HERITAGE ARCHITECTURE OF BATANES ISLANDS IN THE PHILIPPINES: A SURVEY OF DIFFERENT HOUSE TYPES AND THEIR EVOLUTION

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Fig. 1 Vintage Photo of a *Batanes* Heritage Houses

INTRODUCTION

The Historic Houses of *Batanes* is vernacular architecture of lime, stone, wood and thatch and constructed to withstand the harsh and unpredictable climate of the northern islands of the Philippines. They denote adaptation to severe climatic conditions and the rich cultural diversity of the province of *Batanes*. The islands are inhabited by indigenous people called *Ivatans* who recognize that their unique traditions provide the special quality that ensures perpetuation of the province as a living cultural community. Filipino writer Jude Defensor aptly describes the place as such:

"*The way most visitors to Batanes describe it, these far-flung islands seem to be a place that isn't quite real. It has gained a reputation as a land seemingly not of this earth, part of some mythical realm, a peaceful pastoral haven. If this were Middle Earth, in consideration of its peaceable folk and quaint, rounded, partially submerged architecture, Batanes would probably be the Shire. The province, the smallest in the entire country in terms of both population and land area, is also known as the 'Home Of The Winds' due to its legendarily stormy weather.*"[1]

The low houses of *Batanes*, with their heavy stone walls covered with thick thatched roofs are not found anywhere else in the Philippines. They have been shaped in response to extreme conditions of a region dominated by earthquakes, hot-humid summer months, monsoon rains, and severe typhoons. Unpredictable weather conditions and the distance that isolate the islands most of the year have led to preservation of many of this historic folk architecture.

The Province of *Batanes* in the Philippines consists of ten or more volcanic islands located 161 kilometers north of the *Luzon* mainland. Three of the islands are inhabited and the rest are small, waterless islets unsuitable for human life. The largest of the habitable islands is *Itbayat*, where the northernmost town of the province is found. Smaller than *Itbayat* is *Batan* Island with an area of 69 square kilometers. This island is referred to as the Provincial Capital of Batanes Province.

Three miles west of *Batan* Island is *Sabtang* Island. It has an area of 32 square kilometers and has only one municipality. These three islands contain numerous old settlements that reflect some of the most historic spots in the Philippines.

[1] Defensor, Jude "***AT THE END OF THE ARCHIPELAGO***", Manila Bulletin 2004

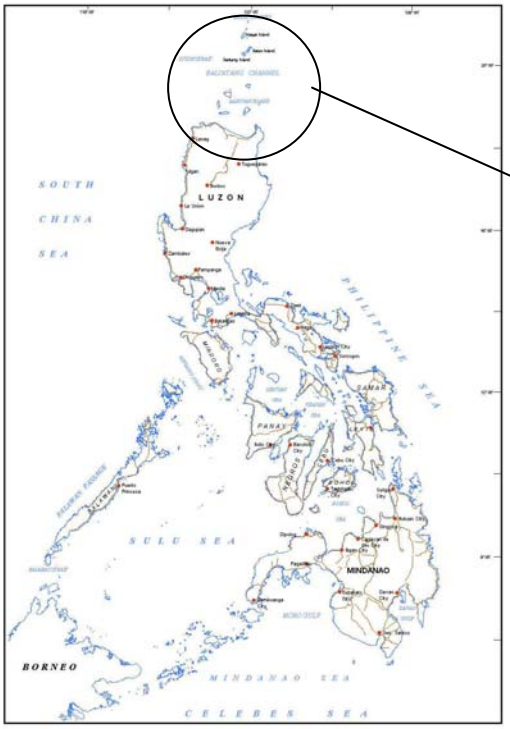


Fig. 2 - MAP OF THE PHILIPPINES [2]

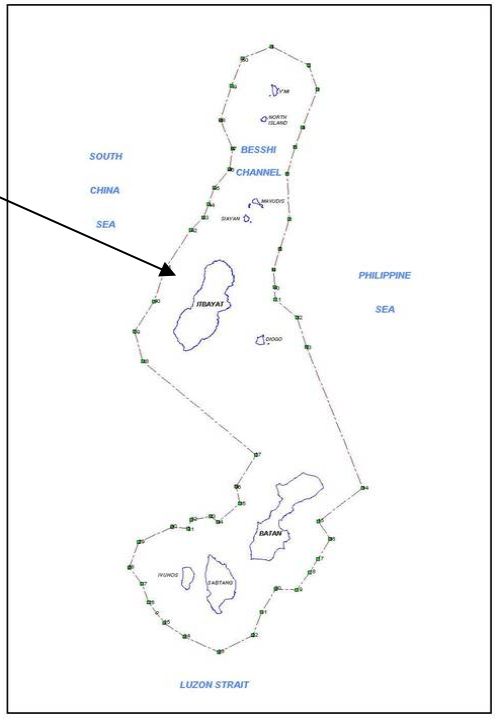


Fig. 3 - MAP OF BATANES [3]

WELL-PRESERVED HISTORIC HOUSES

A typical representation of an *Ivatan* heritage house is one made of stone, lime, and wood with a thatch roof made of local grass called '*cogon*', structures resembling houses found in European hinterlands. They clearly demonstrate the effects of the harsh climatic conditions on the islands and the efforts of the *Ivatans* to adapt to the rigorous tropical environment. It tells a story of how the indigenous communities built compact and sturdy houses for protection against ravaging typhoons and the cold Siberian winds.

Unknown to most, however, is that the stone houses are a product of an evolutionary process dating back to pre-Hispanic colonial times (17TH century A.D.) It is not an accurate assumption to say that the lime-stone-wood-and-thatch house is the sole representation of an *Ivatan* dwelling. Although the

[2] Philippine map courtesy of SEASTEMS, INC.
[3] Batanes map courtesy of SEASTEMS, INC.

lime-stone-wood-and-thatch house has withstood the test of time, the fact remains that there are several other house types that have endured to this day. Most of which are made of wood-and-thatch.

This paper presents a survey of historic *Ivatan* houses and the morphologies that have evolved over a long period of time. An architectural timeline is presented in this paper to establish the evolutionary process of the *Ivatan* heritage house (Table 2).

THE TRADITIONAL IVATAN HOUSE

Before the house morphologies are discussed, it is important to note that traditional *Ivatan* houses fall under main two classifications; Ethnic Architecture (EA) and Folk Architecture (FA). Ethnic architecture is defined as structures native people have produced for themselves. They are architecture created in the process of everyday customs that later becomes traditional under the influence of various challenges. *Ivatan* houses classified under ethnic architecture must be studied in relation to the natural and social environment of the native community, their construction materials and techniques that formed a distinct architectural form for this part of the world. They are made of natural materials such as wood, stone, vegetation, and sometimes mud. Ethnic houses are of modest proportions and used primarily as a shelter from the elements and as a place to sleep, cook, and eat. The inhabitants normally stayed outdoors working under shelters or lean-to roofs and are usually working in the fields.

Folk architecture on the other hand, shows the effects of time and foreign influences and how the communities adjusted to these elements. Folk architecture is an outcome of history. When ethnic

architecture changes in response to time, foreign influences and history, innovations become inevitable and new types of structures emerge.[4]

IVATAN HOUSE MORPHOLOGY

The composition of the *Ivatan* heritage house is not just a single structure. It is made up of at least two separate buildings: the main house and the kitchen. In other cases, a third structure serving as storage or shed may also exist.

There are several variations of the *Ivatan* heritage houses. However, two major archetypes can be easily identified. They are referred to in this paper as: the wood-and-thatch (*WT*) structures, and the lime-stone-wood-and-thatch (*LSWT*) structures. The grouping refers to the basic materials used for the houses. Both groups though, use thatch, wood and reeds as roofing materials.

- *WT* (wood-and-thatch) - These structures use thatch, wood planks, wood studs, reeds, or a combination of these. They are usually smaller and built with less height compared to those made of stone walls. These are limited to single story structures. Most *WT* structures are used as storage or kitchen areas. In addition, along coastline villages, the *WT* structures may serve as temporary dwellings during harvest season for fishing and other agricultural activities.

Fig. 4 & 5, WT (Wood-and-Thatch) Houses

[4] Hila, Ma. Corazon *Arkitektura: An Essay on Philippine Ethnic Architecture.* Sentrong Pangkultura ng Pilipinas, 1992.

