm, most national housing strategies now de-emphasize expansion of the low income housing market. Instead, structures and procedures are focused on “little steps”, which allow families maximum flexibility in providing for their own preferred form of shelter, which may be achieved within their own time frame. A good example of this is a typical ‘sites and services’ project which provides for basic infrastructure such as water, sewer, and electrical service to a specific plot of land. Many projects also include the provision of a simple foundation and a concrete slab floor. Beyond the basic site and services, families experience maximum freedom to build as they wish, within their own time frame. Other physical planning decisions may also effect community economic opportunities, such as making allowances for income generating activities within the home, and planning environments which encourage access from patrons from outside the community, such as communal markets, commercial boulevards, etc. In this way, proper planning and localized decision making can inherently serve to empower the community and enhance overall economic well being. “Alternative development does not negate the need for continued growth in a dynamic world economy, what it does do is to seek a change in the existing national strategies through politics of inclusive democracy, appropriate economic growth, gender equality, and sustainable or intergenerational equity.” (Friedmann, 1992)

Because of its emphasis on the enabling of civil society, Friedman describes alternative development as an “all-but anarchistic program”, wherein the “state is

defined as the enemy” because it is “bureaucratic, corrupt, and unsympathetic to the needs of the poor. Often in the hands of military and civilian elites who treat it as their private domain” (Freidman, 1992). Alternative development schemes generally bypass state authorities, and focus directly on local communities which are considered to be “...moral and autonomous. People are said to possess ultimate wisdom about their own lives” and “politics are generally avoided” (Friedmann, 1992). However, Freidmann believes that state collaboration is almost always necessary to access common resources, remove structural barriers, and affect long term improvements in the condition of the poor. For instance, achieving basic legalization of a settlement is a critical first step to establishing foundations for self help. (Leaf, 1993) Social and political empowerment, therefore, go hand in hand. (Friedmann, 1992) “Although an alternative development is initially based in particular localities, its long term aim is to transform the whole of society through political action at national and international levels” (Friedmann, 1992).

3.2 Gender Perspectives in Housing

As many as 30 to 40 percent of the world’s urban households are currently headed by women. (Friedmann, 1992) This clearly calls for the need for a gender sensitive approach to planning of individual housing units as well as shared communal facilities. Planning of individual housing units often fails to take into account women’s needs for generating income in the home. Zoning ordinances may even prohibit such activities. Yet a significant portion of informal sector economic activity is home based. Many women in developing countries operate a shop or food store from their home, or participate in cottage industries (such as sewing or manufacturing

piecework), while also providing primary child care. Spatial consideration of these kinds of domestic activities are critical to women's empowerment in better providing for themselves and their families.

Consideration of women's perspectives are also critical for planning well functioning communal facilities such as wells and shared latrines. Women's participation in planning the location and design of wells is logical for convenience, proper use, and maintenance as women will likely be the primary users of such facilities. Safety issues must also be addressed from a women's perspective. The design of communal facilities must properly provide for appropriate modesty and security relative to specific cultural context. Women's views toward children's needs and safety issues are also inherently valuable in creating well planned public spaces.

Access to land tenure is one of the most critical issues for women. Without this basic right, women's freedoms may be further limited in other aspects of their lives; they may be highly vulnerable within domestic disputes or abusive situations and unable to relocate themselves and their children to a healthier environment; they are unable to leverage property as collateral in gaining credit; and they are unable to realize savings and security associated with property investment and appreciation. (Moser and Peake, 1987) In many countries, policy reform regarding women's rights to own land are a fundamental first step to enhancing women's personal security and creating more equitable circumstances for women in society.

Although women are often highly active in the physical construction of their homes, their ability to fully participate in a self help program may be subject to cultural values and norms as well as physical limitations due to age, or health. In addition, the “triple role” of women heads of households (as mother, homemaker, and primary means of economic support) may impose severe time limitations on their ability to build their home on their own. (Moser and Peake, 1987) In planning for self built housing schemes it is important to address the unique factors which may limit women’s ability to fully participate in the program and to devise ways in which women may better access equal benefit.

3.3 Participation, NGO’s, and Opportunities for Empowerment

Like any other type of development project, not all housing schemes take an alternative development approach; neither are they all successful at creating an environment for community development. Projects taking an institutional, top-down approach may be structured as efficiently as possible, and may make no additional effort to involve the community in decision making. These schemes may be effective in progressing rapidly toward individual family self-help, but may miss valuable opportunities for empowerment and capacity building at the local community level. Nabeel Hamdi acknowledges the common institutional view that the fewer people in a project, the easier things get done, but emphasizes that in doing so many opportunities for education, networking and strengthening the community are lost. (Hamdi, 1991)

Counter arguments to institutionalized self-help planning include the fact that “these projects required the same level of planning as public housing projects, that they displaced people who depended for their work on inner cities to the periphery of cities, that the cost of their administration was high, and that they would polarize classes and present far fewer economic opportunities than in the mixed economies of informal settlements” (Peattie, 1982, in Hamdi, 1991).

“If efficiency in delivering services is the primary goal of NGO projects, then popular participation may not be viewed as a key ingredient” (Macdonald,1997). In planning the development of any given project, it is important to consider how that project will serve to empower the community. Who will be empowered and with what? Will everyone benefit equally, or only those who meet specific criteria? Will they be empowered with knowledge, skills, material gain, confidence, or strengthened communal relations? In terms of project management, inclusion of the poorest or weakest members of a community may even be perceived as counter productive; slowing the process to involve those who may seem the least likely of influencing positive long term outcomes. (Macdonald,1997) Macdonald distinguishes between three levels of participation which may be utilized.

Instrumental Participation- Beneficiaries contribute to the efficient implementation of a project, but they have no real control over design or evaluation. Control remains in the hands of an outside actor, which may be the NGO itself.

Localized Participation- Projects are focused on local capacity building and beneficiaries may control a great deal of the decision making. However, the focus does not promote broader participation in processes of social change.

Political Empowerment-aims at greater community control at the local level and increased participation in broader political spheres, at the state and national level.
(Macdonald,1997)

In working with an alternative development approach, it is important that agencies carefully consider their goals and available resources, and make a conscious decision about empowerment opportunities. Although involving and coordinating with local participants may not provide the most efficient means to immediate physical results, the participation process may lead to greater long term impacts and may have a significant effect of empowering individuals and the collective community on many levels. In any case,

community participation “should not bring simply the direct material benefits...but a transformation of consciousness and self-perception” (Macdonald,1997).

3.4 Other Perspectives: The Development Debates and Housing

3.4.1 Liberal vs. Marxist Perspectives

One of the most controversial and well publicized theoretical debates surrounding issues of housing and the self help process focus on what is referred to in the literature as the “Liberal perspective” presented by John Turner and a strong critique of his work from the Marxist perspective predominantly through the writings of Rod Burgess. Their debate reflects fundamental differences in development approach contrasting views of neoclassical liberalism and dependency theory.

“Guiding neoclassical economists in their theorizing was a fundamental assumption: Individuals behave as rational utility maximizers. Put another way, people are self interested, they know best what they want, and they also know best how to get it. In the pursuit of their goals, people act rationally and efficiently. From this assumption it follows that the most productive economy will be one in which individuals are allowed the greatest freedom to engage in activities or enter into contracts as they choose, and to reap the full benefits of their labors.

(Rapley, 1996)

This view ties to fundamental tenets of neoclassical economists as far back as Adam Smith, and supports a minimal role for government in market intervention, and allowing individuals to pursue their own self interests. Dependency Theorists, by contrast focus on how structures within these urban (and industrializing) environments serve the dominant capitalist elites, perpetuate underdevelopment in the third world, and maintain links of dependency on the first world.

Liberal Perspective

Through his work in Peru in the 1960's, John Turner's writings served to present new ways of thinking about housing for the poor. He introduced the concept of viewing housing as a verb, recognizing 'what housing does' rather than 'what housing is'. Essentially, this means that housing should be more broadly understood as *a process* of production, rather than the final *product*. (Leaf,1993)

Turner's view stresses the "use value" of a house as determined by how well it serves the needs of its occupants rather than the "market value" which is defined in dollars and cents. The use value is intricately tied to the "relationship between people and things-and not on the things themselves" (Turner,1976). When viewed in this context it becomes possible to consider a much wider frame of alternative forms of housing, means to attain shelter, and utilization of the housing process as a "vehicle for the fulfillment of users' lives and hopes" (Turner,1976).

The hierarchy of basic needs of the most poor, and their ordering of priorities, is largely misunderstood by development professionals. If a family is hungry the need to provide food is of far greater importance than shelter, especially in warm dry climates where it is comfortable to be outside. Employment security , food , healthcare, and opportunity for education are often seen as priorities over improved shelter. (Fass, 1987) Shelter provided through shanty living, may be viewed as an innovative way out of poverty, allowing the poor to redirect precious financial resources toward stabilizing the family's overall condition and engaging in economic growth opportunities rather than overhead. Turner describes this condition of shelter as a

“supportive shack” verses an “oppressive house” (Turner, 1976). Rather than serving to rationalize poor quality housing, Turner’s argument demonstrates the futility of low income families living in shelter which does not meet their needs or income levels. If families are forced to allocate too high a proportion of their income to housing, and are left destabilized in other areas of their life, the ‘quality’ of their house becomes irrelevant. In this case housing becomes an additional form of oppression rather than a means of empowerment. On the other hand, a shack, offering little in terms of architecture or services, will often match a family income level, and provide the flexibility they need in times of financial distress. (Gilbert and Gugler, 1992)

Although Turner argues that housing must be autonomous, he also acknowledges a necessary supportive role for government in providing access to resources, materials, land, tools and finance. For the most part accessibility of these resources is a function of government administration. The Liberal view proposes that government should not engage in the construction of housing, but should be limited to proscriptive laws (defining limits to action, access to land, building materials, credit, etc.) (Turner , 1976) He suggests that countries with limited resources effect little improvement in overall shelter for the masses by venturing into mass housing projects built to modern standards. Rather such countries fare better by “improving service infrastructure that will enable and stimulate the local provision of housing” (Turner, 1976) in other words, “helping the poor to help themselves” (Gilberg and Gugler,1992). Turner suggests that “instead of threatening the existing housing system, governments should respect and support them” (Gugler, 1988).

Marxist Perspective

Turner's primary criticisms come from the Marxist school of thought, which focuses on the tensions between the large populations of poor urban wage laborers and the bourgeoisie capitalist class. Rod Burgess attacks his proposal claiming that development of the informal housing sector through the self-help process only maintains the status quo, promotes capitalist exploitation of cheap labor in dealing with the housing problem, and promotes the commodification of housing for the poor (increasing market sales of building materials directly to the poor and providing legal means to collect rent). Burgess is critical of the self-help process, suggesting that by forcing the poor to utilize their own labor and knowledge to construct their housing, "the state is doing more than just absolving itself of any responsibility for the welfare of its poorest citizens, it is in effect creating a subsidy for the owners of capital" (Burgess, 1982 in Leaf, 1993).

By keeping the workers cost of living as low as possible, the capitalists are able to drive wages further down and increase profits. The self-help process is seen as tool to maintain a large pool of available workers existing at an absolute minimum level of overhead costs. To the extent that a wage laborer utilizes his own manpower to construct his house, and maintains a loan for the materials he has used to build it, he is essentially subsidizing the capitalist class. (Leaf, 1993) Burgess' perspective, illustrates the "double exploitation" of self help programs, presenting a far different view than that which is presented by Turner and focuses on the liberating aspects of self reliance and local autonomy. Furthermore, Burgess identifies the proposition as

creating additional opportunity for politicians and urban administrators to further manipulate and exploit the poor.

Capitalist domination of markets and resources in this way continues processes of oppression and colonial domination. “Dependency theorists argue that...neocolonial capitalist domination still remains and that third world social structures continue to be dependent on the industrial world” (Isbister, 1998). Structures which control industry in urban environments in developing countries alienate workers from the means of production, prohibit reliance on subsistence or traditional lifestyles, and compel citizens to work for capitalist wages. By continuing to maintain these structures which impoverish common workers, emerging third world economies are further incapacitated at achieving an overall balanced development. (Isbitzer, 1998)

3.4.2 Natural Building and the Counter Development School of Thought

The current impasse in development theory is largely due to the many failures of the ‘development project’ to realize substantial change and an improved quality of life for significant percentages of the world’s people. Western desires to develop the globe have all too often been fueled by eurocentrism, misguided or distorted altruism, and the ultimate quest for market expansion. The word ‘development’, conjures ideas of growth, evolution, and maturation and always implies favorable change, from worse to better, from inferior to superior. (Esteva, 1997) In most cases, however, societies touched by seemingly well intentioned development efforts have been disrupted, invalidated, and subjugated by the oppressive influence of more technologically

advanced powers. Theorists such as Tucker, Esteva, Sachs, and others who espouse the Counter Development School of Thought object to the entirety of the development mindset, and its concomitant notions of reality and progress. They reject the vision of a world that has fully evolved down the unilinear track of Western development, which they view as unsustainable, spiritless and on the edge of self destruction. In many ways, the focus on natural building technologies and revival of sustainable indigenous building practices is consistent with concepts supported by the Counter Development School of Thought.

Tucker recommends engaging in a respectful dialog with contemporary indigenous peoples. This process of exchange by equals will call for greater flexibility, openness, and experimentation and will “above all require theoretical humility and respect for other rationalities” (Tucker, 1999). This idea suggests that the dialogue with indigenous people will not only reveal new processes and means for natural advancement of indigenous courses of development, on their own terms, but also that their insights will lead to the eventual reevaluation of Western values and stimulate altogether new ways of thinking, leading to fresh and innovative solutions. The natural building revival in Western societies is young and ambitious in exploring the full range of old and new technologies. Open exchange and discourse with communities which hold natural building as a valued tradition, has great potential to expand the collective body of knowledge in the field and provide new insight and rationalization for the use of specific materials and techniques.

A fundamental theme of the Counter Development School, is the concept of significantly 'disengaging' from participation in a market based cash economy. National movements toward industrialization tend to create dualistic societies separated by growth oriented participation in the modern sector and 'backward' participation in the traditional sector. Similar patterns are apparent in the housing sector. Traditional, non-economic forms of shelter production have been invalidated, and often lost altogether as a result of societal movements toward market based production. The position of Counter development offered here raises fundamental questions about the validity of an economic system that supersedes all other aspects of social life. Karl Polanyi's writings addressed economic determinism as a phenomena of the 19th century, suggesting "that the market systems violently distorted our views of man and society, and that these distorted views were proving one of the main obstacles to the solution of the problems of our civilization" (Esteva, 1997). Social structures, previously organized around communal forms of subsistence and alternative systems of economic interaction such as reciprocity, redistribution or subsistence living, are destroyed forcing the individual to become dependent on the capitalist market for survival. Sachs notes the huge populations of people who are presently caught in a "dead calm", between the advanced sector which has no capacity to support them and the remnants of an ever declining traditional system. However, recent policy shifts, especially since the Rio Earth Summit in 1992, have opened the door for revalidation of traditional means to provide for greater sustainability in the provision of shelter. Whether or not they are supported in practical application, many policies now endorse the continuation of traditional

building techniques, the use of local and indigenous resources, and the utilization of labor intensive rather than capital intensive technologies.

