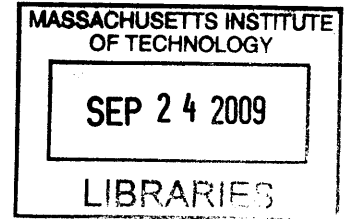


**Historic Districts as an alternative approach to preserve the Bhutanese
Architectural Heritage.**

By

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Bachelors in Architecture
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Submitted to the Department of Urban Studies and Planning
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Master in City Planning

at the

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September 2009

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To,

My Love - Sonam Leki Dorji

For always believing in me.

Historic Districts as an alternative approach to preserve the Bhutanese Architectural Heritage.

By

Sonam Gayleg

Abstract

Conservation practice in Bhutan is based on two sets of guidelines. One, the Traditional Architectural guidelines that illustrates the entitlement of different architectural features based on the type of building. The other guideline is the Bhutan Building Rules that makes it compulsory to incorporate certain traditional architectural features in all other construction. Although these guidelines have succeeded in preserving the historic structures individually, through the piecemeal approach, it lacks the holistic approach to conservation that takes the neighborhood fabric into consideration which is an important component of vernacular Bhutanese Architecture. This thesis is an attempt to come up with an alternative approach to conservation practices in Bhutan, the holistic approach which is the adaptation of the Historic district concept to better achieve the conservation objective. I analyze the conservation practices in the United States by specifically looking at two historic districts – Beacon Hill in Boston and Charleston in South Carolina. Based on the analysis, my recommendations for the alternative approach to conservation in Bhutan – the Historic district concept includes a set of design guidelines applicable within the historic districts while also looking at ways to make the historic district sustainable economically.

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1.

Introduction

Bhutan today faces a constant challenge of striking a balance between preserving its unique culture and at the same time embracing modern civilization. With an unconventional development philosophy that emphasizes “gross national happiness¹” vs. gross domestic product, Bhutan has considered its unique culture an integral component of achieving this goal. Traditional architecture, then as a tangible reflection of this culture, has received much attention in policy regarding the preservation of the Bhutanese culture. As part of its preservation efforts, the Royal Government of Bhutan has established the Conservation Division under the Ministry of Culture to undertake conservation projects, consisting mostly of Dzongs (see section 2.1) and monasteries, and has also put in place a set of traditional architectural guidelines that require certain features to be incorporated in every building irrespective of its uses.

Although the government’s effort to preserve the traditional architecture is noteworthy, there has been a disconnect between this vision and the policy guidelines that neglect the holistic approach to vernacular design that values form and context developed over centuries. Conservation practice in Bhutan consists of the preservation of Dzongs and monasteries in its earlier grandeur and the inclusion of traditional features in all new constructions. Both these practices undertake a piecemeal approach considering the structures individually and neglecting the surrounding neighborhood fabric which is an important component of Vernacular Bhutanese Architecture. Further, the Traditional Architectural Guidelines used for new construction address

1. Gross National Happiness is Bhutan’s development philosophy that serves as the vision for economic and development plans for the country. This model is based on the premise that holistic development of a human society includes both material and spiritual growth. The main pillars of GNH are 1) Socio economic development, 2) Preservation of culture, 3) conservation of environment and 4) good governance...

traditional design only at the façade level and does not consciously consider the evolution in culture and hence the changing spatial needs of the society today. This thesis suggests an alternative approach to conservation practices in Bhutan, one that addresses the conservation objective of preserving the traditional Bhutanese architecture while also acknowledging the need for readapting culture and architecture which are constantly evolving to reflect the current societal needs.

I explore the concept of Historic Districts as an alternative holistic approach to preserve the traditional architecture in Bhutan. To this end, I analyze holistic conservation practices in the United States through the Historic Districts of Beacon Hill in Boston and Charleston in South Carolina and look for possible lessons that may apply to the Bhutanese context. This thesis recommends the implementation of the historic districts in Bhutan as part of its conservation efforts, drafting a set of holistic design guidelines for these districts that takes into consideration not just the individual structures but the whole village fabric.