- *LSWT* (lime-stone-wood-and-thatch*)* – These structures use stones of varying sizes from gravel to boulders. Different stones are used including volcanic, basalt, metamorphic, and the like. Coral stones are also commonly used particularly in areas close to the sea. Stones are piled and bound together by applying lime mortar, forming a strong, interlocking edifice. The building system allows for a larger floor area and a two-storey frame. During the rainy season, the lower level is usually used as storage for food and as shelter for animals. During summer, it is used for storage of agricultural products such as yam, sweet potato, wood and charcoal while the upper level is used as the main living quarters. A wood floor separates the two levels.

Fig. 6 & 7, LSWT (Lime-Stone-Wood-and-Thatch) Houses

The *LSWT* structures are commonly used as the main house and the *WT* types as the kitchen or the storage and on certain occasions as temporary dwelling during harvest season.

The development of the traditional *Ivatan* house is also related to these two predominant patterns. A systematic examination of each type, especially if it is broken down into its individual component, will show a clear progressive outline. A pattern of evolution shows progression of the *WT* house types leading to modifications that eventually produced the *LSWT* classification.

This evolutionary tract will be better discussed by undertaking a detailed description of each house type in their order of advancement.

Wood-and-Thatch Structures

Lagatiti

This is a makeshift type of shelter resembling an ethnic lean-to. It is commonly used as a temporary shed in farmlands. It is a small structure just over 4 square meters in floor area. It has a two-slope roof with one slope long enough to touch the ground and the other being a lot shorter almost resembling a roof eave. (Illus. 5)

The roof is made of thatch or any type of broad grass leaves. Reeds or long branches placed above and below keeping the thatch in place. Tree trunks are driven into the ground to serve as posts to support the roof assembly. The perimeter posts are just about one and a half meters high. This creates a very low ceiling that forces a person to be constantly seated or squatted while inside. It has thatch walls on three sides with the sloping roof functioning as the wall for the remaining side. This reduces the space even further because of the tapering height of the roof-wall.

Illus. 1. The "*Lagatiti*" Shelter

Rahaung

This developed from the primitive *kamadid* or *camarin*, a basic shelter consisting of a two slope (A-frame) roof resting on the ground. Timber logs were used as posts to elevate the A-frame and thus emerged the *Rahaung* shelter. The roof construction is similar to the *Lagatiti*. Reeds are used to clamp the thatch. This time, however, more layers of alternating thatch and reeds are used forming a thicker roof system.

It may have no walls, although in a variation of this house type, the front and rear areas of the A-frame sometimes have wall-like barriers made of thatch. These barriers cover only the area from the level of the eaves to the top of the triangular frame, sort of elevated walls. They provide shelter from rain and sun, which would otherwise penetrate if these areas were left bare.

Low, narrow wooden platforms are built alongside the posts to serve as worktops, storage, or benches. This house type is used as a multi-purpose shelter to house boats or as a shed for various work activities.

Illus. 2. The "*Rahaung*" Shelter

Chivuvuhung/Jinjin/Gingin

The *Chivuvuhung* is an improvement of the *Rahaung*. It follows the same framework minus the low platforms.

Walls are now incorporated to create an interior space. Its name is derived from the Ivatan term for the cogon wall. As such, its walls are made mainly out of wood, cogon, and reeds though similar to the roof but with only two layers of cogon. Like the *kamadid*, the walls rest on wooden posts that serve as columns.

Door and window openings are made by simply leaving rectangular spaces in between posts. Pieces of wood planks are used to serve as window frames and doorjambs. One or two pieces of wood may be used as door or window panels for each opening. These panels are affixed to the jambs using improvised metal hinges.

It may or may not have a wood floor depending on its use and the availability of wood planks. Though it is commonly used as a temporary shelter, there are those who maintain this type of house as a permanent dwelling. As such, a wood floor is a necessity.

Jinjin's are primarily used as a seasonal shelter in fishing villages such as *Diura* Village in *Batan* Island. These houses provide refuge and sometimes serve as storage where smoked fish are cured during fishing season. They are left unoccupied when the tenants return to the mainland until the next fishing season starts.

Illus. 3. The "*Chivuvuhung*" House

Illus. 4. The "*Jinjin*" House

Niriñdiñ

As mentioned earlier, this house type is found only in the Island of Itbayat. It is a slightly varied version of the *Jinjin*.

It primarily functions as a house than a temporary shelter. As such, it is built using more durable materials. The walls are made of wood planks and clad with cogon at the exterior. This provides added protection from weathering for the exterior wood partition.

Since the cold months are far more severe in this island, the use of wood planks for the wall is a necessary protective measure against the wind. The same may be said for the floor.

The door and window panels are different, as well. In contrast with the swing-out type panels used in the *Jinjin* (or all the other house types), the *Niriiñdiñ* is the only one that uses sliding panels.

Mayhurahed

This house type is the next step in the improvement of the *Jinjin* and the *Niriñdiñ*. Since both house types are built at ground level, the damp earth causes problems at the portions close to the ground. The cogon and wood rot faster when in contact with the damp soil. Therefore, a low base consisting of mud and stone is integrated at the lower section of the wall. This base is called *hurrahed*. Thus the name *Mayhurahed* or *may hurahed*, meaning "with stone base".

The stone base serves a more important function during rains. For houses that are built on terrains with uneven slope, the water flowing from the higher areas tend to seep into the floor especially during heavy downpours. The stone base helps divert the water around the house.

Illus. 5. The *Mayhurahed* House

Lime-Stone-Wood-and-Thatch Structures

The arrival of the Spanish colonizers brought in new construction technologies in the islands. Most influential of these is the use of masonry. The use of lime as mortar was introduced and with this emerged a new system of construction. European community planning was enforced using religion as means to convince the indigenous people of its practicality. In line with this, adaptation to European construction techniques developed a new set of house archetypes while merging with old traditions.

Sinadumparan

This type of Ivatan house has walls made of stones and lime mortar. It still followed the basic form and roof construction of the WT houses but the use of masonry allowed it to go wider and higher.

This new technology allowed for a lower level, which is used as a storage area or as shelter for domesticated animals during typhoons. A *Sinadumparan* house may vary in size and height depending on its use.

Main House or Rakuh

If it is used as the main house, meaning the living quarters, it is usually larger and taller. The lower level may have higher ceiling to accommodate jars, boats, and other household belongings. Though it is referred to as a lower level, it is not located below ground. It is actually at ground floor height and is only treated as such because the upper level is where the main habitable area is.

These two levels are divided by a wooden floor anchored to the wall by a system of girders and joists resting on several pieces of corbel stones protruding from the walls. The floor is made of wood planks joined together by wooden dowels.

The door and window openings are identical in width and height. Both have two swing-in panels and the only visible difference between the two is a hip-high *verandilla (*wood balusters*)* added to the windows.

Kitchen or Kusina

A *Sinadumparan* used as a kitchen is a smaller version of the main house with a few noticeable alterations. Its lower level (basement) is only about a meter high and sometimes, the lower level may be omitted. It is intended mainly as a shelter for small animals such as dogs and fowls. Consequently, the openings in this level are devoid of any door panels. The kitchen has the same door assembly as the main house but has smaller widows, measuring only about half the height of the door.

The most distinguishing feature of the kitchen is a very low wall platform serving as a built-in stove called *rapuyan*. This is also made of stone and mortar. It is also equipped with wooden partitions located above the stove called *paya*, which are used as storage for dried fish, vegetables, condiments, and the like. Wood branches shaped as hangers are hung from the roof truss and above the kitchen's cooking area. Meat and dried fish are hung on these food hangers so that the rations are naturally smoked while cooking. Recessing part of the wall about half a meter deep makes a built-in storage area. This area is just about half a meter wide and a meter tall.