As one of the primary critics of over-consumption in the North, Wolfgang Sachs calls for major changes in Western Society through community level resistance to development and conventional notions of progress. Many natural owner-builders in the U.S. and other industrialized countries espouse values of environmental sustainability, non-consumerism and anti-accumulation. Sachs, in his writings, calls attention to the appearance of similar shifts in popular values. He highlights that many people in western societies have expressed a renewed interest in slowing down, accompanied by a strengthened sense of belonging to a place and community. In his equation, “the ideal of lean consumption becomes more attractive, because a wealth of goods is at odds with a wealth of time” (Sachs, 1997). In the U.S., this trend in the late 1990’s has been popularly labeled “downshifting”; people making conscious choices to consume less, simplify their lives, and work fewer hours at workplaces away from their home. (Schor, 1998) Many natural builders could be referred to as “downshifters” seeking greater self sufficiency in providing for basic needs. By shifting values, and seeking shelter alternatives which consume fewer manufactured goods and a smaller percentage of their financial resources, many people have been able to jump off the economic treadmill, and gain the freedom to spend quality time at more rewarding endeavors. Within the Counter Development School, the principle arena for change in the consumptive demand patterns generated by the North, is the North itself. The current natural building revival in the US can be viewed as an

excellent demonstration of Counter Development tenets of anti-accumulation and reducing the overall strain on the environment caused by western housing standards.

Counter Development proponents see that ‘development’ has ultimately failed as a social and economic endeavor, and presents no model for advancement in terms that accommodate the full range of needs represented by the diversity of nations and cultures of the world. Some proponents call for a radical and complete withdrawal of all development efforts and cultural meddling from the West; a ‘hands off’ policy which will allow countries to reevaluate their own cultural values and priorities and determine their own destinies for themselves. Others see this as an overly idealistic goal. Though they reject unwanted external cultural influences and imperialist oppression of alternative views, they do not abandon all efforts toward improvement of communities and societies on local terms. Participatory projects which are internally initiated and controlled at the grassroots level are supported within this school of thought. Although many natural building projects in less industrialized countries could be viewed as radically positioned on the fringe of Counter Development, this school of thought offers no real approach or strategy for project implementation. Therefore, although many project actions align with Counter development principles, their actual approach is often one of Alternative Development.

4.0 Policy and Housing Production

4.1 Policy and Shelter as a Basic Human Right

“Since the adoption of the Universal Declaration of Human Rights in 1948 (article 25), the right to adequate shelter has been recognized as an important component of the right to an adequate standard of living.” (UNCHS, 1996, Para 61 of the Habitat Agenda) The Right to adequate shelter is further recognized by each of the following documents:

International Convention on the Elimination of all Forms of Racial
Discrimination (1965, article 5)
Convention on the Elimination of all Forms of Discrimination Against Women
(1979, article 14)
Convention on the Rights of the Child (1989, article 27)
Convention Relating to the Status of Refugees (1951, article 21)
(UNCHS, 1996)

Over 185 countries have ratified at least one or more of these international treaties as a demonstration of their commitment and responsibility to their citizens regarding the right to housing. (UNCHS, 1996) Despite this, it is estimated that over 1 billion people worldwide do not have access to safe shelter and a healthy living environment. (UNCHS, 1996)

Definitions of adequate shelter vary widely in different nations, cultures, and social circumstances. What is perceived to be very adequate to members of a traditional society living in a rural agricultural area may be considered highly inadequate to those accustomed to western style urban dwellings. One of the greatest problems in creating housing policy is striking a balance between economic extremes and establishing appropriate standards for health and life-safety without infringing on

peoples rights or abilities to access shelter. If housing policies and building regulations are intended to support the fulfillment of the basic human right to shelter, they need to be flexible enough to accommodate the full range of peoples' needs, desires and abilities in providing for shelter. According to the 1988 UNCHS, Global Strategy for Shelter (GSS), adequate shelter means "adequate privacy, sufficient space and security, adequate lighting and ventilation, adequate infrastructure in a location with adequate access to employment and basic services at a price which is affordable to the user"(UNCHS/ Shelter, 1990).

On an international level, the Habitat II Conference acknowledged the magnitude of barriers governments face in realizing their responsibility toward solving the crisis of housing. The Habitat Agenda defines the role of government as one of policy reformation toward "combating homelessness, preventing discrimination, promoting security of tenure, preventing illegal/mass evictions, and promoting access to information, land, services, and finance for affordable housing" (UNCHS, 1996). It further clarifies that it is not considered the responsibility of the state to build housing for the entire population, or to provide housing free of charge; nor is it reasonable to expect that the state must immediately fulfill all aspects of its obligation. The agenda also stresses the need for the involvement and support of all sectors of society in making significant strides toward realization of this basic human right; including the private sector, NGOs, community and local organizations, as well as partnering organizations and the international community. (UNCHS,1996)

The UNCHS/GSS supports an “enabling approach,” which mobilizes actors in all aspects of shelter production (UNCHS, Shelter, 1990) In this approach, the role of national government is to “establish legislative and institutional and financial frameworks that will enable formal and informal business sectors, NGO’s, and community groups and households to make optimum contributions to national shelter delivery systems” (UNCHS, Shelter, 1990) An enabling approach implies that people participate at the community level, and are involved in decision making according to the needs and priorities that they themselves define.

4.2 Policy and Housing Production

On a National level, governments in most third world countries deal with housing production within three differing sectors which are distinguished by the degree of government involvement and control in housing production.:

public sector- housing projects directly undertaken by governments or state enterprises.

private sector- housing by non-government developers who operate within the formal regulatory system as defined by the state.

popular sector- or “informal sector”, all housing which is built independently of the government regulatory framework. (Leaf, 1993)

Because government has direct control over public housing, the public sector was, for many years, the primary focus for housing policy in developing countries. In addition to criticisms of poor design, conventional public housing schemes are also often denounced as serving a very small percentage of the population, being utilized for political purposes, or to house government employees, being expensive and highly

subsidized. The failure of these schemes to meet demands for low income housing has resulted in the pervasive growth of informal settlements in the form of squatter and shanty towns.

For many years governments responded to rapid expansion in the informal sector with policies of demolition. In most cases, new housing produced was not very effective in meeting the needs of displaced populations in terms of location, spatial function, flexibility and finance. (Gilbert and Jugler, 1992) Charles Abrams, among others, was highly critical of the irrationality of slum clearing policies in the 1960s. He suggested that demolition of housing stock without replacement only intensified the worst aspects of slums; overcrowding and high shelter costs due to the imbalance in supply and demand. (Abrams, 1964) Fortunately, today most governments are much more tolerant of informal settlements and actively seek positive support mechanisms and “enabling strategies” within all sectors of the housing market.

The private sector is considered to be far more efficient than the public sector in enlarging the overall volume and capacity of housing stock. As developers are motivated by profit, and consumers are often unable to fully assess structural quality, regulation of the private housing industry is deemed necessary to ensure public safety and to protect consumer interests. Mechanisms for regulation include land use regulation, zoning, and building codes. As private developers cater to the most profitable segments of the market, they often serve the interests of only the highest income populations. Policy in the form of tax incentives, and subsidies can raise the level of private industry involvement in the development of low income housing, yet,

developers will only participate to the extent that housing *need* can be transformed into real housing *demand* (that is, consumers who create a real market demand because they have the ability to purchase and pay for their housing). (Leaf, 1993)

Popular or informal housing is the hardest sector for governments to control, as it falls within the realm of civil society and is extremely amorphous. The informal sector may include both legal and illegal settlements, self built housing or cooperative efforts, and houses built for owner occupancy, or for renting out to others. In many cities the popular sector (including community sector housing) accounts for well over half of the overall housing stock. In Indonesia, over 80% of the annual growth in housing stock is provided by the popular sector. (Struyk, Hoffman and Katsura, 1990, in Leaf, 1993).

Many believe that “the best that governments can do is to not stand in the way” of civil society’s participation in housing development to increase the total volume of housing stock. (Leaf, 1993) Many government administrations now support a people centered alternative development approach. With World Bank endorsement of self-help programs, since 1974, many developing countries have shifted policy emphasis toward alternative forms of housing support such as “sites and services” projects or “upgrading” schemes which enhance activity in the private and informal sectors. (Moser and Peake, 1987) These types of projects often function outside the sphere of formal political systems to promote self reliance and enable civil society as the main facilitator of grassroots development.

4.3 Land and Infrastructure

When addressing the shelter needs of the poor in developing countries, it is important to distinguish between problems of low income housing and the more broad based problems of human settlements. Physical structures which provide shelter are only one element within a settlement and low income housing is only a component of the overall housing picture. (UNCHS, Global Report, 1987) Many other factors related to physical and social infrastructure effect the lives and health of inhabitants. Increasing land values have resulted in the majority of low income settlements being located on the periphery of urban centers, making access to employment costly and inconvenient. Distribution of basic services, such as roads, drainage systems and electrical/telephone service within a settlement impacts opportunities for local business development which can be essential for economic prosperity within a community. Sanitation services such as water, sewer and garbage collection can pose serious health risks from biological hazards spread by rodent and insect vectors. (Murison and Lea, 1979) Poor air quality and inadequate ventilation can aggravate bronchial problems or cause permanent lung damage. Convenient access to public services such as education, healthcare, and public transportation will also have a significant effect for resident's potential for employment, equal opportunity, and improvements in their overall quality of life.

Consideration of all of these factors are important in addressing balanced community development. In many cases, land and infrastructure development is the primary emphasis for policies oriented toward low income housing. This often comes through

government absorption of the costs for providing roads, sewers, drainage, water supply, utility service, etc. as a subsidy to the private housing industry. (Leaf, 1993) Policies which support the expansion of the supply of serviced land are intended to increase production and the overall volume of housing stock, whereas, improvement in access to finance serves to increase consumers purchasing power and the housing demand. (Leaf, 1993) Both policy approaches utilize market forces, stimulate economic activity within the housing sector, and create new opportunities for shelter.

4.4 Affordability and Barriers to Finance

Affordability, as defined by UNCHS standards, usually falls between 15-25% of household income. (UNCHS, Global Report, 1987) Although some policy restrictions have been relaxed in recent years to accommodate the needs of the poor, most programs “have displayed a tendency to serve the needs of the most able and enterprising among the urban poor” and fail to provide for those most in need of assistance (UNCHS, 1987).

Many self-help projects are specifically designed to advocate incremental building over time. Rather than taking out a large initial loan, incremental construction allows a household to add more space or upgrade the structure as financial resources become available. The quality of the house may be much lower during early phases, but overall security of the family in general is enhanced. Policy measures and incentives within the banking industry may be necessary to encourage the availability of small loans for construction, and may require adjustments in the standard forms of finance available to low income families. (Leaf, 1993)

The implications of unaffordability due to unrealistic standards of construction and impractical code requirements are an ongoing concern in policy development and can limit the availability of housing for the urban middle class as well as for the poor. Yet many governments are unwilling to lower their defined standards because they fear criticism that they are sanctioning the development of low quality housing and slums as the bulk of their housing stock. These circumstances also breed corruption as people find it impossible to build according to standards, and are forced to bribe officials for necessary building approvals, or proceed knowing their housing status is labeled as “illegal”. (Gilbert and Gugler, 1992)

4.5 Housing Policy and Building Regulations

Regulations for construction are intended to ensure the safety of inhabitants within built environments. However, building codes all too often present obstacles for low income families struggling to improve their home environment. Many codes are modeled after those used in the industrialized nations, and emphasize western technologies which are generally not suitable to prevailing conditions in developing countries. “Most existing construction codes favor import-based construction materials which, despite their high cost or scarcity, often become imposed as the only choice available to the low-income builder” regardless of how inappropriate they may be (UNCHS, Global Report, 1987). “Typically, they do not provide adequate guidelines to artisans and professionals for safe use of indigenous materials and infrastructure technologies, they sometimes prohibit the use of traditional materials and techniques, and they do not contain provisions to incorporate feasible innovative

technologies as they emerge” (UNCHS/Shelter, 1990). In order to remove barriers, revitalize the construction sector, mobilize local resources, and increase the volume of activity in the housing sector, modifications to the codes are necessary to promote technologies that are appropriate in terms of economic need, as well as social and cultural circumstances. (UNCHS, 1982)

The potential of creating distinctive building codes and construction standards for low-income or alternative settlements, needs to be further considered. In many cases, traditional or recycled materials are perfectly adequate for simple construction needs and have tremendous potential for improving the quality of existing housing when used in the right way. (UNCHS, 1987). In recognition of the validity and shelter delivery potential of many alternative building practices, it is necessary to correct regulatory defects, improve knowledge and technique in proper use of alternative materials, and promote improved standards rather than rigidly imposed ordinances. (UNCHS, 1987)

The UNCHS highlights that these types of reforms are not likely to be developed or implemented without continued public activism and shows of support by those who have demonstrated an ability to produce shelter effectively and have a direct interest in the reforms. (UNCHS/ Shelter, 1990)

4.6 Policy for Sustainable Human Settlements

More than 100 world leaders participated in The 1992 Rio Earth Summit. The publication of their proceedings, *Agenda 21*, has provided a comprehensive outline for the possible scope of sustainable development. “Based on the fundamental premise that the First World must subsidize development in the Third World in order to redress past inequities and reverse the destructive cycle of resource depletion”.

(Steele, 1987)

Among the *Agenda 21* recommendations for the management of human settlements, the following corrective measures are advocated:

- Use of local and indigenous building sources.
- Incentives to promote the continuation of traditional techniques and self-help strategies.
- Improved construction materials, techniques and training in recognition of the inequitable toll that natural disasters take on developing countries.
- Regulation of energy-efficient design principles.
- Use of labor intensive rather than energy intensive construction techniques.
- Appropriate restructuring of credit institutions.
- International information exchange.
- Encourage the recycling and reuse of building materials.
- Decentralization of the construction industry, through encouraging smaller firms.
- The use of ‘clean technologies’.

(Steele, 1997,pg16)

4.7 Enabling Strategies

In issuing the proclamation for the Global Strategy for the Year 2000, the United Nations General Assembly announced the emergence of new enabling approaches to housing and policy development. The approach de-emphasizes the need for replicable pilot projects and asserts the need for “sustainable process in shelter delivery”.

(Awotona and Briggs, 1997). Emphasis is therefore placed on creating ‘enabling environments’ for partnerships within civil society to scale up the pace of housing production within all sectors to meet increasingly critical demands.