My recommendations also include adaptive reuse and private investment within the proposed historic districts to ensure a degree of economic sustainability by engaging the private sector. The implementation of historic districts, with strict guidelines within the indentified area, will allow for more flexibility in design guidelines outside of the historic districts. Therefore, this will help facilitate the re-adaptation of current policy to reflect the evolution in culture and its reflection in the built environment. The proposed research unit and architectural education within the Ministry of Works and Human Settlement will further complement the effort of readapting traditional architecture to current construction practices and act as resource of implementable design solutions.

Chapter 2 briefly provides a background in Traditional Bhutanese Architecture and Chapter 3, analyzes the conservation practices in Bhutan and the US, focusing on possible lessons that may be applicable to the Bhutanese context. Finally, Chapter 4 outlines the principle recommendations.

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2.

Traditional Bhutanese Architecture

The origin of Bhutanese Vernacular Architecture goes back to Tibet² but as it arrived into Bhutan, the difference in the climatic conditions and the availability of timber gave rise to a unique architecture in which timber plays a major role. The plentiful supply of timber contributed towards the unique timber details and features, which form an important component of vernacular Bhutanese architecture. In addition, the different climatic conditions also led to the development of unique Bhutanese features, for example the abundant rainfall in Bhutan compared to the dryer conditions in Tibet, brought in the need for sloping roofs. And so from its roots in Tibetan architecture,



Figure 1: Punakha Dzong (Photo: Yeshey Wangdi)



Figure 2: Traditional Bhutanese Houses (Photo: Yeshey Wangdi)

2. Based on the fact that most Dzongs in Bhutan were built by Zhabdrung Ngawang namgyal, a great tibetan saint who came to Bhutan in 1616 and unified the country.

Bhutanese architecture developed its own unique identity as both natural and cultural influences shaped what we now refer to as traditional Bhutanese architecture. Although oral tradition exists, there is not much recorded documentation on traditional design in Bhutan, the Dzongs, (See figure 1) and monasteries scattered all over the country today stand as striking examples of a strong vernacular architecture. These structures capture all that is considered central and unique to traditional Bhutanese design.

Dzongs have been regarded as a major architectural trendsetter in Bhutan. Some examples of Dzong architecture include the Domkhar Palace³ (1937) (see figure 3) in Chumey Valley and Kuenga Rabten⁴ (1937) (see figure 4) in Trongsa. (Amundsen 1999). Dzongs are still used as an inspiration for design, as seen in the design of the new National Assembly building built opposite the Trashichhodzong⁵ (1641) (see fig. 7) in Thimphu in the 1990's.



Figure 3: Domkhar Palace
www.dzongkhag.gov.bt/bumthang/pictures.php



Figure 4: Kuenga Rabten Palace
www.bhutantour.bt/.../palaces-of-bhutan.html



Figure 5: University of Texas at El Paso, United States
www.stateuniversity.com/universities/TX/The_U..

Even outside Bhutan, the architecture of the University of Texas at El Paso (see fig. 5) is a rare example of the adaptation of the Dzong Architecture. (Yangki 2008) While every building has a unique architectural feature, the Dzong architecture encompasses most of the features incorporated in all types of buildings. Therefore outlined below is the discussion on Dzongs and its architectural features.

3 Summer Palace of the 2nd king of Bhutan, Jigmi Wangchuck

4 Winter Palace of the 2nd king of Bhutan, Jigme Wangchuck

5 This is the central Administrative and religious seat of the capital, Thimphu, and hence the country

2.1 Dzong

Dzong is a massive architectural structure comprising two main elements: a monastery and a fort and is an important form of religious architecture in Bhutan. The word Dzong, in Bhutan's official language Dzongkha, is understood to mean a core sanctuary of refuge and protection against negative energies. The architecture of a Dzong, with its functions as both monastery and security stronghold, is a very tangible representation of this idea. (Yangki 2008) Most of the Dzongs were built in the 17th century under the leadership of Zhabdrung Ngawang Namgyal⁶ who is one of the most important historical figures in the country. He is believed to have revived the Dzong system in Bhutan and gave it a unique character from those found in other Himalayan Buddhist states. Today dzongs in Bhutan are large complexes that house the dual system of government (religious and civil) or the Choe sid zung drel⁷ where the Civil Leader and the Chief Abbot (Je Khenpo⁸) are accorded equal status.(Amundsen 1999) Each district in the country has its own Dzong that houses the religious and the administrative seat of the district.