Illus. 6. The "*Sinadumparan*" House

***Sinadumparan* with Crown**

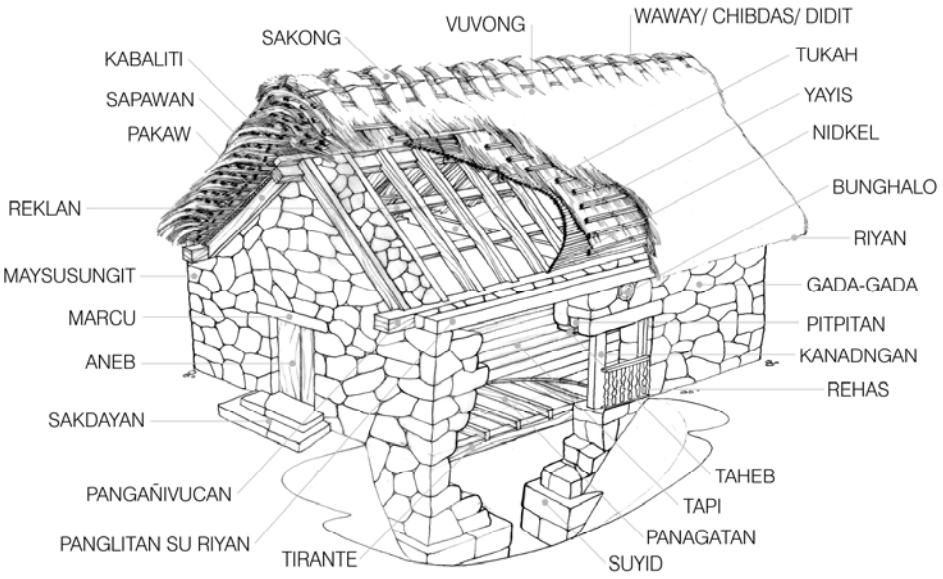
This variation has modifications to the triangular wall. The three corners of the triangle are extended to create wall protrusions with the one at the apex being rectangular in shape resembling a

crown. These serve as flashings meant to protect the cogon roof ridge and the eaves, which are prone to shredding caused by strong winds and rain.

Illus. 7. Variation of the *Sinadumparan's* Triangular Wall, referred to as *Sinadumparan* with Crown

Sinadumparan – a - Binedberan

This is a variation of the *Sinadumparan* commonly found in Itbayat. The cogon roof and some of the horizontal members of the truss extend beyond the triangular wall. The purpose behind is to secure the triangular wall in between two rafters. This provides more protection from rainwater entering the walls and to reinforce the triangular portion, which is otherwise susceptible to breaking off from the main wall during earthquakes. The common cause of damage is seepage of water inside the walls thus eroding the lime mortar, which in turn weakens the structure.



Illus. 8. Anatomy of the *Sinadumparan-a-Binedberan* with Vernacular Terms

Beaterio

This house type is comparable in form with the *Sinadumparan* minus the lower level and the wooden floor. The most obvious change is the use of clay tile roofing in place of cogon. It was a product of the Spanish regime to introduce clay tiles as a substitute for *cogon* grass. According to local information, only one of these structures was ever built. It is located in the Island of *Batan* and was originally used as a Nun's Convent. To date, it is used as a storage area for the church.

The clay roof tiles are said to have been imported from Spain during the colonization. The house is located conveniently along the main road and close to the sea shore. A unique feature of this structure is the circular windows along the triangulated wall. One window faces the sea and the other faces the church. Niches along the walls of the interior space are used as altars for religious statues.

Illus. 9. The "*Beaterio*" House

Maytuab/Nituavan

This house type evolved from the *Sinadumparan* (2-slope roof structure) as a result of a disastrous earthquake of 1918 wherein the weak triangular portion of the walls collapsed for some houses. Instead of rebuilding the damaged walls, the 4-slope roof was introduced.

The elimination of the triangular wall resulted in a more structurally sound shell, which eventually led to the construction of taller houses.

Most of the relatively younger generation houses in Batanes are of this type; a testament to the argument that it is one of the more recent morphologies in the evolutionary chain of traditional heritage houses.

Illus. 10. The "*Maytuab"* House

Colonial Houses

In time, colonial houses with two levels and larger spaces emerged during late 19th to early 20th Century. By osmosis, these houses adapted styles coming from the mainland. The forms developed from the convergence between Native culture and European culture. Styles in *Batanes* evolved into an architectural fusion similar to the famous *bahay na bato* (stone houses) and the churches of other provincial towns seen in the mainland. The combination of Native and Spanish styles is referred to in the Philippines as *arquitectura mestiza.* These developments in *Ivatan* architecture is shaped by construction, technology, and the owners improved lifestyle. In addition, a strong feature of these colonial houses reflects the Filipino's love for festivities. A large veranda or balcony exists at the entrance foyer where people can view religious processions and parades held yearly during town fiestas. Larger kitchens, receiving and dining areas are evident in interior spaces to accommodate visitors during these celebrations.

Illus. 11. The Large Colonial Houses

Archetype	Classification	Description	Use
Lagatiti	EA, WT	Type of Shelter Only Found in Itbayat Island	For Taking Refuge from Heat and Rain
Rahaung	EA, WT	Common Shelter found all Over Batanes	For Taking Refuge from Heat and Rain
Jinjin/Gingin/Chivuvuhung	EA, WT	Improvement of the Rahaung	Used as Kitchen or Dwelling Units
Niriñdiñ	EA, WT	Variation of the Jinjin with Wall Planks	Used as Kitchen or Dwelling Units
Mayhurahed	EA, WT	Jinjin with Stone Base	Used as Kitchen or Dwelling Units
Sinadumparan	FA, LSWT	Improvement of WT Structures/Walls are made of Stone and Lime	Used as Kitchen or Dwelling Units
Sinadumparan with Crown	FA, LSWT	Improvement of Sinadumparan/Triangular Walls have Flashing	Used as Kitchen or Dwelling Units
Sinadumparan-a-Binedberan	FA, LSWT	Improvement of the Sinadumparan / Thatch Roof Extends Over Triangular Walls	Used as Dwelling Units
Beaterio	FA, LSWT	Improvement of the Sinadumparan / Roof Material Made of Clay Tiles	Originally Used as Nun's Convent
Maytuab/Nituavan	FA, LSWT	Improvement of the Sinadumparan / Roof has Four Slopes Instead of Two	Used as Dwelling Units
Large Colonial House	FA, LSWT	Improvement of the Maytuab / Integration of Balconies and Large Receiving Areas	Used as Dwelling Units