Since the 1980’s global trends in national housing policies have universally shifted toward enabling strategies including the “shedding of direct responsibility for the production and management of shelter by government, in favor of the provision of support and incentives to private sector developers, voluntary associations, and individual households.” (UNCHS, Roles, 1990, pg 11) These policy shifts acknowledge the advantages of local participation in housing and service provision, recognize the need for dynamic relationships between civil society and governmental administrations and ultimately aim toward harnessing the energy and ingenuity of NGO’s and the informal sector, especially in meeting the needs of the poor. (UNCHS, Roles, 1990) Because of these policy shifts, many innovative forms of cooperative efforts have emerged. These include the expansion of self help initiatives, owner-builder support programs, various forms of collective ownership and community cooperatives, partnering housing associations, and tenant-management programs.

Although current policy trends have opened opportunities for flexible forms of self-help, many communities remain legitimately skeptical. “For years they had been helping themselves despite government policies. Now they were helping themselves because of government policies”(Hamdi, 1991). Especially within squatter areas, new policies may tend to encumber the freedoms squatters have previously known; building where, when, and however they could. Within many institutionalized sites

and services projects, for instance, residents are often held to regulations and construction standards, and are ultimately required to pay more while they have less freedom. (Hamdi, 1991)

4.8 Policy, Natural Building Technology, and Small Scale Industry

In most third world countries, the informal sector relies heavily on the use of natural indigenous materials and traditional building technologies in producing significant proportions of the population's shelter. It may seem evident that 'the problem of ever increasing housing deficits the world over is socio-economic, not technical, and that mechanized capital-intensive building technologies have little place in countries faced with absorbing massive increases in human resources and in building industries that are pricing themselves out of the marketplace' (Murison and Lea, 1979) Although many countries have ignored the potential for use and development of indigenous technologies, the case for policy reform and action to support traditional housing sectors has moved to the foreground. Consistent with UNCHS 'enabling strategies', traditional low-tech building solutions emphasize manpower and focused use of natural resources rather than capital, are readily applicable in low-skilled self-help schemes, and provide potential for the expansion of local cottage industries. By revitalizing traditional and indigenous capacity within the housing sector, local resources can be better mobilized to meet the basic needs of the majority population (UNCHS, 1982).

In developing housing programs and policies, it is necessary to focus on development of indigenous building materials and construction techniques that favor the use of local resources. Earth, timber, bamboo, stone and palm thatch are among the most commonly recognized natural building materials used the world over. Less traditional building products may be produced from locally available resources and agricultural or industrial by-products, such as straw, volcanic pumice stone, rice or coconut husks, and lime (Murison and Lea, 1979). “The criteria for selection of a technology should include the affordability of its initial cost, the ability of local labor to utilize and maintain it, and the viability of adapting it to local needs” (UNCHS/Shelter, 1990).

Focused development of small scale building materials industries utilizing locally available and ecologically sustainable resources may significantly impact a community’s ability to purchase affordable materials and therefore improve the condition of their housing. This approach not only supports new economic development initiatives, but fosters self-reliance and sustainability in the provision of shelter and has considerable potential for supporting the rapid expansion of the local stock of affordable housing. The development of small scale building industries, however, may be limited by an unskilled labor force, lack of access to credit, lack of technological information, and insufficient institutional support. (UNCHS/ Shelter, 1990) Policies intended toward long term implementation of sustainable building solutions may need to support research of raw material resources, feasibility and testing for various construction applications, and the potential for production and marketability by local industry. Public awareness campaigns and skills training may be necessary to promote the popular use of suitable technologies. (UNCHS/ Shelter,

1990) In addition, fiscal adjustments on imported building materials may be necessary as a means of assuring that locally manufactured products can compete with foreign imports. (UNCHS/Shelter, 1990) It may also be necessary to ensure that natural resources are harvested in a manner which is sustainable, and does not contribute to local environmental degradation. “Not all of these technologies are readily known to senior project professionals and decision makers, and a concerted effort is required to bring relevant technologies to their notice and to make corresponding design and implementation procedures a part of formal professional training” (UNCHS/Shelter, 1990). In many cases, a wide range of low-cost technologies are appropriate and suitable for differing physical, social and economic conditions in less industrialized countries. Revision of building standards and codes, and the development of technical guidelines and specifications for the use of natural building materials has much potential to expand the housing alternatives for the poor.

5.0 Builders Without Borders

5.1 Introduction/ Mission

Mission Statement:

Builders Without Borders is an international network of ecological builders with the mission to form partnerships with communities and organizations around the world to create affordable housing from local materials, and to work together for a sustainable future. (BWB, website 2000)

In the fall of 1999, a well intentioned group of natural builders began to share their ideas and frustrations about the problems of homelessness worldwide; especially those in developing countries, war torn regions, and areas effected by natural disaster. With their collective knowledge of the availability of sustainable, low cost, natural building solutions, the immense scale of the current global housing crisis seemed incomprehensible. Together, they resolved that within their own area of expertise, they would strive to serve underhoused populations through a variety of means. By December of the same year, the group had created the non-profit organization titled Builders Without Borders (BWB). The new international NGO, is dedicated to the exploration of alternative solutions to the housing crisis and serving homeless populations, whether their circumstance results from war, natural disaster, or the chronic shortage of affordable housing known throughout the world today. Builders Without Borders seeks to build relationships between communities and international networks with a common goal of creating sustainable and affordable forms of shelter. Their focus on housing solutions addresses not only the construction of new housing units but seeks to train local populations in sustainable practices in building their own forms of permanent shelter.

Within its first year of operations, the organization has shown considerable ambition and promise in making a significant contribution. BWB carried out its pilot building project, provided advanced research support to a significant international project, initiated an educational resource program and established a website for outreach and organizational communications. A series of membership meetings and public relations activities were also carried out. Details of the organizations specific activities in its fledgling year are further reviewed in the institutional development section of this chapter.

BWB Goals and Objectives

- Build partnerships toward affordable housing for all.
- Empower people and communities to create healthy homes through the use of local ecological materials.
- Educate people about sustainable building technologies.
- Network and share information across national borders.
- Work together for a sustainable future.

5.2 Practicum Position- Role and Responsibilities

After attending a 3-day conference and planning meeting with BWB in March of 2000, I agreed to work on a full time volunteer basis with the organization for a period of 6 months. As the organization is very young and still in its formative stage, my role was multi-faceted, and at times undefined. The lack of structure challenged my organizational and communications skills on many levels and provided a great opportunity for learning.

The position as Project/Operations Manager involved a full range of duties associated with the daily operations and public relations of the organization, as well as

development strategy, and project coordination/management. While building public relations for the organization, we attended several national conferences, spoke with many people interested in supporting the mission, and built up the membership base of the organization. We also developed a simple brochure to describe BWB's mission, and appeal for financial support. Ongoing member discussions surrounded the development strategy of the organization, and debated issues relevant to successful project implementation. I also participated with two significant projects which were carried out with partner organizations.²

The term of my service with BWB lasted from May to November 2000. Many of the issues faced in creating a strategy for BWB activities involve questions about how to shape the organization's structure for optimum effectiveness, how to best direct projects to empower beneficiaries, and how to make the most of limited resources. Vacillating between varying priorities, group discussions have struggled with the most basic philosophical issues of "who, what, where, why, and how" the organization should make its next move. A primary task of the November 2000 membership meeting was to debate various potential operational models for carrying out BWB's mission.³

After fulfilling my initial commitment of full time participation in the office, I embarked on a tour of independent study visiting related projects in Mexico. By observing several successful projects in Mexico, each with a different approach, I hoped to gain insight about the underlying elements which were leading to the

² (See Appendices 9.2 and 9.5 for further project details).

project's success. A brief review of the case studies, my inquiry, and findings are included in Chapter 6.0. Based on this analysis, and my observations throughout the term of the practicum, I have developed a series of recommendations, presented in Chapter 7, which I hope will be of benefit to BWB in the future.

5.3 Agency Approach

The BWB approach to the provision of affordable shelter focuses on the self-built or owner-builder process and the utilization of local, natural materials in building. The organization views itself as a support resource, catalyst, and mechanism for community action. It also seeks to facilitate access to specific knowledge about natural building, technical information and resources. By working at the grassroots level, BWB seeks the empowerment of individuals and local communities to better provide for themselves in the creation of sustainable forms of domestic shelter.

Within the broader context of development, BWB's theoretical approach is situated within the framework of alternative development. It is a people centered approach, communicating at a grassroots level, utilizing local materials and human resources, and focusing on the enabling of civil society. The BWB focus on natural building places the organization squarely in the realm environmentally sustainable development. Because natural building utilizes labor intensive rather than capital intensive technologies, BWB activities offer opportunities for empowerment, building self reliance, and affecting social change at many levels.

³ (See Appendix 9.1 for an outline of potential operational models).

Ultimately seeking new answers to the global housing crisis through integration of old and new technologies, BWB seeks not only to teach, but to learn and explore. They hope to learn about the old ways of community and building, to seek new sustainable answers to the problems of shelter, and to consider how alternative solutions may be applied in other regions of the developed and developing world. On a philosophical level, the organization views the contribution of knowledge by local communities as equally vital to the development of sustainable solutions in housing and the long term creation of a sustainable future. A segment of the BWB "Values Statements" describes the rationale of their reciprocal approach as follows, "People in less developed parts of the world can help awaken us to a closer contact with the earth and ways of living lightly upon it. Together we can begin the process of creating a sustainable future for our global village." (BWB, website 2000) On a more pragmatic level, the track record of the organization is too limited to demonstrate how this philosophy translates to practice.

One of the potential weaknesses of the BWB approach is also consistent with an alternative development approach. Alternative development typically fails to connect with the larger social issues of national, regional, or global development. In addressing issues of sustainability in housing development, BWB *does* seek to connect local communities to the larger global context, especially accessing knowledge and resources across political borders, however, the organization, at this time, has no focus on issues of national development or policy reform. In general, they avoid discussion of market forces, social class relationships, and analysis of the institutional structures which effect people's ability to attain adequate shelter.

5.4 BWB Institutional Development

As the Builders Without Borders organization is new, many of the objectives discussed for the first year surround establishing the organization, its operations, and developing its programs. Even so, BWB's accomplishments within the first year are significant. By participating in three national conferences focused on natural building, and a number of other smaller workshops, the organization was able to outreach for membership and support within the natural building community⁴. The membership list grew to approximately 150 members by November 2000; roughly 500% growth in 10 months. Three significant member meetings were also held throughout the year. These meetings have been highly participatory, and are conducted in the form of facilitated working seminars.

Although BWB, relies completely on volunteer time contributions of administrative support and leadership and project labor, the organization has managed to achieve a substantial fiscal foundation for its first year. The organization was awarded several small grants which served to support the pilot building project, and cover miscellaneous cash expenses. A significant grant was also awarded by the Graham Foundation, specifically for the development of training materials and curriculum. Toward the close of the first year, the organization was very pleased to receive another significant grant from the Lifebridge Foundation to offset operational costs in the upcoming year.⁵

⁴ (see Appendix 9.3)

⁵ (See Appendix 9.3 for specific grant awards).

In terms of carrying out specific projects, Builders Without Borders has also accomplished much in its first year, providing a foundation for member interaction and an initial track record of success to build upon.

BWB Projects 2000

Creation of the BWB Website, Networking Natural Builders Worldwide

The BWB website links communities worldwide to educational resources and services. It currently posts Steve McDonald's Visual Straw-Bale Primer, prototype straw-bale house plans with translations in English and Spanish, and Joe Kennedy's Natural Building Curriculum, available for free download. The bank of resources and internet links will be continually expanded over time. The website also provides an interactive place where members can give feedback and comments on current issues. <<http://www.builderswithoutborders.org>>

Straw-bale Hogan Building Project

BWB members led a straw-bale construction training workshop held at Sacred Mountain Camp, New Mexico, in July, 2000. An earth plastered hogan dormitory was built from start to finish in 5 days together with the National Indian Youth Leadership Project, and a team of urban youth from the eastern U.S. The project served as an enlightening cross-cultural learning experience for all involved.⁶

United Nations Development Program Mongolian Straw-bale Study Tour

A 17-day Research Tour including over 35 site visits and meetings with architects, engineers, and code officials was organized and hosted by BWB in September, 2000. The tour supported the technical advancement of one of the largest current straw-bale building initiatives in the world. The team of 5 Mongolian UNDP project officials are charged with shifting straw-bale building technologies from prototype projects into the realm of mainstream building throughout Mongolia. By witnessing how alternative technologies are being utilized to meet the demands of middle and upper income consumers in the U.S., their professional views of the validity of low-tech building solutions were reinforced.⁷

⁶ (See Appendix 9.2 for a more detailed project report).

⁷ (see Appendix 9.5 for a more specific detailed project report).

Educational Resources Fund

Books, videos, printed materials, and training curricula have been donated and shipped to sustainable building projects underway in China and Mongolia. Perpetuation of this program will hopefully provide similar technical resources to other meaningful projects worldwide. In addition, BWB has provided tuition sponsorships to several natural builders from low income communities to attend natural building conferences and training workshops.

Design Manual/Handbook

BWB is developing a Facilitation and Design Handbook For Development Worker Training in Ecological Design and Natural Building. The handbook will include sample housing designs (relative to their specific context), an illustrated curriculum for use by teachers in the field, an instructor's guide, and case studies. The manual is intended to remain as a "work in progress", expanding and changing over time as new knowledge is collected.

Membership Data Base

A customized data base has been created as a tool for accessing membership profiles; allowing information to be retrieved in many formats; according to state/region, contact information, volunteer interests or history, professional skills, etc.

Within its fledgling year BWB has faced many challenges and learned many lessons about organizational development as well as carrying out well intentioned technical field work. The organization has been met with much enthusiasm and support, and has begun to build a strong foundation of human and technical resources. There seems to be no question that there is both need and support for the organization. In terms of organizational development, there is still much room for strategic planning and the creation of organizational structure which will synthesize and direct energies and resources in the most effective way. Analysis of the organizational strengths and weaknesses and what I view as barriers to organizational growth, are provided in the following section.

5.5 Organizational Strengths, Weaknesses and Barriers to Growth

Human resources and the membership composition of the Builders Without Borders organization is one of its greatest strengths. BWB is composed of many individuals who are passionate about the appropriateness of utilizing natural building technologies to satisfy contemporary housing needs by low cost and sustainable means. They are also highly ambitious and sincere in their desire to support families and communities who are less fortunate than themselves. The collective group possesses an admirable amount of technical knowledge and experience in building, and the general willingness to actively share that knowledge with others without compensation (in monetary terms) for their time. Among the membership body, and their associates, there is also a wealth of related professional skills such as legal counsel, non-profit development, public relations and media production, and administrative support skills, which may be drawn upon to develop and support the activities of the organization. Collectively, the group represents a growing network of people who are both driven and capable of achieving significant impacts.