Figure 6: Paro Dzong (Photo: Yeshey Wangdi)



Figure 7: Tashichho Dzong, Thimphu valley. (Photo: Yeshey Wangdi)

6. Zhabdrung literally means 'at whose feet one bows.'

7. Choe sid zung drel means the dual system of government - coalition of religion and administration

8. Je Khenpo is the religious head of the country

2.1.1 Layout

Although no original plan of any of the Dzong exists, it appears that they were built according to a common arrangement with regional variations. The plan of the Dzong complex is often square or rectangular in shape. It consists of thick stone masonry walls with habitable structure that runs around the periphery enclosing an elevated courtyard (see fig. 8&9) in the center which is paved with large flat stone slabs. At the center of the courtyard is a prominent tower usually the tallest structure within the Dzong complex called the utse that has a square base with a tapering top. Today, it is residence to senior monks and houses some of the more important relics of the dzong.

The vertical architectural order in size and decoration serves the purpose of both defense and aesthetics (RGOB 1993). The windows at the lower level are small and modest with a sober wooden frame set into the heavy stonewalls. The windows on the upper levels, on the other hand, are larger and more ornate and become an important element of architectural aesthetics of a dzong.

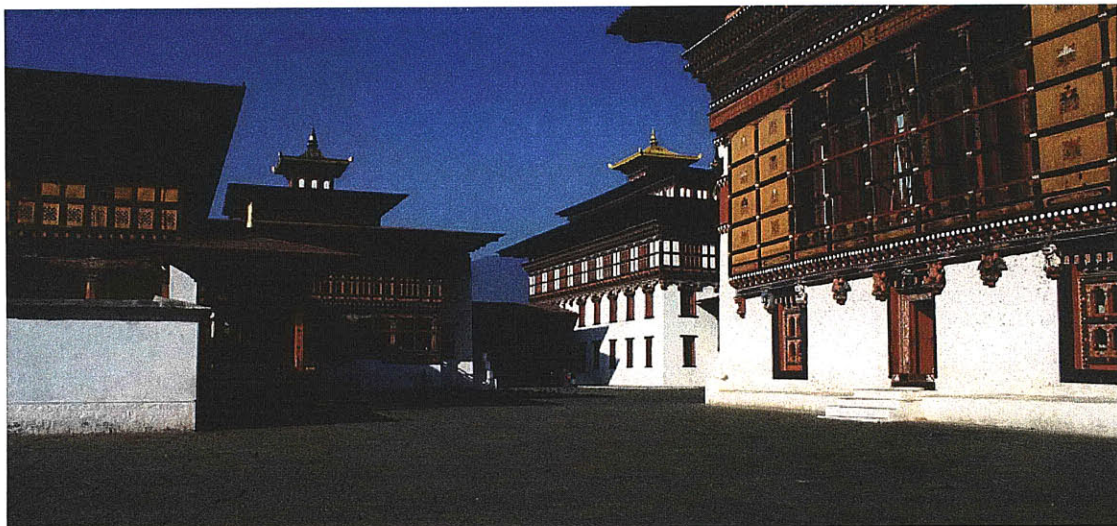


Figure 8: Courtyard within Tashichhodzong (Photo: Yeshey Wangdi)