Table 1. Classification of Extant Ivatan Heritage Houses

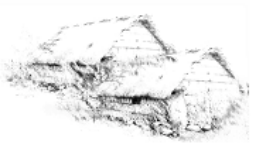
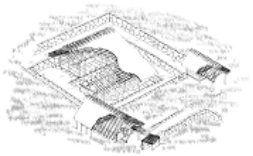
300-500A.D.	CIRCA 1600-1700	CIRCA 1700-1800	CIRCA 1800-1900	CIRCA 1900-2000
• Chinese merchants started trade from Mainland China to the Philippines   • Pre-historic Ivatans built their shelters by digging out pits with low roofs over them. Shelters were located along mountain ridges as protection against hostile neighbors. *(Sairahi Kara Study from Kumamoto University)*  • Traces of early forms of architecture can be observed from extant shelters still visible today and through house settlements of neighboring Orchid Island  • Stone walls were built in pre-colonial Batanes. Sources taken from oral tradition of Ivatans as observed in actual structures existing today. *(Homeño ethnographic essays: Taming of the Wind)*	 • Current archeological data at the Racuaydi, Nakavajayan settlement dwellings were built with large vertical lime stones used as columns for the corners of the house. *(Cadio Study from archeological studies program, University of the Philippines)*  • "Wood, grass, and reed construction" - Small houses made of wooden posts, wattled with boughs - Posts are not more than 4.5 ft high - Height of ridgepole is approximately 7-8 ft high - Dwellings have a cooking area at one end of the house - Dwellings were built on the sides and top of rocky hills/mountains - 3 or 4 rows of houses were arranged one above another along steep precipices - A wooden ladder is used to go navigate from one row of houses to another *(Blair and Robertson, 1906)* 	• 1686-1719 Spanish colonizers arrived in Batanes • 1773 - Local natives consented to become subjects of the King of Spain • 1785 – Prior to the arrival of Spanish colonizers, animals were kept near dwellings. Dominican friars eventually introduced slightly larger house designs with gardens to promote a healthier environment  • 1789 – Spanish provincial governor Joaquin Del Castillo ordered mountain dwellings to be abandoned and mandated Ivatans to live in lowland settlements around churches and municipios. The task was executed with the force of a gun  • 1791 – Protests against Spanish impositions resulted in casualties. Resistance and revolt led to the execution of the local chieftain called Mapopus of Malakdang Amang Dagat  • 17 a introduced large-scale lime mortar production • 1799 – Beginning of lime-and-stone construction. New architectural technology resulted in massive stone walls and thick cogon thatch roofs. These houses are extant and referred to as traditional Ivatan Houses. *(Homeño ethnographic essays: 1982-1994)*	• 1819-1820/21 – New Spanish settlements proved to be health hazards caused by the outbreak of cholera aggravated by the close proximity of houses. Population decreased considerably • 1831-1844 – Previous migrants from 1790's resistance movements who settled in Ivana returned to their ancestral houses. 1831 was also the advent of the construction of lime-and-stone public buildings • 1876 – Shows a rapid decrease in population. Possible reasons are outward migration and plagues  • 1890 – First attempt to introduce clay tiles for roofing. Extant house is the Beaterio. Zinc or G.I. roofing was also introduced.  • 1895 – Sto. Domingo Church, the first church with G.I. roof, was built in Basco • 1899 – The Philippines was sold to the United States by Spain.  • 1900 – Americans arrived in Batanes. Reinforced concrete construction technology was introduced. Concrete slabs replaced thatch roofs. Demand for large stones for houses diminished.	• 1900-1946 – American colonization brought about the school system resulting in a very high literacy rate enjoyed until today • 1941 – First landing of Japanese forces in Batan Island • 1945 – Ivatans reestablished the Commonwealth of Sabtang signaling the end of Japanese occupation and the American regime • Demand for crushed gravel started for road and house construction • G.I. roof proved to be less durable. Corrosion after 5 years was observed and resistance to typhoons was not as strong • 1918 – Earthquake of considerable magnitude leveled several southern towns in Sabtang and Batan islands  • Maytuab Houses (4-Sloped Roof Structures) developed from the Sinadumparan Houses (2-Sloped Roof Structures) to resist strong typhoons and earthquakes • Heartwood was used as additional reinforcement for lime-and-stone walls. These were integrated as posts running from the basement all the way to the beams holding the truss system. The heartwood acts as wooden posts that keep the roof intact during earthquakes even if the walls collapse. • 2000 – Magnitude 7.1 earthquake destroyed several Ivatan houses. Tsunami tidal waves destroyed Chahahavayan Municipality located along coastal area. Massive campaigns to preserve Ivatan heritage houses started. UNESCO listing sought by provincial government.

Table 2. Architectural Timeline of Ivatan Heritage Houses

CONCLUSION

In summary, the traditional *Ivatan* heritage houses as they are perceived today is a product of a long and slow metamorphosis from the wood and thatch archetype into the more popular lime-stone-wood-and-thatch archetype.

This transformation is a result of different factors including adaptation to the environment such as topography, typhoons and earthquakes; availability of materials; inherent technology of the

indigenous people and influences brought in by various colonizers that asserted their presence in the province.

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National Commission for Indigenous Peoples – Batanes

"MAINTENANCE PLAN FOR THE HERITAGE HOUSES OF BATANES, PHILIPPINES"

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Fig. 1 Vintage Photo of a *Batanes* Heritage Houses

INTRODUCTION

Houses built in the tropics need to deal with the contextual elements inherent in the region. Such is the case for heritage houses located in *Batanes*, Philippines. Natives built their dwellings to address fundamental issues such as earthquakes, hot humid summer months, strong typhoons and continuous monsoon rains. The low houses with their heavy stone walls and thick grass roofs are not found anywhere else in the country. They are vernacular architecture of lime, stone, wood and thatch. They are designed to adapt to extreme conditions of a region that is dominated by the unpredictable climate.

The people realize that their unique ways provide the special quality that ensures the perpetuation of *Batanes* as a living cultural landscape. Situated between the equatorial latitudes of Cancer and Capricorn, the sun hovers almost directly above generating an environment that is warm and fertile

during summer. During the rainy season, inhabitants nestle inside their cozy houses with abundant stock of agricultural products that will last throughout the rest of the year. Natives rely on agriculture and fishing for their livelihood. Their architecture showcases poetic values that integrate local traditions into the physical environment. In Addition, builders subscribed to the rule that form is shaped by daily activities and the elements. An example is observed through planning where villages are laid out to encourage interaction with neighbors while chores are merged with the agricultural practices of the community. The distance and unsympathetic weather that isolate the islands most of the year thus led to the preservation of many of the heritage houses in this unique part of the Philippines.

A strong sense of history prevails in the different islands of *Batanes*. This is seen in the cultural systems that continue to prevail in various villages. Established cooperatives and traditional practices dating back to colonial times still exist today. Fishing, farming and house building activities remain deeply rooted in *Ivatan* (indigenous people of *Batanes*) way of life. A result of the transfer of know-how handed on from one generation to the next. But, the houses continue to be subject to risks such as earthquakes and strong typhoons that cause irreparable damage to some of the extant houses. *Batanes'* built heritage is continuously subject to various types of deterioration, including weathering and the introduction of modern amenities coming from the mainland. Over the last couple of years, a strong sense of patrimony was observed in the region and efforts to save the houses have been the focus of the *Ivatans*.

GOALS

In July 16 of the second millennium, a major earthquake took place causing damage of varying degrees to many of the historic houses. To address the crisis, local officials prepared the *Batanes* Heritage House Restoration and Conservation Program (BHHRCP) based on regulations created after the earthquake.

Included in the BHHRCP report are the historical, cultural, social and political aspects of the Province. For aspects related to technical assistance and consultancy, the following course of action have been established:

- Develop a pool of local preservation and conservation experts in *Batanes*
- Provide advice / assistance on restoration, conservation and preservation, including the maintenance and development of source of materials – reeds, thatch grass, boulders, lime, etc…
- Study adjustments on design to reflect changing use, limitations on sources of building materials, functionality, etc.

PLAN OF ACTION

In response to this requirement, the Office of the Provincial Government, the NCIP (National Commission for the Indigenous People) of *Batanes*, and the Extension Services Program of the University of the Philippines College of Architecture, entered into a tripartite agreement to develop an architectural guide for the preservation of these historic houses.

The program was initiated in the last quarter of 2003 and submitted in 2004 as part of a comprehensive management plan to UNESCO's (United Nations Educational, Scientific, and Cultural Organization) World Heritage Listing. The goals were as follows:

- Set architectural parameters for developing and evaluating forms, systems, components and details of *Batanes* Historic Houses
- Document and explore traditional, innovative and alternative construction systems that support the use of available architectural know-how in the region without compromising the forms of existing heritage houses
- Address architectural preservation and conservation problems within the limitations defined by environmental concerns such as earthquakes, fire, typhoons, natural decay, cost, and efficiency

The project was created as part of requirements for the UNESCO nomination dossier. In the next couple of years, UNESCO will assess if *Batanes* can be included into the World Heritage List.

HISTORICAL VALUE

In a study conducted by Anthropologist Peter Bellwood, Austronesians were believed to have originated in Southern China and Indochina and reached the *Batanes* Archipelago in 3,500 BC. *Batanes* was the stepping stone in the start of a great migratory wave that led Austronesians through the Philippines, one of the land bridges for the rest of Asia. Just about a thousand years later, they moved on from the Philippines and expanded towards Borneo, Sulawesi, and eastern Indonesia. A thousand years later they continued to travel from eastern Indonesia to Micronesia and Polynesia, reaching as far as Madagascar on the African shores of the Indian Ocean. [5]

Bellwood, who studied the Austronesian dispersal and origin of languages, talks of a Taiwan-Northern Luzon axis of the Neolithic community between 3,500-2,500 BC which was reinforced by the Kumamoto Report. Taiwanese anthropologist Ho Chuan-kun's research presented another

[5] Villalon, Augusto F., et. al., ***Mavid A Vatan! Project: Province of Batanes, Nomination Dossier for UNESCO on Batanes Protected Landscape and Seascape / Cultural and Heritage Sites Management Plan,*** 2004

theory showing that the earliest Micronesians in Taiwan came from the Philippines and Indonesia. Austronesians eventually went to the Palau and Yap Islands throughout a century of migration. The established trade circle was based on "stone money" which are said to be as large as a home.[6] Nevertheless, the common link established by the Austronesians through their area of dispersal was language, the basis for language similarities that now exist in the Asia Pacific Region. Closer scrutinies of architectural forms show that tangible heritage can serve as basis for establishing these links as well.