Potential access to resources is another strength of the organization. Simply because it is based in one of the wealthiest nations of the world, the group has far greater opportunities to access capital, material provisions, and technical resources than most organizations based in poor countries. Resources may be drawn from philanthropic organizations, foundations, research and educational institutions, corporations, and private funding sources. In addition, the organization can utilize its position to effectively channel resources and function as a bridge between the industrialized and less industrialized countries. Within its first year, and without much of a track record,

the organization has demonstrated its ability to gain the financial resources necessary to continue its work.

What is lacking in terms of financial stability, however, is a cohesive program for fund raising, and a commitment to carrying out the types of activities which will lead to greater financial stability. These may include numerous activities such as membership drives, fund raising events, grant writing, private and corporate appeals, etc. Concomitant with fund raising issues is the lack of a comprehensive operational budget which defines funding requirements relative to the achievement of specific goals. In many cases, it is easier to obtain funding for project specific tasks, and to cover cash expenditures, than to gain funding for general operations and administrative support. A clear outline of administrative roles, responsibilities, specific job tasks and associated expenditures necessary for the proper management of the organization may be a useful tool to gain the confidence of funders. Presently, the lack of defined administrative structure (in terms of full time or part time staff) and a framework for accountability may be presenting barriers to obtaining of funding.

Many of the weaknesses of Builders Without Borders are associated with its youth. As with any youngster striving to define his/her self within in a larger social context, BWB is struggling to define its identity. Within the global housing crisis, there is no shortage of need or possible sites to explore and demonstrate the benefits of natural building. Because group ambitions are high, and the mission knows no geographic boundaries, there is often much debate among members with differing views about

which actions or priorities will have the greatest impact and most effectively utilize the resources of the organization. Current membership discussions revolve around alternative operational models which may be adopted by the group.¹ Each one presents a different focus for carrying out the mission. Although they are equally valid, each will require the development of a unique set of skills and experience in order to carry out that work most effectively. Each will lead the organization down a different path. The issue of how to resolve these debates leads into some of the more structural barriers to the organizations development.

Two important and fundamental problems can be identified as structural weaknesses of the BWB organization. Unless they are resolved, I believe that these issues will continue to present significant barriers to the organizations growth and capacity. First is the lack of leadership willing and able to dedicate the time necessary to build the structure of the organization into an effective tool for carrying out the objectives of the mission. Although there is a loosely associated core group of people who have made substantial contributions to pushing the concept of Builders Without Borders along, the group has failed to recruit a team of people willing to sit at the helm as directors for an extended period of time and consistently carry out the strategic decision making that will keep the organization on course. Second is the lack of guiding principles for decision making in the organization. Presently, BWB has a strong statement of values which is posted on the website. It also presents a list of project specific tasks which the group intends to undertake. Between these values and proposed activities there is a gap. It is unclear how the organization intends to

¹ (See Appendix 9.1)

translate these values into action on a regular and repeated basis. Though it may not be necessary to define a complete program agenda, it is essential to define the principles which will guide the organizations conduct. These principles will present a platform of priorities and form the foundation for strategic planning year after year.

Although staffing problems are closely linked with issues of administrative structure and financial stability, it must be stated that the lack of a regular and dedicated staff is presenting a significant barrier to BWB development, growth and stabilization as a reliable and accountable non-profit organization. Human resources and many manpower hours are necessary to carry out the directives of organizations members and leadership. In its first year the organization has relied almost completely on volunteer time to carry out the activities of the organization. Even among those with the most honorable intentions, it is not possible to sustain a flow of concentrated energy and focused attention without a subsistence level of income and operational cash flow. Much momentum and energy is presently being lost through reliance on short term, volunteer staff positions, and the lack of general project administrative support.

Most members want to volunteer by plugging into a project during the construction phase, and for a limited scope of time. Many folks are able and willing to travel to project sites and participate. They want to contribute, to learn, and to feel that their contribution has meaning. Many potential volunteers contact the organization and ask "how can I help?". Likewise, needy communities contact the organization and ask for support. Presently, there is no tangible method or process which enables

communities to link with BWB, or to submit their projects for consideration. If a project is casually proposed, either by a member or a potential partner organization, there is no means or criteria to evaluate whether or not the project fits within the organizations strategy and current objectives. Similarly, there is no agreed upon authority to approve or disapprove of the project proposed. BWB has a responsibility to member volunteers as well as to project beneficiaries, that BWB projects are well organized and create a positive and rewarding environment for participants. The organization also has a responsibility to the membership and contributors that the organization is kept on its track. Until there is a commitment to creating the organizational structure and appointing appropriate support staff with clear job tasks and accountabilities, the organization may continue to drain its potential, and may even scar its reputation.

In terms of carrying out the work of the organization on the project level, the organization also exhibits both strengths and weaknesses. The organization is aware of and sensitive to the diversity of cultural issues which may arise in any form of community intervention, and are conscious of the need for checks and balances to guard against ethnocentric assumptions. With the development of the training handbook for ecological design many discussions arose which are now directing the organization toward a more 'participatory' and 'process' oriented approach. This is an important shift which expands the potential for community decision making, and reciprocal learning rather than focusing strictly 'technology transfer'. It changes the organizational approach to community participation from an *instrumental level* of participation, wherein, "beneficiaries contribute to efficient project implementation

but have no real control over design or evaluation” to a *localized level* of participation where “projects focus on local capacity building and beneficiaries may control a great deal of the decision making”. (Macdonald, 1997) Another related potential weakness of the organization in terms of project development is its overemphasis on straw-bale building techniques as the appropriate solution. The strength of conviction among some members who advocate for straw-bale solutions may have an effect of undercutting the participatory process, or may place less value on projects where other solutions are employed.

In addressing problems of sustainability within the larger context of global housing development, it is also important to address the political and structural issues which perpetuate ongoing problems. Although BWB activities seek to provide tools for community level access to knowledge within the greater world community, there is presently no forum or program focus for addressing issues related to overarching economic market forces, societal perceptions, and political barriers to the effective implementation of natural building practices.

6.0 Case Studies

6.1 Case Study, Casas Que Cantan, Ciudad Obregon, Sonora, Mexico

General background:

The Casas Que Cantan project is a cooperative project which helps to facilitate community efforts to build affordable natural built homes in an informal settlement on the outskirts of Ciudad Obregon, Sonora, Mexico. The project is a grassroots initiative created by a group of local women who organized themselves to cooperate in helping to build each others homes. The natural building solutions employed were inspired by another local building project. In 1995 the Obregon office of Fundacion de Apoyo Infantil, FAI, (Save the Children) had initiated the construction of a new headquarters aimed at demonstrating ecological design principles and utilizing labor intensive rather than capital intensive building technologies. Because the region has abundant agricultural and labor resources, straw-bale technologies were utilized for cost effectiveness and to provide maximum insulation against the harsh summer sun. At that time, Bill and Athena Steen, of the U.S. based natural building non-profit The Canelo Project, were involved with the FAI project, first as technical consultants and later as volunteer partners in the demonstration building experiment. Exploration, training, and the sharing of knowledge between local builders and outsiders were inherent components of the development process. The 5,000 square foot building evolved as an organic process, without an architect, over the course of 2 years.

Inspired by the project's success, the sister of two of the primary builders of the FAI project decided to build a home, together with her husband in the local colonia called Xochitl ("Flower" in Nahuatl). Their simple home was admired as one of the most

substantial, beautiful and comfortable homes in the settlement. An ambitious group of women in the settlement petitioned for support in their efforts to construct similar homes. After unresponsive appeals to local authorities, the group addressed a letter directly to Bill and Athena, and invited them to attend a community meeting. The Steens agreed to support the group by providing technical support and training, and entrusted primary organization and decision making to the group. The women structured a process of shared work and responsibility which would result in each one participating in the building of the others homes over time. The project sequence was agreed upon by the group, with the houses for the most needy members being built first.

The Steens have provided an integral, yet detached role in the project, interjecting much needed moral support, momentum, and technical expertise consistently over time. Linking the Xochitl project with their own non-profit organization, provided further opportunities to expand the project across the social, economic and political boundries that separate the U.S. and Mexico. The Canelo Project, was able to channel donations for Casas Que Cantan, “Houses that Sing”, to cover material expenses which are especially important in providing foundation and roofing materials (approximately \$500 US, per house). The organization also conducted a series of educational workshops which included volunteers and students from the U.S. Participants worked side by side, learning together, and engaging in a cross cultural exchange which resulted in more than just the 12 physical structures which have been built to date. Friendships, increased understanding and changed perceptions have resulted.

For the Steens, witnessing the spontaneous expansion of natural building ideas in the community has been one of their greatest rewards. This year, FAI initiated a new project which seeks to shift straw-bale building more toward the private sector, with an ambitious program to build 150 affordable straw-bale houses within the next 3 years. The project will be conducted based on the technical knowledge gained to date, and will not include the Steens or the Canelo Project in any significant role. Within a development context, this is, perhaps, the best possible demonstration of working in an environment aimed at enhancing conditions for self reliance and local capacity building.

Analysis:

The following comments represent my observations of the Casas Que Cantan project, relative to current developmental issues faced by BWB. By highlighting the factors, which I view as most significant to the projects success, I hope to provide insight which will be meaningful to BWB in establishing a working model for operations, developing organizational structure and formatting field projects for appropriate community level interactions.

The value of strong human relationships surrounding the project.

The friendships between the Steen family and the extended families closest to the building projects in Ciudad Obregon have encouraged the scope of the natural building work in the area to grow and change slowly over time. The strength of their family to family relationships is what has kept the Steens deeply connected to the

community. It is also the root of their joy and sense of reward in their work. What has transpired in terms of project development has grown up from, and because of friendship. The process has been more spontaneous than calculated.

Long term relationships between a specific organization and a specific community.

What started as a consultation by the Steen's/Canelo Project on an institutional (quasi-public) building for Save the Children, grew to become a two year building experiment, then shifted to providing technical support in a series of women's co-operative building projects. Utilization of straw-bale technology has now taken on a life of its own in the area. The careful maneuvering of the Steens, and their distant, yet consistent relations have nurtured the utilization of natural building technologies in Obregon and have helped to actualize the ideas and initiatives of the community.

Development of technical solutions on site.

Every natural building project must be considered within its own ecological, social and cultural context and each community setting offers its own unique combination of local, natural, man made, and human resources. In the case of Canelo Project work in Obregon, a dynamic process of dialog and experimentation on site lead to final decision making as to the most appropriate technical solutions for each building condition. These were, of course, based on material availability, cost, durability, and ease of construction using simple tools and semi-skilled or unskilled community labor. Certain construction techniques such as those using the local reed, *carrizo*, were specifically developed during the project, based on modifications of traditional

ways of building. The development of straw clay blocks for building was another valuable innovation. Other vernacular techniques were explored such as the use of Nopal cactus juices to enhance adhesion and durability of lime plasters. Local knowledge was important in many ways including selecting the longest-lasting species of palm for roof thatch and in locating the best clay sources and colorants.

Long term process of experimentation and discovery which benefits both the local community and the support organization.

By entering collectively into a vigorous exploration of possibilities for natural building, new combinations and solutions were allowed to emerge. Methods and techniques which became familiar through the process have since become part of the working vocabulary for the Canelo Project as well as for the project participants in Obregon. Knowledge, skills and experience gained from the earliest works have been utilized time and again on both sides of the border. To quote the words of Bill and Athena Steen, “Our worlds, cultural pride, and differences had combined to make something more than a building. Our working and being together had redefined the way we see the world, the way we live, and the way we build. The lives of everyone involved were forever changed” (Steen and Steen, 2000).

Attitude, not of charity or aid, but of respect, support and mutual cooperation.

The sincerity of this philosophy seems to underlie all of the Casas Que Cantan work. Workshops are structured as cooperative and educational cross cultural experiences. Participants come to learn new skills as well as to support those in need. Everyone gains knowledge, experience, and comes away with new expanded views. Rather than

focusing all of their efforts on fundraising and building houses at rapid speeds, the Steens have made themselves and their organization available as a steady and dependable resource to the community at many levels. Though they assist by seeking material and financial resources on behalf of the community where appropriate, this is kept on a limited basis. Their work has slowly grown, changed peoples thinking over time, and has served to empower people with skills, confidence and new options in their lives.

Case Study, Zopilote, Tlaxco, Tlaxcala, Mexico

General background

Zopilote is a small locally based environmental organization in Tlaxco, Mexico, focused on alternative education systems which promote the utilization of permaculture principles and ecological building practices. At least twice per year the organization hosts a two week study course in the highlands near Tlaxco, Mexico, titled *Traditional, Colonial, and Ecological Building in Mexico*. The workshops provide an intensive blend of theory, dialog and hands-on exploration of natural building technologies and land restoration practices. The unique setting and history of the organization's activities in the Tlaxco region and community provide the foundation for initiating technical presentations, demonstrations, and field trips to relevant regional sites.

The Zopilote organization actively promotes sustainable rural development based on principles of simple lifestyles in harmony with nature. Community self reliance is encouraged by refocusing attention and values on appropriate utilization and management of the local environment in providing for basic human needs. Rather than favoring market based products, the importance and logic of utilizing local resources are emphasized in the production of food, shelter, and in the management of human waste. This is accomplished by teaching people methods of small scale organic farming, agro-forestry, solar energy utilization, rain water collection, ecological building, and sanitary composting. In theory, this reduces community level dependence on outside resources, and minimizes the negative impacts of economic market fluctuations on the community. The process requires a fundamental shift in

values away from western products and lifestyles (which prioritize economic means in nearly all aspects of life) toward the creation of healthy, contemporary, subsistence lifestyle households and communities.

The educational format of the Zopilote workshop is oriented toward reciprocal learning and all participants are encouraged to share their knowledge and experience with the group. The dynamic and open group exchange is guided, by program directors Alejandra Caballero and Professor Paco Gomez through a full agenda of topics each day. Ianto Evans, of the Cob Cottage Company, also co-directs the workshop, adding specific expertise in popular natural building technologies within the U.S. A limited number of participants are invited for each session in order to maintain a group balanced with 1/3 U.S. or European, and 2/3 Mexican and Latin American participants from a range of regional and professional backgrounds. Presentations and discussions are fully translated in Spanish and English for the equal benefit of all in attendance. According to Zopilote, the course is offered to help accomplish the following objectives:

- Increase the numbers of people who understand the principles of ecological interdependence and regenerative systems, particularly as they relate to rural development.
- Help participants develop skills that can be used to select appropriate technologies and design /maintain sustainable systems for meeting basic human needs (food, shelter, energy, water, cash income, etc.).
- Help participants become more effective teachers, better able to communicate sustainable systems concepts to people of all ages in a variety of situations.
- Integrate each participant's relevant personal experiences, cultural background and technical skills into the course.
- Share the experiences of the people who live in polycultural society with mesoamerican roots and ancestral traditions. To provide another focus rather than traditional western attitude of "saving the Third World", and find ways

(together) to solve common problems while strengthening relationships between people.