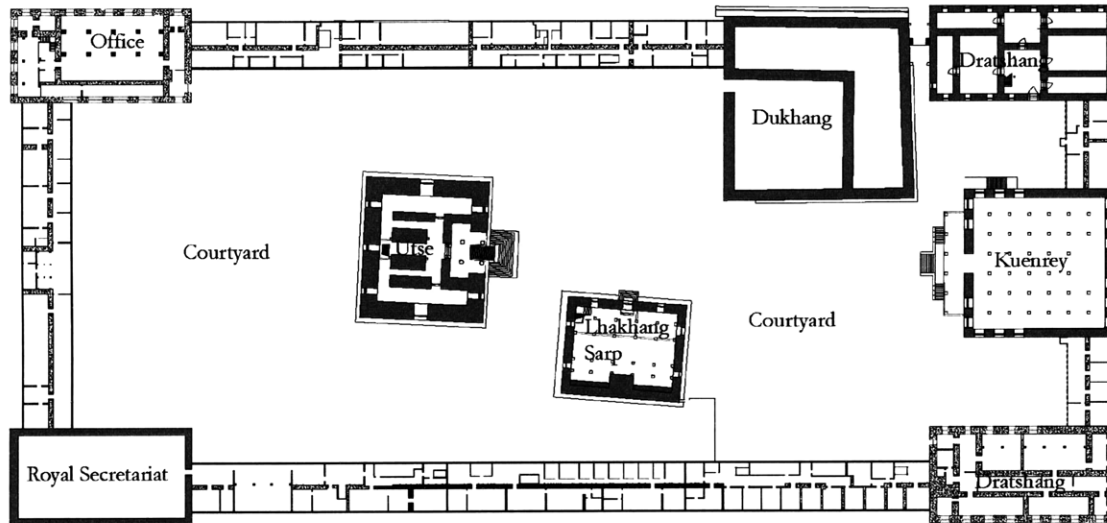


Figure 9: Plan of Tashichhodzong (Drawing: Department of Culture, Thimphu)

According to Amundsen (2001) the architectural layout of different spaces within the Dzong follows the layout of the mandala (see fig. 17), the Buddhist cosmological model. The mandala consists of an elaborate design of concentric and diametric arrangements of spaces revolving around the center that is deemed to have the power to unite and harmonize. These core principles of the mandala, which is considered sacred, are applied to the architectural layout of the dzong making the spaces powerful and sacred with the utse that holds the most precious relics of the dzong as the center of the layout.

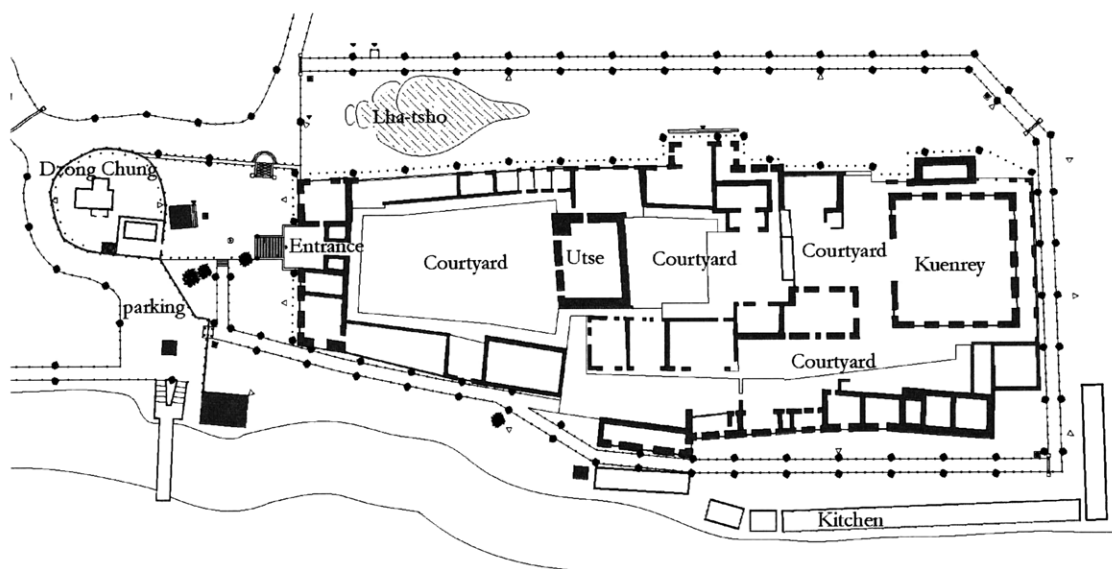


Figure 10: Plan of Punakha Dzong (Drawing: Department of Culture, Thimphu)