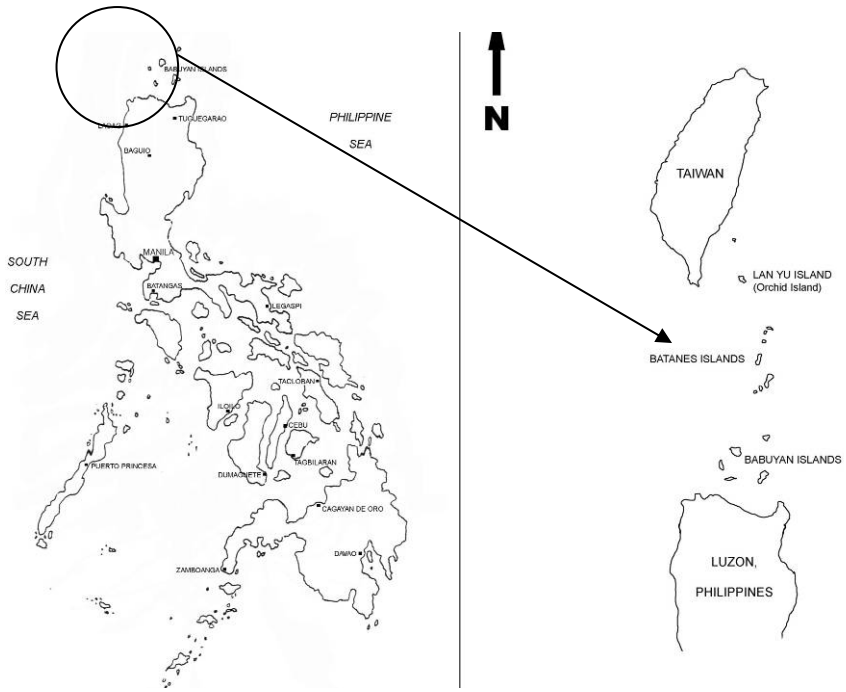

Fig. 2 - Location Map of *Batanes* and Taiwan's *Lanyu* Island

Similarities in the historic architecture found in *Lanyu* Island of Taiwan and the *Batanes* Islands have been noted. *Lanyu* is inhabited by the *Yami* (*Tao*) Tribe and the strong similarity between language and cuisine of the *Ivatan* and *Yami* is well-established.

[6] Yu Sen-lun, ***Connecting Taiwan to its Past,*** The Taipei Times, Sunday, Jul 13, 2003,Page 18

In similar respect, the Austronesian architecture of lightweight construction is observed to have similarities all over the region. *Ivatans* evolved their own architecture variation to respond to strong winds, typhoons, and earthquakes. This is the *Batanes* environmental reality.[7]

Fig. 3 & 4 –Ethnic Architecture: *Niriňdiň* and *Chivuvuhung* House

Sinadumparan* House of *Batanes

The *Yami* House of *Lanyu*, Taiwan

Fig. 5 & 6 – Colonial Architecture: Similarities between Taiwan and Philippines

Spanish colonial presence started in the 17th century. During the Spanish colonization, the natives were forced to transfer to coastal villages designed by the colonizers. They obliged communities to follow western town planning and introduced architecture made of stone and thatch materials. A housing program was introduced by the Spanish friars during this period and many of the modular units still exist to date in various housing settlements all over *Batanes*. During the Spanish

[7] Turalba, Cristina V., et. al., ***Mavid A Vatan! Project: Province of Batanes, Nomination Dossier for UNESCO on Batanes Protected Landscape and Seascape / Cultural and Heritage Sites Management Plan,*** 2004

colonization, it is believed that some *Ivatans* migrated to the mainland and others escaped to *Lanyu* due to strict rules imposed by the friars.[8]

Fig. 7 – Variations of the Heritage Houses in *Batanes*
(Left to Right: Changes in house morphology through the years)

There are no less than 1000 existing historic houses all over *Batanes* with additional 500 or so damaged structures from the magnitude 7.1 earthquake that occurred in July, 2000. These old settlements whose remnants manifests the tangible culture of the province, together with their fortresses, with its monumental presence shows the defensiveness of a bygone era. The islands and its residents were constantly exposed to invaders. Apart from their burial grounds, with tombs made of scattered stones shaped into boats, all of these were left intact and free from the disturbances of trespassers. More archeological studies remain to be seen. Likewise, the areas were the natural

[8] Hornedo, Florentino H. ***The Traditional Ivatan House: A Historical Survey.*** Vol. 16 No. 2 of ¬UST Journal of Graduate Thesis. March 1987.

heritage of the province are located has been left untouched by encroachers. In them are still seen the endemic flora and fauna present only in the province.

***Sinadumparan* House**

***Sinadumparan-a-Binedberan* House**

Fig. 8, & 9 – House Archetypes types in *Batanes*

House

***Maytuab Mayhurahed* House**

Fig. 10 & 11 – House Archetypes types in *Batanes*

METHODOLOGY

Several house settlements are scattered all over the three islands of *Batanes*. For this project and due to the large number of existing houses, only a few the structures that are found to be authentic were thoroughly scrutinized to serve as basis for the research. An in-depth study on the morphology of

these historic structures was collected to serve as basis for the conservation work required. Moreover, detailed documentation showing building forms and their traditional construction methods were re-established and documented as requisites for the long-term maintenance of the houses.[9]

This author, for example presents one house settlement as a case in point in this paper (Fig. 12 & 13). The settlement is in the Island of *Batan* and located in the village of *Diura*. The settlement has been identified as a Cultural Core Heritage Zone by the local provincial government. The village was created during the Spanish Colonial period as a new town and designed in a grid plan with a central plaza. Predominance and presence of good examples of the *Chivuvuhung* or *Jin-jin* house types, with unique architectural features is found in this village. The whole village is in moderate state of conservation.

In the village of *Diura*, there are a total of 90 houses; 13 of which are new construction, 1 traditional house is abandoned and derelict, 1 traditional house is occupied with medium damage, 2 structures unclassified, and 73 traditional houses are well maintained and currently occupied as dwellings.

[9] Ignacio, Jose "***Heritage Architecture of Batanes Islands in the Philippines: A survey of Different House Types and their Evolution"***, Environmental Architecture Laboratory - University of the Philippines, College of Architecture, May 2005

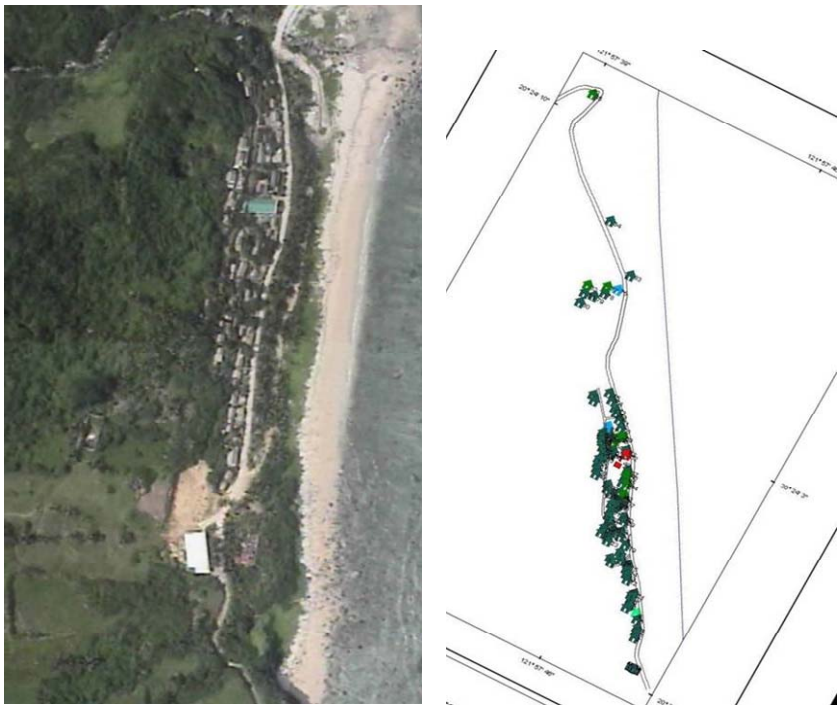

Fig. 12 & 13 – Aerial Map of *Diura* Village, Locator Map of Heritage Houses

To address the preservation and conservation of houses for a village such as *Diura*, several phases can be taken. In addition, the whole effort has to work within the limitations defined by environmental concerns such as earthquakes, fire, typhoons, natural decay, cost, and efficiency. The processes for developing the maintenance plan for the houses are as follows.