(Zopilote, 1998)

The educational interchange established in the Zopilote workshop offers a unique opportunity for exploration and discovery in addressing issues of sustainability in providing for basic human needs. It is intended for architects, development workers, regional planners, builders of all kinds, historians, teachers, writers, contractors, and individuals who plan to build their own homes. Most importantly, the workshop provides a setting for people with shared interests and goals to build relationships across cultural, economic and political boundaries while experiencing, first hand, the rich history and traditions of the Mexican Highlands.

In addition to the workshops, the organization supports an alternative primary school, focusing on environmental education and “nurturing a vision for an ‘*educacion para quedarse*’, literally meaning ‘education in order to remain in one’s community’” (Zopilote, 2000). The school aims to integrate children in the Tlaxco community, stressing local activities, the use of local resources, and “invites the child to consider his/her development relative to the local environment, instead of one that breaks ties with their place of origin” (Zopilote, 2000). Academic work at all age levels is integrated with practical training in carpentry, pottery, textiles, horticulture, and forestry. The school’s approach, which is intimately tied to the community and respect for nature, maintains academic standards of formal accreditation in the school system. (Zopilote, 2000) The school demonstrates the practical application of alternative teaching methods and the promotion of alternative values and traditional lifestyles.

The Cob Cottage Company in Oregon U.S. is a key partner in the Zopilote organization; promoting the workshops, helping to coordinate arrangements among non-Mexican participants, and campaigning for financial support for the primary school (primarily to pay for teachers salaries). The workshop tuition collected from participants from industrialized nations are used to provide scholarships, offsetting the weight of financial burden on Latin American participants with fewer cash resources. The program provides fair opportunities for needy participants from wealthy nations as well; allowing for work trade, and extended learning experiences by contributing to the organization's efforts after the course is complete.

Analysis:

The following comments represent my observations of the Zopilote project, relative to current developmental issues faced by BWB. By highlighting the factors, which I view as most significant to the project's success, I hope to provide insight which will be meaningful to BWB in establishing a working model for operations, developing organizational structure and formatting field projects for appropriate community level interactions.

Ongoing process of reciprocal learning and information exchange across cultures.

The process of reciprocal learning and information exchange between workshop participants is important on many levels. First, on a psychological level, the workshop reinforces the commonality of the struggles faced in creating a sustainable

future. It comforts people to know that others are dealing with the same issues, and promoting similar ideas in other corners of the world. It gives them hope that even small steps, made in the right direction can provide a quiet example and eventually have some impact on the greater global society. Participants are also inspired by their exploration of a wide breadth of possibilities in technical solutions, and gain confidence in their abilities. Second, on a social level, the workshop brings together people of completely different backgrounds and lifestyles, and places them in an environment of mutual learning and exchange. Factors relative to social, economic, or educational status which may present barriers to communication in other settings are not apparent. Participants eat, sleep, work and learn together. All participants including the host/facilitators are perceived as equals, and each person's contributions are valued. Participants come away with new friendships, a network of contacts, increased appreciation for the way others live, and an expanded world view. Finally, on a technical level, the workshop environment creates fertile ground for experimentation and the cross breeding of ideas, which may lead to new and exciting technical solutions.

Empowerment and individual Capacity building

The seminar format used empowers participants through expanding their thought process and providing new analytical tools. The workshop approach creates a setting for students to explore and discover new possibilities. As learning occurs most smoothly when students discover things for themselves, many new concepts and a great deal of information can be absorbed within a short period of time. The process targets the root of participants thinking about the way that we as a human species

relate to the land in providing for all of our basic needs. Although the process is geared toward learning, it is less oriented toward technical transfer, and far more oriented toward exploration. This results in an increased capacity to problem solve and apply knowledge in new and creative ways when participants return home.

Limited scope of involvement.

The organization functions as a resource for knowledge and a catalyst for activism. Participants are inspired and encouraged to engage in natural building projects after the course is completed. However, the organization itself retains no responsibility for project implementation outside of the seminar context. Zopilote acts as a catalyst for initiating work in many different regions and social settings, yet maintains a manageable and steadfast focus on ecological education. The organization places limited efforts on increasing public awareness or changing societal values beyond the scope of inspiring action through the seminar process; they do not publish, collect technical data, or actively network with other national or international organizations. The organization has defined its role, and has built a strong identity around a specific and limited mission.

7.0 Recommendations and Conclusion

7.1 Recommendations

Based on the totality of my experiences with Builders Without Borders, and my observations of project work in Mexico, I offer the following recommendations for the future development of the BWB organization. In addition to ‘project development’ recommendations specifically related to field work, I have included a series of ‘organizational development’ recommendations. Both are significant in laying the foundations for effective operations. Additional recommendations for project management are highlighted in the NIYLP Project Team Review (see Appendix 9.3). These were composed by a team of project participants including myself, and representatives from the partner organization, and are not duplicated in the following overview. Recommendations for the development of the BWB Design Manual/Handbook, to be posted on the website, are also included separately in Appendix 9.6.

7.1.1 Project Development Recommendations:

- **Emphasis on Process-** ‘Process’ can be far more important for real empowerment than any technical solution. Of course technical solutions have to work. Appropriate technical guidance should be inherent in BWB’s role. However, many of the problems related to housing shortages are social, not technical. BWB’s most difficult problem is in dealing with the social/psychological aspects of nurturing a truly empowering project that changes the way people think, behave, and consequently, build their environments. Increased cross cultural understanding

is an important outcome of effective 'process' in project implementation between partner organizations from different countries or social backgrounds. Careful attention to 'process' also builds strong interpersonal relationships which last beyond the term of the building project, and increases opportunities for future projects between partners.

- **Emphasis on Participation-** Many BWB projects are currently presented by partner organizations with a fairly clear idea of what will be built. In many cases, proposed projects do not currently include a participatory resource analysis process, or design process. Community participants are “neither passive nor willing to accept an outsiders preferred solution as unquestionably correct. They are not empty vessels waiting to be filled, but skeptical scientists and shrewd consumers energetically pursuing the best available solution to their problem of the moment” (Dudley, 1993). In all projects, I recommend that BWB take time to poll the community and establish a team of people with diverse interests to participate in design development and project decision making. Each project should also emphasize an educational process of resource analysis specific to the local context. This provides a broader base of understanding and enhanced creativity in future problem solving relative to many issues. Participatory process also builds pride and creates local stakeholders in the project.
- **Open Ended Approach-** Concomitant with emphasis on 'process' and 'participation', it is important to establish project methodology which allows for open ended outcomes. “Unfortunately, researchers and development workers

often focus not on the possibilities for translation and local interpretation, but on cultural differences” (Stokke, Suhrke, and Tostensen, 1997). Project processes must remain flexible enough to shift and bend as the project evolves, in accordance with the needs of participants, as schedules change, and as new aspects of the work unfold. In many cases, less tangible social outcomes may ultimately be more significant than the physical building project. For instance, during the planning of the BWB hogan project, team members did not suspected the significance that cultural factors would play in affecting project outcomes. In the end, the project was successful in having a positive impact on several young people, in planting subtle seeds in others, and in teaching BWB much about its own ethno-centricities and limitations in effectively carrying out future work.⁹ These are all positive and valuable outcomes, however, they were not the outcomes proposed when BWB set out to provide technical support to a Native American building project. In addition, if project development had taken a more participatory approach, it is likely that the character of the final technical solution would have been quite different. In developing project scenarios in the future, it is important that BWB consciously commit to engage in ‘processes’ with open ended outcomes. This is not to suggest that project objectives be abandoned, but that processes include an inherent openness to alternative ideas and that the definition of positive outcomes is broadened to include less tangible impacts as well as physical results.

⁹ (See Appendix 9.2, NIYLP Project Report).

- **Gender Awareness-** Project design development has the potential to significantly impact the lives of women in the community. Personal security, the ability to monitor the activities of their children, and access to employment activities within or near the home are among the factors which can inherently lead to empowerment of women. Their voice should be recognized in all aspects of project development and implementation. While it is important to be sensitive to the reality of potential time limitations due to the 'triple role' of women as mothers, housekeepers, and bread-winners, it is also critical to extend invitations for equal participation, and to encourage women's input wherever possible.
- **Emphasis on Capacity Building-** An educational approach builds analytical tools and capacity for problem solving on an individual basis and at the community level. BWB building projects also have the opportunity to affect community capacity by linking with other local institutions. These may be political, cultural, educational, or connected to the local economy. For instance, a component of the project may investigate how local authorities view natural building technologies and may open a dialog between community members and leaders. Local cultural and educational institutions may wish to highlight the project in classes or publications, increasing general public awareness. Longer term projects may spur local market activities including the development of small scale building industries. Connection to trade unions and technical schools may offer an opportunity for individuals to learn new skills and provide marketable services. Each of these linkages offers the potential to expand the future capacity of the community beyond the scope of the initial building project.

- **Tread Lightly and Proceed Slowly-** Typical project scenarios proposed by BWB are intended to affect positive change. When intervening in any community's development, it is critically important to be sensitive, observant, and respectful of the delicate balance of community life. Attentiveness to the conspicuous as well as the obscure undercurrents of the community can serve as signals for necessary change in a project structure or process. History is full of well intentioned material and technical aid interventions which have had disastrous results for the intended beneficiaries. "Aid is predicated on the existence of outsiders with resources- and resources mean power. ...The genuinely philanthropic intervener is faced with the problem of how to exercise power in the most equitable, just, and effective manner" (Dudley, 1993). One of the most respectful ways to exhibit responsible intervention is to "tread lightly and proceed slowly" in initiating change. The most positive changes will then take firm root in the community, whereas less successful efforts will be more quickly forgotten with fewer negative impacts.
- **Emphasis on Reciprocal Learning-** Opportunities for reciprocal learning are one of the most important aspects of BWB building projects. Because each project has a unique context, team, and available resources, each project has the potential to increase the body of knowledge in the fields of development and natural building. A spirit of experimentation and local interpretation should be inherent in the development of each project, rather than emphasis on 'technology transfer'. BWB will deepen the meaning of the organization's work by continuing to be conscious

of the value of reciprocal learning and by making a concerted effort to share new knowledge and understanding with the larger community.

- **Research project conditions relative to local and national authorities-** Within any project context, it is important to be conscious of any specific requirements of authorities who may have jurisdiction over the work. These may include national or city government, code inspectors, or financial institutions. It is also important that the project recognize its position relative to local government's long term strategic plan for housing in the region and any potential plans for future development in the project area. The UNCHS, Global Strategy for Shelter (GSS) calls for all organizations involved in the support of the housing sector, to evaluate their programs and assistance policies relative to the guiding principles of the GSS, and in accordance with national shelter strategies of the countries concerned. It also suggests that activities review potential linkages with other organizations, to avoid overlap or waste of precious resources in attaining shared long term development goals. (UNCHS, 1990)
- **Create Institutional Memory-** Within any development context, "failures are an important part of the learning process." (Dudley, 1993) In carrying out the diversity of work which BWB proposes, it is important to establish some means of evaluating and recording both the successes and failures of a project. Unless the larger group can recognize the underlying reasons for positive and negative results, various project leaders will continually repeat the same mistakes. The case studies segment of the proposed BWB Design and Facilitation Handbook is a

logical location to archive some evaluation data. However, the handbook is an external document which will be posted on the web as public information without discrimination as to its readers. Full discussion of project failures, and the reasons for the failures are necessary for proper institutional memory. Posting such a record for public review will in many cases be totally inappropriate. At times, it may be necessary to state circumstances where partner organizations did not meet their commitments, or where BWB team members failed to act in a responsible manner. Archiving such records in a public site would not only reduce the confidence of potential funders, but could present problems of legal liability or negligence.

- **Link with the Global Community-** There are many ways in which BWB could bring deeper meaning to the organizations work by linking with the global community. Of course these can be developed in time as the resources of the organization expand. By recognizing that the playing field for ‘sustainable development’ is equally grounded in both the Industrialized First World and in the Third World, BWB is in a unique position to demonstrate and advance sustainable alternative visions of ‘progress’ which include natural building technologies. By sharing knowledge, resources and project related successes via the internet, BWB is in a position to inspire others and provide valuable information to help others facilitate more appropriate ‘development’ work in both worlds. Additional forms of outreach could be envisioned to include strategic public relations programs or media campaigns which promote concepts of natural building in popular culture and increase awareness about the issues.

- **Advocate for Reform-** On a political level, movements toward long term change may be affected by addressing relevant issues of national development, policy reform, and economic barriers to affordable housing within each project context, and through increased interaction with other international advocacy organizations. BWB may also wish to envision a future program for Traditional Builder Advocacy, which would actively support the rights of indigenous peoples and other traditional builders on the level of international policy.

7.1.2 Organizational Recommendations:

- **Refine the Organization's Identity-** Presently, I believe the organization is trying to be all things to all people within the context of natural building and the global housing crisis. In order to orchestrate the diverse energies, talents and ambitions of members and contributors, I feel that it is essential to have a limited and clear initial focus on what the organization intends to do and how. Once the organization stabilizes within defined boundaries, there is much room for expanding programs and shifting strategies over time as BWB grows. In the mean time, potential future programs may be envisioned and worked into an overall development strategy.
- **Adopt a set of Guiding Principles-** Although the organization presents a clear statement of values, there are no guiding principles which illustrate the organizations platform for action. An adopted set of guiding principles would

form the foundations for program and activity development. For example: The value of education could be translated into a guiding principle for action which states that “BWB intends to engage in educational activities, focused on ecological building.” If education is determined to be a primary priority for the organization, all proposed activities could be evaluated for their educational value. From this action oriented vantage point, a multifaceted program for educational activities could be developed. Guiding principles could allow for costs and benefits of proposed activities to be considered against the organization’s identified mission and priorities. Other potential guiding principles could be developed to support the range of different priorities identified by the Potential Operational Models (see Appendix 9.1).

- **Create a Strategic Plan-** which establishes a set of priorities for organizational development and illustrates a long term vision for the organization. Strategic plans may be either short term or long term. As a document, it may be distributed to the membership for feedback, and reconsidered annually, or every few years. Like a set of guiding principles, the Strategic Plan provides a platform for development from which any question or issue may be addressed.
- **Form a set of Operational Guidelines- or By-Laws** which can be presented to and adopted by the membership. This document may be loosely defined, and subject to multiple revisions, but will serve to establish some groundwork of procedures for decision making within the organization. It may contain information as simple as defining an intention to hold, open membership meetings

on a quarterly basis. It may also establish certain roles and responsibilities of the organization's leadership, such as an expectation that BWB leaders conference together on a monthly basis (whether by phone or in person). This document may be structured in a way which limits organizational bureaucracy while still establishing a framework for general operations.

- **Develop the Organizational Structure-** In addition to a comprehensive need for definition of a working format for the organization (in terms of guiding principles, a strategic plan, and operational guidelines) there is a need for the creation of an organizational structure which defines responsibility for the various functions of the organization and the relationships between them. For instance, the organization has discussed the need for an Advisory Board of individuals who may be called upon to provide specific professional guidance when needed. These valued members would hold a distinguished role among the membership. It would be wise to define expectations, responsibilities, and reporting relationships for advisors, as well as any other committees which may be created. Development of organizational structure includes development of all the necessary functions of the organization, and conceptualizing how each function will be carried out.
- **Establish a Governing Body of Leaders-** The membership of BWB now stands at approximately 150 members. Any group of this size needs effective leadership in order to keep the group on track. Passionate and dedicated leaders are needed to speak on behalf of the membership in working through the developmental issues which will build a strong organization. They are needed to sift through options, to

follow through with daily decision making, and to prepare information for member evaluation and discussion. Leaders who are able to fully comprehend the implications of the issues at hand and to learn from the organizations past experiences are needed for consistency in development. In its first year, BWB has failed to identify a team of people willing and able to sit at the helm and steer the organization. Whether they are titled as Directors, Board Members, or Steering Committee Members, it is necessary for the membership to define what it hopes of its leaders, if not, what it expects of them. Once an outline of roles and responsibilities of the leaders is defined, perhaps a small group of individuals will come forward with appropriate commitments. I also recommend that previous problems of distance between leaders be resolved. Whether it be by computer communications, tele-conferencing, or selecting leaders who are not located physically distant from one another, leaders need to be committed to meeting regularly to resolve organizational issues.

- **Hire Operations Staff-** In order to carry out the projects of the organization and to sift through the bulk of work associated with BWB development, full time or part time staff people are needed. For the upcoming year, I recommend utilizing the awarded Operations Support Grant to hire a part time operations director who is accountable to the governing body/leaders of the organization. A job description for this role, with clearly defined tasks, and time commitments should be defined. The primary initial task of the Director, should be to raise funds to continue staff salaries. The role should also be facilitated with funding to supplement administrative fees to other individuals as needed. These may include small

stipends to offset costs for data base and website support, graphic design or publishing efforts, grant writing, accountant fees etc. Small amounts should also be reserved to cover travel reimbursements for the organizations administrative team when needed.

- **Initiate a Fund Raising Program-** The biggest current barrier to funding is the lack of a concerted effort to gain funding. A multidimensional program for funding should be implemented to approach philanthropic organizations, foundations, housing and development institutions, corporations, and private donors.
- **Establish Guidelines to Facilitate Member Driven Projects-** The concept of allowing BWB members to propose and lead projects under the BWB name has many advantages. The concept makes use of the initiative and energy of members who are passionate about a specific project. The approach supports the member with the resources of the organization, and helps to facilitate their work. BWB involvement could bring non-profit status to the project, a network of potential volunteers, potential funders, technical expertise, some administrative support, and a lending bank of work tools and other equipment. The initiating member would act as project manager with full responsibility for carrying out all aspects of the work, in accordance with certain standards and criteria established by BWB. This approach stretches limited administrative resources of the organization. It is also likely that strong interpersonal relationships, which are so important to overall success, will exist prior to the project being initiated.

- **Obtain Independent 501c3 Status-** Although it may not be a priority for 2001, I recommend that BWB begin to prepare for status as an independent non-profit organization. Currently, BWB operates as a project of Network Productions, Inc. However, BWB has grown larger than its parent organization. The organizations are also inherently different, as BWB is a membership organization and Networks Productions is not. Although independent status will require more paperwork and accounting, it will relieve Network Production officers of liability associated with BWB activities.

Note: Several members have expressed concern that BWB members take care not to create organizational bureaucracy. They fear that rigid organizational structures will alienate members and bog the group down with procedures. I agree that this is a concern, however, I believe that it is very possible to create an efficient organization founded on democratic principles, which maintains appropriate systems of accountability to the members and beneficiaries. At the same time, I believe it is necessary to highlight the fact that BWB is a membership based organization, which has exhibited a strong tendency toward circular (rather than hierarchical) decision making. BWB has already defined itself, not as a small non-profit organization, with a limited mission, but as a broad based and multifaceted membership organization. In fact, by way of the organizations website, BWB has already extended its hand out toward the global community. This scenario is quite different from a small non-profit organization, founded by charismatic individuals intently focused on a specific

mission. In their circumstance, they may only be accountable to themselves and to the specific commitments they have made to their funders. Although they may welcome the contributions and support of volunteers, there are undisputed leaders who are deeply invested in their mission and have no intention of yielding authority to others. This type of an organization can proceed day to day, monitor their progress according to their own standards, and change course as they see fit. An egalitarian membership organization of people united because of common interests, who want to work together to achieve common goals is a different scenario all together. More defined systems of communication and decision making are needed.

Presently, BWB is stuck between these two positions. From its birth, the organization has valued the tradition of group decision making and has welcomed the contributions of all of its members. Yet, identification of leaders, and those with authority in decision making has remained unclear. Likewise, definition of who has responsibility for carrying through with the decisions made by the group has been unclear. This has not only lead to confusion, but also much diffusion of energy and momentum. At times, issues have been redundantly discussed with varying outcomes, depending on which member/decision-makers are present at the time. Some form of representation is necessary to define a working group of leaders, who the membership trusts with appropriate stewardship of the organization. As in any democratic institution, there needs to be defined procedures for decision making and agreed upon guidelines and structures for operations.

7.2 Conclusion

As we enter the twenty first century as a global community, the need for innovative and sustainable solutions to the housing crisis becomes ever more apparent. As populations expand in coming decades, the inequitable and inhumane living conditions of many of the world's poor will demand increasing attention in international discussion and debate. How these concerns are addressed at the community level, and within the realm of national and international policy, has the potential to significantly affect the world's citizens and their ability to realize the basic human right to adequate shelter.

It is encouraging to observe current shifts in national and international policy recommendations which support an alternative approach and begin to recognize the value of traditional, indigenous, and alternative building technologies. Many current projects which support ecological and affordable housing technologies, such as the Mexican case studies represented here, are demonstrating the ability to have an impact, and empower people and communities on many levels. With small steps, such as those of the BWB/NIYLP hogan building project, and larger works, such as UNDP straw-bale housing in Mongolia, innovative projects world-wide are setting an example which may lead to shifts in the way that we as human societies create our built environments and sustain the earth's precious natural resources.

As a young NGO, the Builders Without Borders organization is ambitiously dedicated to the exploration of alternative solutions to the housing crisis through integration of old and new technologies. In its first year, BWB has faced many challenges and

achieved significant accomplishments. Though there is much growth involved in developing the organization to maturity, there seems to be no doubt that with appropriate leadership and planning the organization will readily find the support required to carry-on with its mission. As a BWB member, I hope to remain involved with the organization well into the future.

The breadth of experience throughout the course of my graduate work has allowed me to engage issues of sustainability and affordable/ecological housing solutions from a range of perspectives; in academic study, practical application, peer dialog, and in independent field research. Throughout this exploration, I have continually been encouraged by the diversity of project approaches used to address widely ranging social, economic, and ecological problems relative to housing. I am grateful for the opportunity to meet many creative, optimistic, and dedicated individuals along the way, who continue to inspire me in the persistence of this work, and in promoting the validity of natural building technologies and traditional indigenous building practices in creating architecture for a sustainable future.

*"Never doubt that a small group of committed citizens are capable of changing the world.
Indeed it is the only thing that ever has."
- Margaret Mead -*

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9.0 Appendices

9.1 Appendix: Builders Without Borders, Potential Operational Models

The following outline of potential operational models were presented for membership evaluation at the November 2000 meeting. The objectives of the models were to facilitate brainstorming, analysis, debate, and group decision making on desired organizational format and the setting of priorities for future development.

Technology Transfer Model- Emphasis on long term local community capacity building with a partner organization. Trains people within the private sector (skilled or semi-skilled builders) as well as those within the popular sector (owner-builder) in natural building technologies appropriate to their region. A partner organization and a “mirror team” carries on the work of the partnership once BWB the training team departs from the area. Multi-disciplinary, multi-faceted approach. Requires a deep level of involvement to act as a catalyst of change involving various actors within a specific community, and closely integrates relevant social, economic and political factors in project planning. Requires resource analysis, long term commitment, follow-up, and can be very sensitive work if it is to truly comprehend the workings of a community and provide a long term benefit. *(This model seems to fit closest with original mission discussions.)*

Education Model- Conducts classes, workshops and lectures to teach natural building technologies, both at home and abroad. Emphasis is on developing and disseminating educational resources (books, manuals, videos), curriculum and building excellent teaching/training skills. More comprehensive building projects may be carried out together with partner organizations, but the emphasis of BWB support may be fairly limited to conducting workshops within a finite time frame and scope of work. For instance, BWB may conduct only wall raising or earth plastering workshops at a building site that is primarily developed by a partner organization.

Networking Model- Organization focused solely on networking and PR, related to affordable natural building technologies. Links communities in need with various individuals, and organizations who may be able to provide technical and financial support. May highly utilize a data base linked with the web. May also publish or provide a wide variety of technical resources for download or purchase.

Disaster Relief Model- Provides Mobilized teams to rapidly build temporary straw-bale or other forms of shelter immediately following a disaster. Includes the necessary integration of non-shelter related provision for basic needs such as food, water, and sanitation in order to contain the state of emergency. Integrates with other relief organizations such as the Red Cross, Doctors Without Borders, UN, etc. Focuses on rapid mobilization of teams. May be limited to regions where straw bales are readily available year round, and colder climates where people need warm shelter for survival.

Post Disaster Reconstruction- “Community Development” oriented organization that works closely with local people, resources, institutions, and political structures to

help re-build not just buildings, but whole societies and communities in the wake of disaster. This requires deep and long term integration in the workings of extremely diverse communities, and can be very fragile work. Requires a multi-disciplinary focus on resource analysis, political and economic structures, cultural issues, urban/regional planning and development, architectural planning, etc.

Affordable Straw-bale House Model- Straw bale advocacy organization, working to physically build affordable straw-bale demonstration projects within the U.S. and abroad, and publicize their advantages. May integrate community participation in the building process, but focuses on getting the word out to low income communities that self-built straw-bale housing is a viable solution. May require management of demonstration sites to be open to the public. May emphasize public and media relations and requires links to further technical resources.

Traditional Builder Advocacy- Organization focused on supporting the basic rights of people worldwide to create their own shelter. This model would focus efforts on the removal of structural barriers and the lifting of codes which limit alternatives in natural building. Operate at the grassroots level to support community activism and political empowerment aimed at policy change.

Cross-Cultural Workshop Model- Conduct workshops focused on training people in natural building technologies, within the context of a cross cultural (North/South) exchange experience. Paying participants from wealthy countries subsidize the cost of building materials and/or the tuition of students lacking in cash resources. Requires sensitivity to cultural and dependency issues, yet has great potential for building bridges of understanding and real friendships between those of the industrialized and less industrialized worlds.

Member Projects/Umbrella Org- Organizational structure focused on facilitating the work of individual members in carrying out their own projects, or supporting projects they have otherwise encountered, where the goals and objectives are consistent with the BWB Mission. Members utilize the organization's human and technical resources, non-profit status, and shared track record of success to respond to shelter needs. Members may host short term demonstration projects or engage in long term work based on strong community relationships. Commitment and momentum required for each project resides primarily with the initiating members who also act as the project manager. The central organization serves members, who in turn, serve communities. BWB may provide a network of volunteers who may be willing to participate, fund raising and public relations support, technical support, training for individuals working in cross cultural context. Assurance of quality control and appropriate project implementation is a paramount concern in this model.

9.2 Appendix: NIYLP Project Report

National Indian Youth Leadership Project Report

Addressed To: BWB Members

*Submitted By,
Susan Klinker, BWB Project Co-ordinator*

Many thanks to all who participated in the NIYLP Straw-bale Hogan Project at Sacred Mountain Camp, and contributed so much to making the event a success. We are especially grateful for the generosity of project architects, Alfred von Bachmayr and Janice Vascott. Without their significant contributions of time and talent in design, planning and preliminary coordination, this project could never have occurred. Thanks, also, to those who sent their moral support even though they could not be there with us.

The NIYLP project presented several unique challenges, none of which proved insurmountable, and we feel proud that this BWB pilot project was a wonderful achievement. It was an exhausting and exhilarating week of what often turned out to be 12 hour work days. Despite inclement weather, the straw-bale hogan withstood several afternoon thunderstorms including one which brought 3" of rain in an hour. Presently, the hogan roof is closed in, the door and windows are installed, and the majority of rough plastering work is complete, both inside and out. Two finish plaster workshops with NIYLP Americorps volunteers are planned in early August in coordination with completion of the ceiling and installation of the brick on sand floor.

The dynamics of team "diversity" proved to be a signature characteristic of the project, providing both challenge and opportunity, as teenagers and adults from widely varied backgrounds came together to fulfill common goals. Compliments to NIYLP staff for inspiring the spirit of cooperation, and BWB team leaders for making sure everyone had a chance to contribute.

As a pilot project, Sacred Mountain Camp provided valuable learning experiences for us, and we received some great press coverage, including an article on the front page of the Albuquerque Tribune. A more detailed report about the event follows, including notes about some of the unique challenges of the project, and "lessons learned". Anyone interested in volunteering to work with finish plaster workshops may contact our office or just stay tuned for more information. We also welcome feedback or suggestions relative to the project, as part of our project evaluation process. Thank you,

Sincerely, Susan Klinker

Project: NIYLP , Sacred Mountain Camp, Straw-bale Hogan Project

Project Dates: July 9th -July 15th, 2000

Total # Volunteers: Approx. 75

Participating Organizations:

NIYLP, National Indian Youth Leadership Project, and Americorps
American's for Native Americans
Civil Air Patrol
Builders Without Borders

BWB Project Coordination Team:

Janice Vascott, *Architect*, Alfred von Bachmayr, *Architect*, Catherine Wanek, *BWB Acting Director*, Derek Roff, *Project Coordinator*, Susan Klinker, *Project Coordinator*

BWB Volunteer Participants:

Graham Driscoll, Bob McKinney, Benjamin Miner, Terry Morawitz, BJ Harris, Carl Rosenberg, Robert Ward, Carl Ballenger

Press Coverage:

We are proud to have received coverage for the NIYLP project in at least three New Mexico news papers, including the front page of the Albuquerque Tribune (7/14/00), the Albuquerque Journal (7/14/00), and the Gallup Independent (7/13/00).