Phase One:

- Document the existing heritage houses within the village through aerial maps and photos
- Identify the various house morphologies and architectural parameters
- Conduct interviews from the elderly members of the village and gather historical / written data on weathering, construction techniques and sourcing of materials
- Evaluate the forms, systems, components and construction details of the houses
- Document the architecture and engineering particulars and re-establish the anatomy traditional houses through sketches and diagrams

Phase Two:

- Formulate guidelines on preserving the heritage structures
- Establish alternative construction systems that support the use of available architectural know-how in the region without compromising the forms of existing heritage houses
- Develop handbooks that address architectural preservation and conservation proposals within the limitations defined by environmental concerns such as earthquakes, fire, typhoons, natural decay, cost, and efficiency

DESIGNATION OF THE PROPERTY

Because the house settlement is still in good state of preservation and little alteration is observed, the whole inventory of houses in *Diura* can be classified under Strict Protection Zone. In this core zone, clusters of traditional houses survived time and are in their original condition and still used as dwellings. Furthermore, the houses are still inhabited by the locals. This hopes to further ensure the preservation of the structures.

The houses are of outstanding example of a type of building, architecture or technological ensemble that illustrates a significant stage in Philippine history. *Chivuvuhung/Jin-jin* houses as well as the *Sinadumparan* archetypes are built of wood, stone and thatch and located in tight clusters to withstand strong typhoons and prevailing north winds that are the strongest in the country and perhaps elsewhere in the world. *Batanes* islands lie directly in the path of the inter-tropical convergence zone.

OWNERSHIP, ASSUMPTION OF PROPERTY AND THE RESPONSIBLE AUTHORITIES

House ownership all over *Batanes* is mixed. Traditional houses are privately owned. The government owns all open plazas, roads and public buildings throughout the village. Churches are the property of

the Roman Catholic Archbishop of *Batanes*. Following local tradition, owners provide free access to their property.

The National Commission for Indigenous Peoples Rights Act (IPRA) focuses on cultural integrity ensuring that the state shall recognize, respect and protect the rights of Indigenous People. The NCIP-*Batanes* Office is the lead agency working on the conservation projects. The *Ivatan's* of *Batanes* are an indigenous tribe of the Philippines.

USAGE

In general, the main purpose of heritage architecture preservation for *Batanes* is: firstly for habitation and second to increase revenues through tourism. A detailed promotion program is currently in process. Promotional activities undertaken within the past year have included publication of newspaper articles, photographic exhibitions, *Batanes* Week Celebration, and the *Batanes* Festival sponsored by the *Batanes* Province and the Department of Tourism in Manila.

Fig. 14 to 18 – House Functions: Current use of the Houses are Primarily for Storage and Residential Use

PRESENT STATE OF CONSERVATION

The heritage of *Batanes*, which is not only composed of the traditional villages, has likewise been left in good condition through time because of their isolation from the outside world. Together with these are the cooperative practices, part of their intangible heritage, which until today still remain in practice. (*Kamaňidungan* Cooperative System)

Fig. 19 to 24 – *Kamaňidungan* Cooperative's Re-Roofing Activity

ISSUES AND CONCERNS

Recent years show transformations in the state of conservation of the heritage sites of *Batanes*. In the last decade, since the July earthquake that devastated major parts of its built heritage, traditional architecture together with the rich customs and traditions of the people, have been most compromised, leaving with it many damages to structures.

The people had to immediately repair their houses due to the constant battering of typhoons that hit the province yearly. The national government likewise extended assistance in terms of materials and

methods of construction that paves the way to repairs through materials and technologies that are incompatible to the original.

Fig. 25 to 27 - Damage and Changes in the Use of Materials

Some villages are gradually being infused with changes. Some houses of stone and lime with thatch roof are shifting to new materials. The corners of the houses would now present themselves with concrete columns, while the grass roofs have slowly been replaced with corrugated galvanized iron sheets imported from the mainland. The houses originally with stone beams would now be seen with reinforced concrete structural members. Even the stone lintel that holds the upper structural part of the apertures of the houses would slowly disappear and be converted to concrete lintel beams, infused with reinforcing bars.

Slow transformations have been observed. Primarily caused by out migration of the residents, cultural traditions are affected, starting the influx of modern characters. Younger generations inspire these transformations. Their quests for a better life have initiated their transfers to study or work in the mainland, and were therefore influenced by what they have seen. Difficulty in producing lime and scarcity of traditional raw materials come into conflict with heritage preservation efforts. A reality the local government and stakeholders have to contend with.

Fig. 28 & 29 Examples of Changes in Roofing Materials

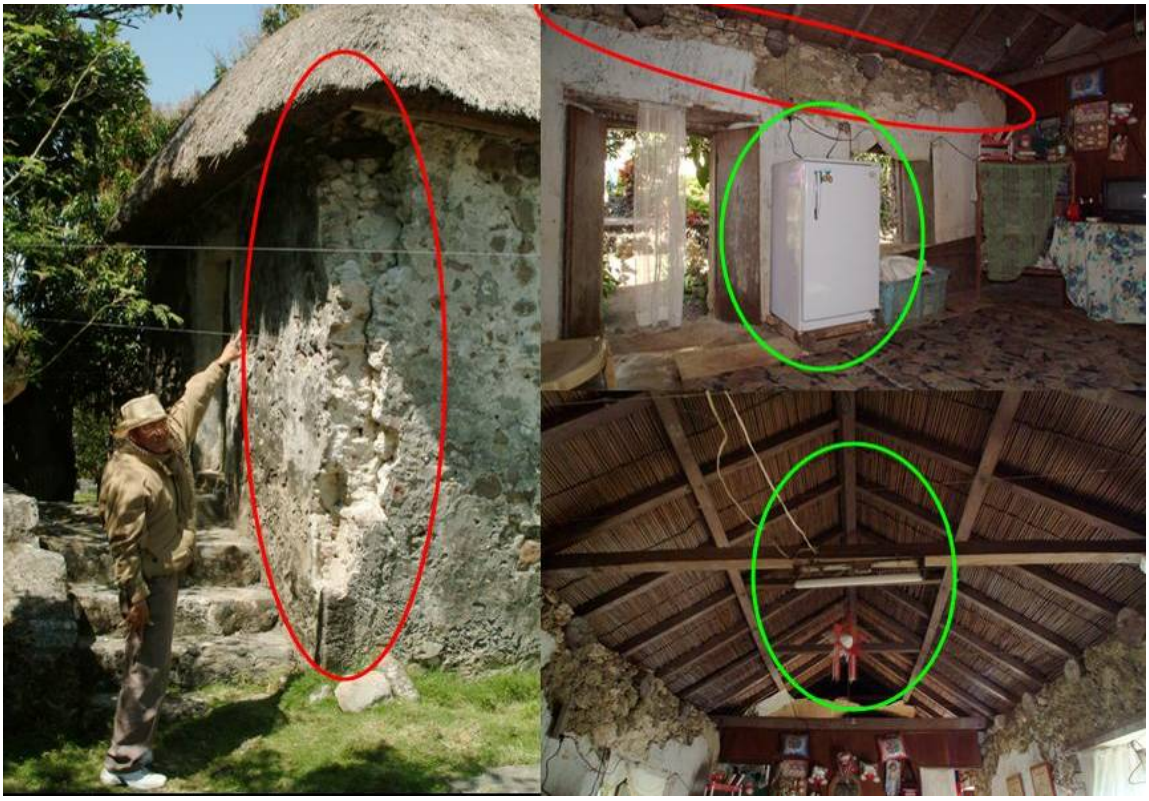

Fig. 30, 31 & 32 Examples of Damage and Infusion of New Household Amenities

LEGAL ISSUES, LEGAL PROTECTION, MUNICIPAL PLANNING

Issues on the Legal Status of the Heritage Houses are encompassed in Republic Act No. 7586: National Integrated Protected Areas System (NIPAS). This is the legal framework protecting *Batanes* as Landscape and Seascape. Under the NIPAS Act, *Batanes* is recognized as one of ten priority sites in the country with the following protective umbrella:

- Proclamation No. 335: Recognizes *Batanes* Protected Landscapes and Seascapes (BPLS) as one of the ten sites protected by the NIPAS Act. The BPLS focuses on the preservation of *Batanes* Culture and its traditional practices to continue in harmony between the inhabitants and their natural environment, leading to an acceptable balance in the *Batanes* Archipelago.