Project Description:

The NIYLP, Sacred Mountain Camp project involved the collective efforts of several non-profit organizations. At least 75 individual volunteers turned out, eagerly focused on learning techniques for natural building. The program was designed as an opportunity for Indian and non-native teenagers and adults to share in cooperative work projects, cross cultural experiences, and educational activities. The agenda focused primarily on sustainable earth architecture projects including the construction of a straw-bale hogan, and an adobe amphitheater. Builders Without Borders team members provided instruction and leadership centered on straw-bale building, and earthen plaster techniques.

After several months, and many hours of donated design and coordination time, the NIYLP program was carried out during the week of July 9th through 15th. Accommodations for participants were camp-style, with meals graciously provided by Americans for Native Americans volunteer cooks. Educational activities included an informal group discussion on Navajo hogan traditions, a straw-bale building slide show under the stars, presented by Catherine Wanek, review and distribution of available educational resources and literature, and lots of hands on building experience. Other culturally related presentations included performances by the Native American "Pollen Trail" Dancers, and Lakota and Navajo Dancers, Norman and Ramona Roach. A "Beauty Way Song" closing ceremony was also conducted by Edwin Cadman.

Although the building schedule was condensed to only 5 days, dedicated volunteers often worked until dark, enabling the majority of the construction to be completed. Several BWB skilled carpenters volunteered to remain on site and finish the installation of door, window, and roof panels, which were completed by Sunday evening. Finish plaster workshops will be conducted in early August.

Additional projects had been proposed, but not initiated due to time limitations and budgetary constraints. These included the construction of a straw-bale emergency shelter and adobe ovens, which may be addressed at future NIYLP camp sessions.

All in all, this project was a positive and rewarding one. Seeds were planted and strong connections were made with many participants which should flourish in the years to come. Particularly inspiring, was the response of several young Native American women who participated. They feel strongly that straw-bale building techniques should be used more widely to provide comfortable, sturdy housing at an affordable cost. To this end, they have decided to create an organization which they will call, the Native Women's Straw Bale Building Association, and are currently developing a business plan to provide services to families interested in building straw bale structures of their own. The Association plans to work both within tribal lands and off the reservation.

Project Challenges:

Diversity of Participating Organizations

Although it was exciting to engage such a diverse group, there were times when conflicts between the distinctive styles and agendas of each group seemed to inhibit team dynamics. There was both smooth sailing and rough road. The polarization of values stretched between educating about permaculture, simplicity and sustainability, to quiet reverence for the sacred nature of the place and time, to a paramilitary approach to civil service and "chain of command" workflow. As in any project, it takes time to get to know each other and understand how to best work together. As the week progressed, we became more aware of each others' unique contributions and interests, improved communications, and began to sense an upswing in our learning curve.

BWB community building projects in the future will also likely include volunteer groups with diverse cultures, interests, agendas and purposes for participating. In dealing with the diversity of needs, it is important that our attention remain focused on "process" as much as the end "product." By encouraging an environment of education, communication, respect for diversity and appreciation of the land and its resources, we hope to build a skill base for creating positive team dynamics in the future.

Limited Time Frame

The time frame on this project shrank from the proposed 2 weeks, to 10 days, to 6 days, and finally to 5 days. The demanding nature of the schedule put undue pressure on the quality of the "process" and created a less than ideal environment for learning. We were fortunate that several volunteers (namely Carl Ballenger, Graham Driscoll, Carl Rosenberg, and Robert Ward) were willing and able to stay on site and finish closing in the building to protect the structure from weather damage once the camp had ended.

The basic nature of volunteer availability will probably limit time schedules in a similar manner on most future projects. Coordinators should have a back-up plan in place for completing any unfinished critical work necessary for the protection of the structure. It may also be advantageous to plan a project for multiple, phased shifts of team participation over an extended period of 2 weeks or more.

Remote Site

The camp's remote mountain site increased delivery costs for materials, made interim trips for supplies difficult, and inhibited communications from the site (no cell or land phone service). Several volunteers experienced frustration and difficulty locating the site. In addition, a resident bear became interested in our activities and visited the camp almost daily.

Again, it is likely that we will encounter similar circumstances on future projects, especially those carried out in other countries. We hope to build the organizations' resources of tools, equipment and supplies which may be carried along with our members to each project site. These may also eventually include equipment for drinking water, food preparation, and emergency medical care.

Lessons Learned: (see also the article in the upcoming "Lessons Learned" issue of The Last Straw Journal, Fall/Resource Issue, 2000.)

Emphasize the need for good preliminary planning, including:

Establish clear design priorities- and define trade-offs between cost, rapid time frame, and quality. Several design decisions for the hogan were made to enhance durability of the structure, or to minimize labor time to fit the schedule. Consequently, the finished product did not reflect lowest cost alternatives in every aspect of the design. Having a clear definition of priorities early in project development will hopefully minimize "second guessing" of decisions on future projects.

Design issues also arose questioning the appropriateness of an 8 sided hogan. The most common form of hogan has 6 sided (although 8 sided hogans do exist, they are less common). Although this had been discussed and approved by NIYLP partner organization leaders, it was not reviewed or discussed by general project participants or community members. Once the teenagers gathered for construction, the subject was brought up immediately. As the foundation had already been laid, it was impossible to change, and the hogan was built with 8 sides. Unfortunately, this issue may affect the long term successful utilization of the building. Though its use as an octagonal shaped dormitory may not be effected, the structure will be less successful for ceremonial and educational functions.

Define a partnership agreement- identifying the roles, and responsibilities of each partner, as needed to achieve agreed upon objectives. Early planning work between partners on this project was mainly based on casual verbal agreements. This seemed to cause confusion about who was doing what and when. Once specific goals and objectives for the project were defined, and partner roles and responsibilities were outlined, project communications and progress seemed to flow more smoothly.

Discuss issues of liability- in case of injury, and establish a Waiver of Liability. Although this was not an issue on this project, insurance coverage should almost always be addressed when coordinating group building projects.

Obtain materials well before work begins- use local materials wherever possible, communicate about possible substitutions (due to cost or availability) and coordinate deliveries so all materials can be reviewed on site before building team arrives. Unfortunately, due to several factors, materials and equipment for this project were not procured until the last week. This caused unnecessary stress for all team members involved. It also shortchanged communications about possible substitutions (we had to take what we could get) and potentially increased costs for last minute purchases and deliveries.

Need for Quality communications between groups, including:

Coordinate daily meetings- to enhance team communications and spirit, identify potential problems or conflicts, and provide a setting for general comments and feedback from participants. In hindsight, more scheduled meetings with team leaders may have enhanced our project process a great deal.

Keep track of the schedule- by discussing identified targets of completed work for each day, accommodating the unexpected, and posting the overall schedule at the site.

Involve dynamic team leaders- to motivate volunteers, help keep people absorbed in the work, and assure that participants are having a positive overall experience. Several NIYLP staff members were inspirational in their ability to fully involve the youth in their work!

Need to be realistic about what can be achieved in a limited time frame- and have a back up plan for completing critical work should the schedule slip.

Make appropriate provisions for safety needs- including safety goggles, hard hats, gloves, masks or respirators, and earplugs. Although most of the above noted safety items were provided, we could have encouraged their use more effectively. Also, it is important to ensure a first-aid kit on site and access to someone nearby who is trained in first aid. Although there were some blisters and scrapes, we were fortunate to have no serious injuries on this project. Because of the remote location, it was reassuring to have 2 medical doctors on site (who were participants with ANA).

Keep materials simple and easy to work with. The use of metal lathe is extremely hard on the hands, and could be eliminated wherever possible. Burlap, plastic or wood lathe may be substituted in the future. We also found the hexagonal roof design required skilled carpentry. Therefore, roofing systems were not part of the educational process as much as they could be on a simpler structure.

Be prepared for weather- including having pre-sized tarps to cover walls, bales, tools, etc. tie downs, and bunji-cords (to prevent tarps tearing in high winds). A large

event style tent, donated for use on this project proved invaluable for protecting materials, equipment and people from the daily afternoon rains we experienced at the Sacred Mountain Camp.

9.3 NIYLP Team Project Review

submitted by, Susan L. Klinker

During the November, 2000 BWB member meeting, NIYLP project participants gathered for the purpose of reviewing and critiquing the project. Discussions focused on developing a list of recommendations for how to improve projects in the future.

Team Recommendations for Future Projects/ Lessons Learned

- 1. Keep the design simple and low tech.**
- 2. Use materials available on site wherever possible.**
- 3. Involve builders in the design process (not just architects).**
- 4. Refine the design approval process. Be aware of gender influence, and be sure to get the approval of both women and men in the community. Obtain appropriate approval from cultural authorities when the structure is of cultural significance. Obtain formal sign off of approval on the design before proceeding.**
- 5. Partner organization must support the Educational aspects of the process. Emphasis should be on the workshop process.**
- 6. Clarify project goals and objectives in writing before beginning.**
- 7. Define parameters of the project including limits of the scope of work to be achieved, and time frames. Discuss how any remaining work will get finished after the completion of the workshop, or finish date.**
- 8. Emphasize "partnership" rather than "client" relationship. Clarify each partners role, responsibilities, and expectations in writing. Sign a partnership agreement.**
- 9. Recognize potential stopping points, which may signify that it is inappropriate for the project to proceed (such as lack of available funds, any partner not fulfilling their agreements, lack of approval of a particular design, etc.)**
- 10. Responsibility for coordination of the purchase of materials needs to remain with BWB, as most partners will not have appropriate knowledge or skills to perform that task.**
- 11. Need for "Group Process" and continuity throughout project development. Project needs regular, scheduled communications among the whole group.**
- 12. Need for one primary point of contact and responsibility (lead partner) in coordinating all aspects of the work. This person must have the skills necessary to recognize potential bottlenecks and problems further down the line.**
- 13. Be aware of and discuss relative community needs beyond what may be apparent within the specific context of the project. (ie. consider the larger picture).**

9.4 Appendix: Builders Without Borders
Supplementary List of Activities and Accomplishments in 2000

Grant Awards 2000

Richard S. Petty Charitable Foundation	\$ 1,000.
Cottonwood Foundation	\$ 1,000.
Graham Foundation Design Manual Grant	\$10,000.
CASBA	\$ 500.
SBCA	\$ 500.
Lifebridge Grant	\$10,000.

BWB Participation in National Natural Building Conferences:

Build Here Now 2000, Taos, New Mexico, July 2000
Straw Bale Association of Nebraska, October 2000
Natural Building Colloquium, Kingston, New Mexico, November 2000

BWB Representation at other Workshops:

Canelo Project, Lime Plaster Workshop, Arizona, November 2000
Canelo Project, Natural Finish Workshop, Arizona, November 2000
Straw Clay Week-end Workshop, Taos, New Mexico, November 2000

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9.5 Appendix: BWB Mongolian Straw-Bale Research Tour, 2000

Sept. 12- 16- Canadian Research Tour, based from Alberta.

Sept. 17- 25- Southwest Research Tour.

Sept. 26- Oct.3- Nebraska Conference and Tour.

Southwest Research Tour (BWB coordination)

Sept. 17- Sun.- Evening arrival in Denver, from Edmonton, Alberta. Overnight in Pueblo, Colorado

Sept. 18- Mon.- Early morning departure for Kingston, NM.

- 6:00 pm Reception at the Black Range Lodge (C. Wanek - slide show of BWB European & award-winning Belarussian Straw-bale initiative) Participants include, Bruce Woodruff (Tucson City architect), Mike Comier (El Paso Solar Energy Assoc.), Steve Kemble, (engineer), etc.) Overnight at Black Range Lodge.

Sept. 19- Tues.- Morning tour of Kingston Straw-bale homes including the Lodge greenhouse, guest house, chicken coop, straw-bale home with steel post & beam framework in progress. Departure for Gila, NM.

Luncheon Presentation and Tour- Steve MacDonald (Author) & Sue Mullen's low-cost Post & Beam straw-bale houses. (re-uniting with friends who have worked in Mongolia) Departure/Overnight in Grants, New Mexico.

Sept. 20- Wed. Early morning meeting at Sacred Mountain Camp, National Indian Youth Leadership Project. Presentation by Alejandro Lopez and the Native Women's Straw-bale Building Assoc. Discussions surrounding cultural connections between Mongolian and other Asian cultures, and the Navajo (Dine).

Luncheon Presentation with Cadmon Whitty, tour his home renovation, retrofit straw-bale exterior, many half bale and sculptural interior walls. Brief driving tour of straw bale garden walls in Albuquerque.

Tour Passive Solar Home w/ 5 years recorded energy accounting.
Tour Corrales Post Office, with Joe Fortin, Award Winning Green Builder.
Tour Passive Solar Home of Carolyn Kinsman & Perry Wilkes.

Optional Cultural Event- New Mexico State Fair. Overnight in Albuquerque.

Sept. 21- Thurs. Early Morning departure for Santa Fe/Pojoaque. Tour Home and work of Scott Pittman- straw-bale/adobe, masonry stove, permaculture landscape in progress. Tour Christ in the Desert Monastery at Abiquiu- straw-bale/adobe, off the grid solar PV complex built by monks, with architect Janice Vascott & PV solar designer. Optional driving tour of the Ghost Ranch.

Tour Tony Perry Home-Steel Frame, Complete Owner Builder Systems 8 SB homes within 1 mile of Tony's Home. (one is steel frame)

Overnight at Rob Althouse and Nancy Kenney's Yurt.
Video Presentation of the Mary Lowe House project on Navajo
Reservation lands.

Sept. 22- Fri.-Full day in Santa Fe Region. Meeting with Living Structures: Danny Buck. Slide show on straw-bale Construction. Presentation of dataloggers, moisture monitors, moisture/mold studies prepared by Carl Rosenberg, (also possible distribution of details and illustrations via Kieth Hagard and /or Brian Van)

Meeting with Fermin Aragon of NM Construction Industries; State planning and permitting official, involved in finalization of SB codes for state of NM. (meet in city office very close by)

Tour Joan Baker House- fairly high end house in downtown Santa Fe.

Tour Goodwin house, small, simple, low cost house.

Tour Beneficial Farms- 2 story SB/ adobe structure with attached greenhouse.

Evening Reception at Eco Seco sustainable urban development, hosted by Allan Hoffman, w/Alternative Building Alliance, Greenbuilding Assoc., SBCA, etc. Brief presentation by Mongolian Group.(20 min.)

Private Dinner at the home of Alan Hoffman.

Return to Reception, Music and Dancing. Overnight at Rob & Nancy's Yurt.

**Sept. 23- Sat.- Day off, cultural activities and shopping. (Wallmart, Santa Fe Market)
Optional Cultural Activity- "Gathering for Mother Earth" at Pojoaque Powwow .
Overnight near Alamosa, Colorado.**

**Sept. 24- Sun.- Morning Meeting Straw-bale Equipment Dealer, Dean Sisnerros, Schall Ironworks, Dealer of Case IH Farm Equipment.
Straw Baling Presentation with Jerry Gomez, Bale Broker, Presentation of ranges of quality in bales. Meet w/ farmers, demonstrate baling process
Luncheon tour of the home of Teresa Benns, load-bearing, code-approved owner- builder home.
Tour the Home of Kelly & Rosana Hart, earthbag and scorria home.
Various High Altitude Cold Climate Bldgs. in Crestone
Tour Sanctuary House, meeting w/ William and Barbara Howell.
Intro./Tour, Haidakhandi Universal Ashram, SB, adobe, & earthship.
Overnight at the Ashram, in new SB Dorm.**

**Sept. 25- Mon.-Morning departure for Pueblo, Colorado.
Meet w/ Owen Geiger, visit/tour 2 Habitat for Humanity Houses
Robert Andrews, Habitat for Humanity
Bill Harmsen, Habitat for Humanity
Clint Tawes, code official
Tour SB Chapel in Littleton/ Catholic Church, with Bill Beard, Kimber & Elizabeth Janney. Working supper.
Overnight in Denver/ Englewood**

Sept. 26- Tues.- Early morning departure for Estes Park/ Loveland, Colorado.

Jeff Ruppert, Structural Engineer, Load bearing compression testing conducted in conjunction with the University of Colorado. Emerick/ Lassen Residence.

Overnight in Ogallala.

Sept. 27- Wed.- Travel to the Souix Reservation, Tour the straw-bale home of “Fast Wolf”.

Tour the National Monument at Mount Rushmore.

Sept. 28- Thurs.- Continue Nebraska Historic Bale Building Tour, drive to Halsey Conference site, conference registration.

Sept. 29- Fri.- Oct. 1- Sun. 2nd Nebraska Straw-bale Conference

Oct. 2- Mon.- Depart for Denver - Overnight in Denver

Oct. 3- Tues.- Depart to Beijing via San Francisco. 8 am.

* The above itinerary represents the tour plan at the time of departure. Modifications were made to accommodate necessary adjustments as the tour progressed. Several additions, deletions, and shifts in the schedule are not accurately reflected here.

9.6 Appendix: Builders Without Borders, Design Manual/Handbook

Proposed Title: Facilitation and Design Handbook For Development Worker Training in Ecological Design and Natural Building.

After reviewing a preliminary outline of chapters to be included, and a proposed format for Case Studies, the following outline of questions was developed to help facilitate discussions for developing each chapter. *composed by, Susan Klinker and Melissa Melouf*

Perhaps the Case studies and the General Handbook format could follow a similar sequence, such as:

- a) General background
- b) Consideration of local social context
- c) Consideration of local physical context
- d) Critical concerns
- e) Project structure
- f) Project 'Process'
- g) Technical solution
- h) Training program
- i) Connecting with local industry and educational institutions
- j) Implementation process
- k) Follow through
- l) Public relations

Key Concepts to be integrated in the Manual:

Emphasis on Process: dialog, group problem solving, partnership, working with stakeholders, participatory process, reciprocal learning, open ended outcomes

De-emphasize technology "transfer" (which is often perceived as laden with issues of "we know best" and "we are generous in teaching you") and address issues of creating synergy through the sharing collective knowledge and working together to co-create and co-discover new and better ways of creating human places.

The following comments are offered to supplement each section.

a) General background- Address general conditions and the scope of the project, including location, environment, climate. How was the project initiated?, Who asked for assistance, and why? Statement of need in the area/region. Scope of the specific project. Introduction of project partners. What form of aid was provided? (Technical, material, or financial) What was lacking in the community or environment which caused a need for aid? What is the general economic status of the community?

b) Consideration of local social context- What is the traditional housing style/ building type? Settlement pattern? What is the history of housing development in the area? Are there any special or sensitive experiences which enhance or limit community trust, perceptions or political linkages? What are the cultural perceptions, traditions and meanings associated with housing? Describe family organization and structure. Discuss gender roles relative to housing construction and decision making. Describe relevant land ownership/tenure issues and inheritance rights. Were there any spiritual issues or beliefs associated with project development? Were there any significant linkages or barriers presented by local authorities? What was the age range of participants? Was there a general sense of community prior to project initiation?

c) Consideration of local physical context- Describe climate and general ecological environment. Describe traditional building materials. Consider available natural resources for building. Describe access to other potential materials for building such as urbanite (demolished concrete) or recycled materials. Is water readily accessible, and clean? What systems are used for sanitation in the community? Describe physical infrastructure such as roads, streetlights, sewers, etc.

d) Critical concerns- Describe conditions of deforestation and other depleting resources. Describe conditions of convenient access to water and water rights. Highlight potential risks associated with natural hazards (volcanic activity, earthquake, storms, flood, etc.) Note potential health hazards associated with existing housing conditions. Were security issues a concern (either in design, or in the development process)? Was there an environment of political upheaval? Was there an environment of general social, political, and economic stability? Was economic development a critical concern?

e) Project structure- Describe project goals and objectives. Describe the implementation team and partner organizations. Did government organizations or agencies become involved? Were local builders and residents invited to participate? What role did each organization play?

f) Project 'Process'- Describe the project development process. Describe the project implementation process. What was the process of local resource analysis, and who (what team) considered how resources could be best utilized for building? How were group decisions made? How were conflicting priorities resolved? Were group problem solving exercises used? How did the final plan for action evolve? How did the process help to create a real community as stakeholders in the settlement? Did the process build on existing community knowledge, traditions and skills or depart from them? How did the individuals in the community partake in and expand the project? Who were those characters and how did their personal involvement enhance the project? Did the participatory process involve the inhabitants? builders? How were potential solutions evaluated and by whom? How did the process facilitate reciprocal learning or "discovery"?

g) Technical solution- What was the technical solution? Who designed the “solution”? How did it evolve? Was it effective? What new/traditional technologies, materials were used? How were local skills and knowledge utilized and enhanced? What are the costs associated with various alternative solutions? Is the final solution appropriate for conditions of incremental building? Was this discussed?

h) Training program- Who was trained, local builders or community members? Were new ideas conveyed or discovered? Was the process effective? Were the technical concepts used altogether new, or old ideas presented in a new way? or re-validated? What specific communications and teaching tools were used? (Informal discussion, classroom style teaching/learning, on the job training, lecture, drawing and modeling, handbook/textbook, videos, observation, exploration/discovery, exercises, dialog, discussion about local history and what has worked or not worked in the past, exploration of alternatives, storytelling, song, ceremony, food and celebration.) Which tools were most effective and why? What hands-on training was implemented? (On site building, prototype structure, demonstration structure) Who conducted the training? How does the method of delivery affect the success of the program? Did facilitators create an effective and efficient environment? How could training have been improved?

i) Connecting with local industry and educational institutions- How was local labor utilized? Were laborers paid or worked on a volunteer basis? Did the project link with local educational and training institutions? Did the project link with private sector builders, via trade unions, professional associations or clubs?

j) Follow through- Was there a post-project process of evaluation? Did it include representatives from each partner organization and the community? How were individuals, community or tradesmen/local industry empowered? What gave them power? Was it technical skill in building? Increased knowledge and understanding of why to design/build in a certain way? Confidence? Or just outsider support in tackling the political and social obstacles to traditional building methods? Was the project completed? On schedule? How were incomplete details handled (especially architectural details)? Is there a plan for future natural building endeavors? Between the same partners? Was the project successful? What were the indicators of success? Do all participants feel it was successful? How were community relations effected by the project? How was the community strengthened? Did the project create economic opportunity?

k) Public relations- Was there an effort to increase public awareness in the local community? Was there media coverage of the project? Was an open house or ribbon cutting celebration held? What new knowledge was gained by the project? How was the success of the project shared with others ? in the local community? in the larger community? in the global community? (UNCHS, Global strategy, or National development programs-collect info on project success).

Proposed Case Studies to be included: National Indian Youth project, Mongolia Straw Bale Structures, UNDP Technology Tour, Casas Que Cantan, Thlolego Building System, Straw Bale in China, Woodless Construction Development Workshop, Farm Workers, European Model for Natural Post-disaster housing, Matts Myhrman Prototype Transitional Dwelling, Straw Bale in Russia/Belarus, Argentina, (Cob and Straw Bale), Natural Building in Fiji.

Sustainable Rural Development and Natural Building

Two-Week Study Courses hosted in 2001, Tlaxco, Mexico

'Sustainable Rural Development' July 22 - August 4
'Traditional, Colonial and Ecological Building' Nov. 25 - Dec. 8



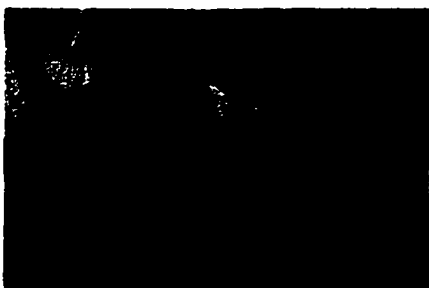
Indigenous dwelling



Architect Alejandra Caballero presents resources



Modern home of primarily indigenous materials



Participants learn cob building



Thatching techniques



Natural paint designs

Mexico has the widest diversity of vernacular building in all the Americas, possibly in the whole world. Geologically diverse, Mexico's rich architectural heritage has always been a product of her bounteous natural resources—trees, cane, bamboo, palms, grasses, rock, clay, laterite. Millennia of astonishing buildings; Mayan, Toltec, Aztec, Spanish, Pre-Columbian, Zapotec pyramids, and thousand-year-old houses, stand alongside some of the latest neo-ecological construction technologies, including state of the art straw-bale, cob and bamboo buildings. As the population grows toward 100 million and real incomes continue to fall, discerning Mexicans are rediscovering their traditional heritage as a pathway to a more sustainable future.

Caballero family lands host this unique international program. 300 acres of experimental farmland and forest have been miraculously restored from almost complete dereliction. In the 50s, when Carlos and Magdalena settled there to raise their six children, the forest was almost gone; the land had 50-foot gullies. Now, without machinery or chemicals, there is healthy productive pine/oak forest with a rich epiphyte flora, year-round springs and Biodynamic dairy pastures.

Architect Alejandra Caballero will lead the program, together with her husband Professor Paco Gomez and Cob Cottage Company's Ianto Evans. They are an extremely knowledgeable and experienced team who have worked extensively outside of Mexico, teaching permaculture and building, and collecting construction wisdom specialized in ecological building practices using indigenous materials.

Expect two weeks of field trips to surrounding villages, markets and old colonial towns, pre-Columbian ruins and natural building projects. We will practice hands-on building with local natural materials, eat spectacular traditional vegetarian food, play games, hear local experts and enjoy warm days, cool nights and the scenic beauty of the Mexican highlands. The course is bilingual and tailored for open exchange between participants of varying backgrounds. Translations will be provided in both Spanish and English.

Sponsored by Zopilote Association and Cob Cottage Company

Box 123, Cottage Grove, Oregon 97424 USA
telephone/fax: (541) 942-2005 or (541) 942-3021
e-mail: <cobcottage@hotmail.com>

Sustainable Rural Development and Natural Building

Intended for: International development workers, architects and builders, historians, teachers, journalists and anthropologists. People seriously concerned with sustainable agriculture, indigenous cultures, deforestation, North-South alliances, organic food, ecological living and natural building.

Purpose: To bring together mixed teams of carefully selected people from Latin America, Europe, Canada, and the USA, to:

- share techniques for sustainability, both traditional and experimental.
- explore the principles of ecology, natural and social regenerative systems.
- learn practical skills and appropriate solutions for common problems.

Topics Included: Identifying local resources; Reading Landscapes; Permaculture Principles and techniques; Forest Management and agroforestry; Bioregional natural building, Organic food production; Land restoration, soil care, and erosion control; Water conservation, Sanitation alternatives; Simple solar devices and cook stoves; Re-establishing local culture. **The summer program** has more emphasis on land restoration, soil conservation, forest management, organic agriculture, ethics of the earth and alternative education. **The winter program** has more focus on the utilization of local ecology to create energy efficient shelter and other forms of architecture. Specific techniques for appropriate, natural/ecological, and traditional Mexican building technologies are explored.

Approach: Each day involves both theory and practice. We emphasize practical learning in mixed groups. There are daily presentations by international specialists; yet all students are teachers, all teachers students. The whole group will define issues and problems and work on appropriate solutions. We visit, work, and live among real examples of sustainable agriculture, natural building, and land regeneration.

Spanish is valuable, though not essential, as there will be translation. The course provides a wonderful opportunity to build Spanish vocabulary specific to these subjects and to make invaluable contacts with potential colleagues, and others working in these fields.

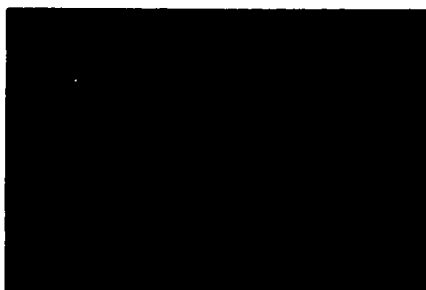
The first week includes visits to villages, markets, farms and projects from tropical rain forest to the snow zone. Week two, based at Rancho el Pardo experimental farm and forest, will focus on practical hands-on work in natural building, reforestation, and erosion control.

Location: Rancho el Pardo, the 300-acre Caballero experimental farm and forest are situated in mountain pine/oak forest (at 8850ft./2,700m.) near the market town of Tlaxco (about 2-1/2 hours from Mexico City; there's a public bus hourly). Food is local, mainly organic and vegetarian. Accommodations are rustic yet comfortable.

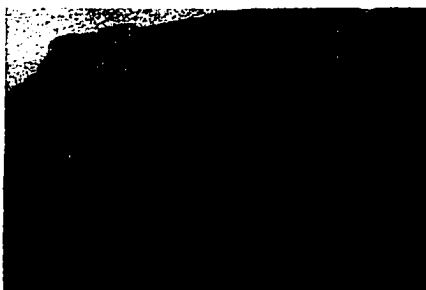
Cost: \$1200 includes tuition, 3 delicious meals per day, lodging and field trips. A \$250 non-refundable deposit insures a place (limited to 10 non-Mexicans, first come basis). 10% discount for full payment at least 30 days prior; 10% discount for enrollment of a second person. Tuition supports scholarships for needy Latin Americans and supports an innovative alternative grade school. Two partial work trade positions are available to suitable applicants. To register or for more information, please contact:

Ianto Evans, Zopilote Association & Cob Cottage Company
Box 123, Cottage Grove, Oregon 97424 USA
tel/fax: (541) 942-2005 or (541) 942-3021, e-mail
<cobcottage@hotmail.com>

Make check payable to: Alejandra Caballero



Land restoration site



Local straw-bale house



Sculptural clay wall ornament



Team study, problem solving and dialog



Straw-bale fire test



Adobe house in progress