- Republic Act 8991: This act establishes *Batanes* Group of Islands as a protected area providing for its management and for other purposes. A Protected Area Management Board (PAMB) was created as the highest policy-making body serving as venue for decision making process in the BPLS. Its members are: Department of Environment and Natural Resources, Local Government Units, People's Organizations and Cooperatives, and Non-Governmental Organizations.

- National Commission for Indigenous Peoples Rights Act (IPRA) of June 1998 protects the rights of Indigenous People of *Batanes*. NCIP-*Batanes* is the Lead Agency working on conservation of the heritage houses.

SEVERAL PROPOSED LEGISLATIONS WERE IDENTIFIED AND APPROVAL IS PENDING

The ordinances related to preservation of heritage architecture are as follows:

Proposed Municipal Ordinance to declare traditional houses individually or in clusters as cultural treasures and provide incentive packages and subsidy and set standards

- Ordinance No. 41 Series 2002 enacting the conservation, development and management of the natural and cultural heritage sites in the province of *Batanes* and providing funds thereof. This ordinance hopes to provide incentive packages and to set conservation standards. (Proposed under the category of cultural heritage conservation and management)

- Ordinance to address issues on gazetting of *Ivatan* Architecture and significant buildings; the establishment of *cogonal* or grass reserves; the establishment of a building code; the conservation subsidy for traditional buildings; the ban on use of cement in gazetted buildings; these will be done in accordance with existing Provincial Ordinances.

- Ordinance No. 02-03 which is an addendum to Ordinance No. 00-10 dated June 5 2000 which is an amendatory ordinance amending Ordinance No. 96-04 regulating and preserving the use of tourist sites in various municipalities.

IMMEDIATE AIMS FOR PRESERVATION AND MAINTENANCE

- To document the vernacular construction techniques and develop design solutions for the preservation of *Batanes* Heritage Houses

- To enumerate, define and articulate the framework that complete the ensemble featuring components of the *Batanes* House

- To address the structural damage caused by tectonic activities of the region

- To re-establish and document the traditional construction techniques of vernacular engineering

- To carry out a maintenance plan for the preservation of the heritage structures

- To provide advice on integration of new technologies into the heritage houses that are caused by shift in lifestyles of the stakeholders

Fig. 33 to 35 Photos show changing lifestyle and the need to draw up solutions to avoid additional damage to the houses

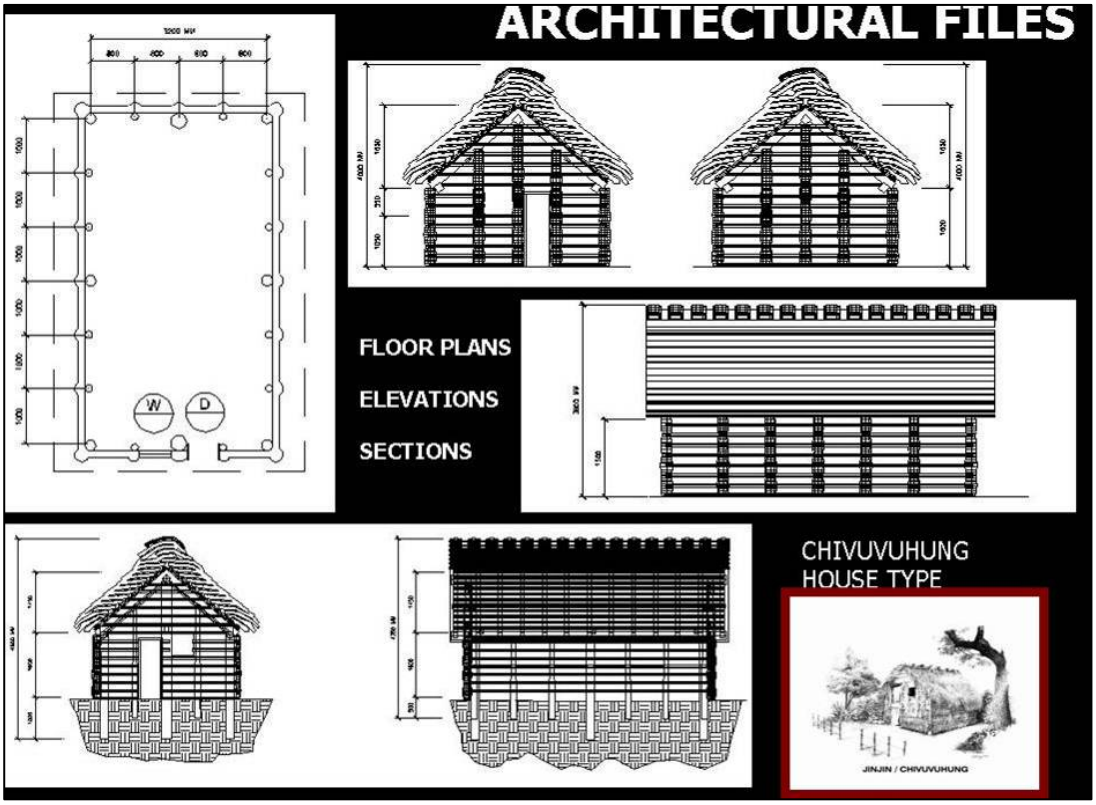

Fig. 37 Photos show samples of architectural drawings and computer aided design files produced for the project

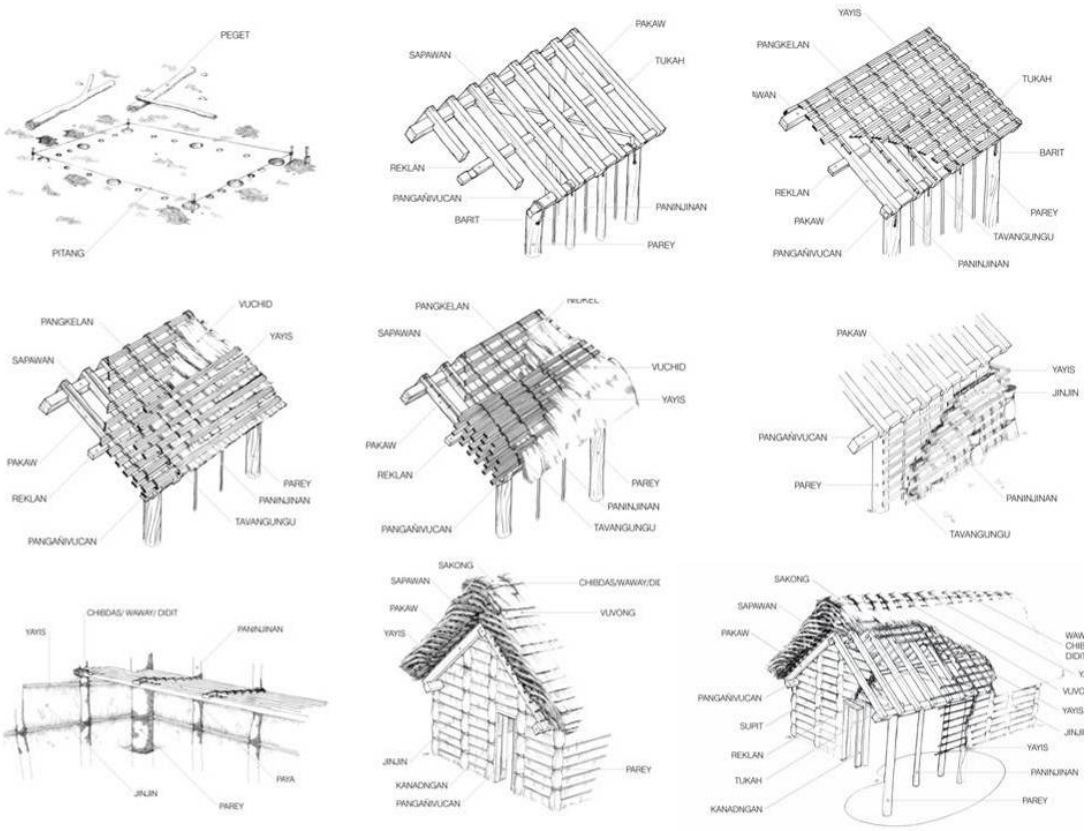

Fig. 38 Sample step-by-step diagrams of construction methods for a *Chivuvuhung* House

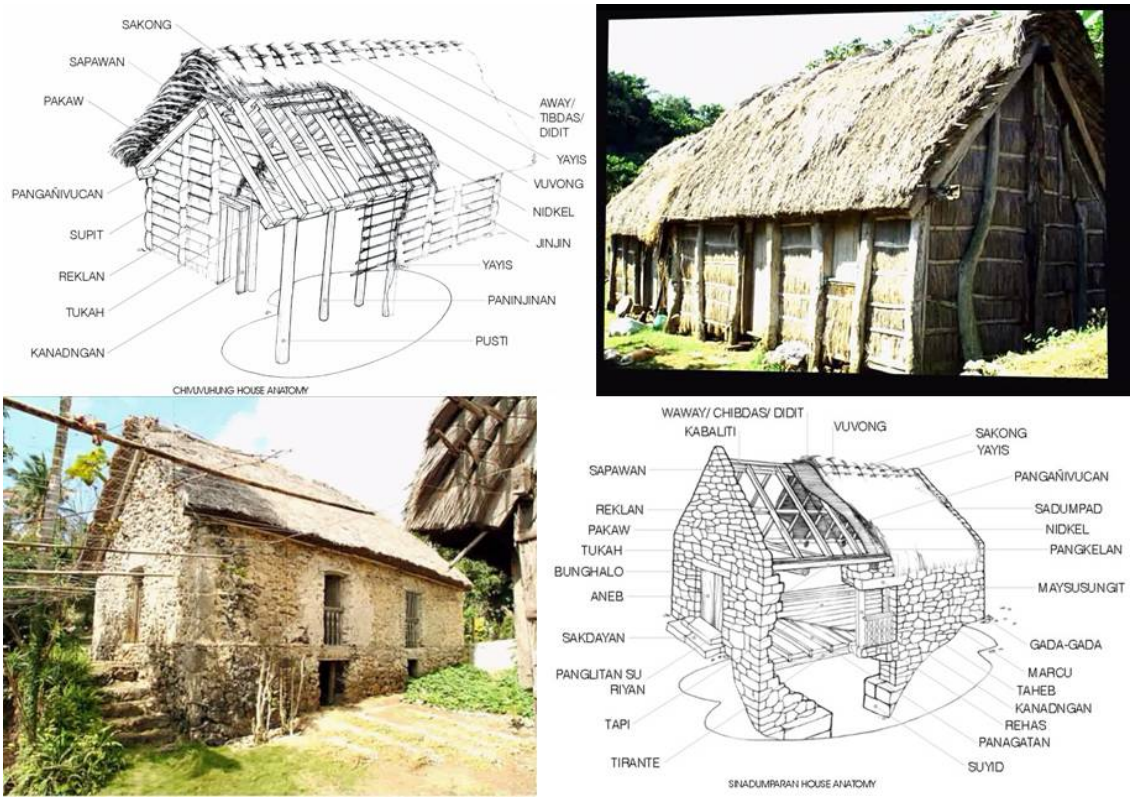

Fig. 39 Sample photo documentation and detailed diagrams showing House Anatomies

SAMPLE MAINTENANCE PROCEDURE IN RETROFITTING DAMAGED IVATAN HOUSES

1. Roof framing shall be temporarily supported by wood props, scaffolds or any indigenous shoring materials such as bamboo poles, coconut lumber or any narrow tree trunks

2. In order to protect the original flooring materials, the planks may be removed to allow all shored to rest on the natural grade material

3. All roof framing members must be totally supported whilst the load temporarily transferred to the scaffolds by using a jack

4. In laying out wood distribution beams, stones at the inner portion of walls may be temporarily removed to provide space for the distribution beams

5. As much as possible, the outer layer of removed stones must be replaced with appropriately sized stones of the same material as the original.

6. Replaced stones must be grouted along surfaces in contact with the new distribution beams before lime mortar mixture is poured.

7. The distribution beams must be anchored using lime mortar to provide maximum bond.

8. After seven days of curing time, supporting scaffolds for the roof frames may be removed.

SIMPLE MEASURES FOR SEISMIC UPGRADING OF THE TRADITIONAL IVATAN HOUSE [10]

The following measures are recommended to increase the structural resistance of traditional *Ivatan* houses during earthquakes:

- De-lamination of rubble stone masonry walls
- Repair displacement / detachment of stones at the corners of the walls
- Repair breakage of connecting portions between two adjacent shear walls (i.e. above or below openings such as windows, doors, etc)
- Replace damaged stone lintels
- Address overturning of upper portion of gable walls by correcting anchorage and inter-locking systems of distribution beams and roof trusses

In addition to the repair works, the following measures may be used to increase the shear resistance of the corners and to strengthen the buildings in general:

- Application of horizontal stitching techniques at the corners of damaged walls
- Vertical stitching to strengthen weak and narrow wall portions

[10] BECKH, MATTHIAS, ***Suggested Measures of the Seismic Upgrading of the Traditional Batanes House***

- Stiffening of the roof structures to brace the walls
- Corroded mortar joints in masonry structures (de-nurtured joints) should be re-injected with lime mortar of same consistency as the original mixture
- Cracks and fissures in masonry walls must be re-evaluated for poor stone laying techniques, the original construction layout must be re-established
- Strength and condition of lintels and of connections between walls, roofs and floors should re-establish the interlocking mechanism of original construction methods
- Wooden elements (hidden decayed parts & wet rot) must be kept dry at all times to prevent insect or termite infestation. Decayed parts should be replaced using original method of installation.
- Water tightness of the roofs must be practiced at all times. Poor performance to precipitation causes corrosion of lime mortar, increase in humidity and water retention on walls leads to fungi on walls. Good ventilation must be provided by opening windows and doors as often as possible.
- Replace iron nails with the wooden pegs observed in traditional construction to prevent corrosion and destabilization of roof system

CONCLUSION

Preventive Maintenance can serve as a primary guiding principle for conservation work in *Batanes*. This means most retention and least intervention. Minimal work must be done to alter the aesthetic, cultural, and structural qualities of a historic building.

Conservation and preservation efforts are still in process and more work is needed to address the goals set forth in this paper. Funding is a crucial factor in the conservation efforts. The balance between economic developments of a province versus the conservation of heritage architecture remains a major concern of local authorities. It is hoped that tourism can bring in additional revenues for the province to sustain their day to day needs. However, the due to the large number of heritage structures, the work overwhelms the local government.

As an intermediate measure, maintenance can be made into a process by which a house is kept to its working condition to guarantee its livability. Based on careful studies of the existing conditions, this can be executed in a systematic way. Old structures reach the point of being altered much when maintenance is not implemented regularly, is not performed properly, or is not done at all. The standard of implementation depends on good education campaigns, addressing the degree of decay as well as preventing their frequency of occurrence. Hence, preventive maintenance, if executed periodically ensures preservation and further deterioration of the historic houses of *Batanes*.

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Provincial Government of Batanes

Batanes Heritage Foundation Inc.

University of the Philippines College of Architecture Foundation for the Built Environment

UPCA Environmental Architecture Laboratory

National Commission for Culture and the Arts

National Commission for Indigenous Peoples - Batanes