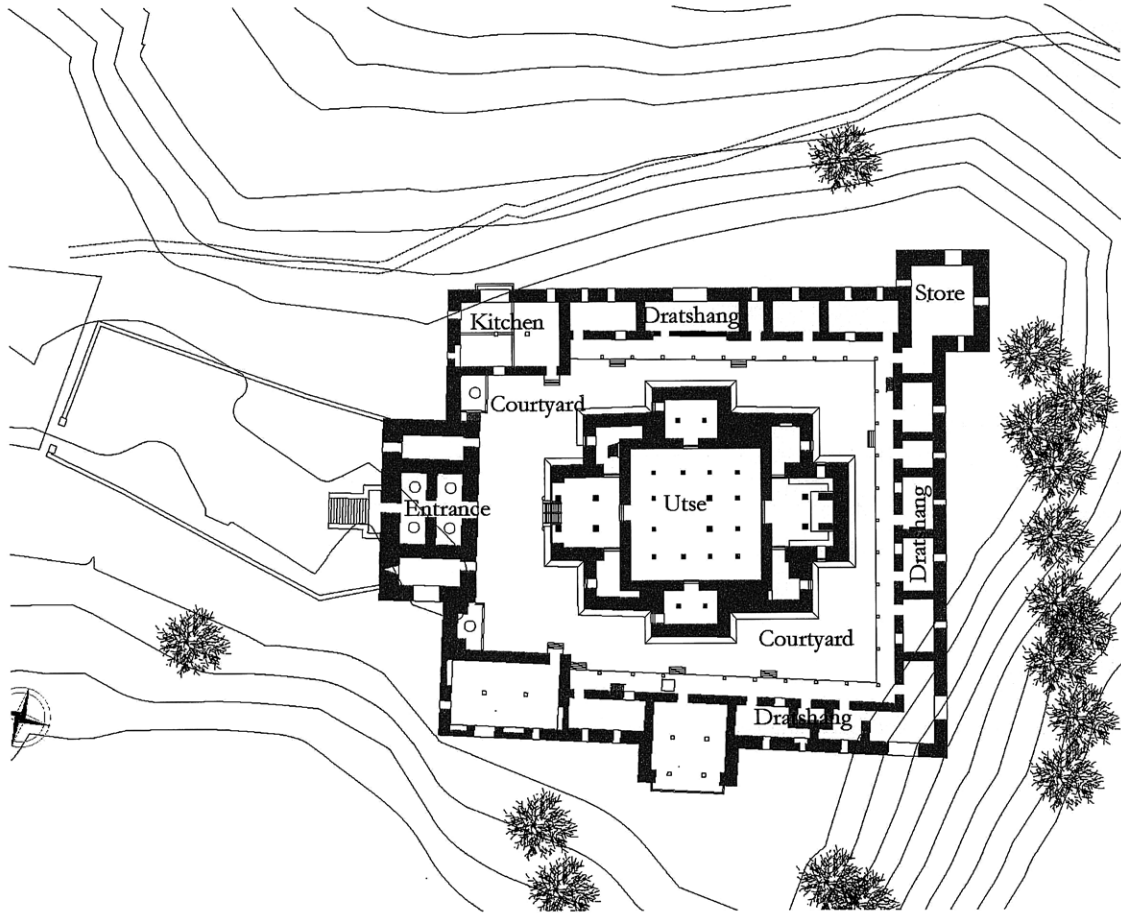


Figure 11: Plan of Simtokha Dzong (Drawing: Department of Culture, Thimphu)

The concept of a mandala has also influenced not only the spatial characteristics of the dzong but also the growth of settlements in Bhutan. Therefore, Bhutanese architecture, not only includes the structures individually but also the neighborhood fabric that holistically ties different structures together. In the following section, I analyze the relationship of the different historical buildings with one another at different scales and also describe the traditional Bhutanese Architectural features.

2.2 Contextual Study

The essence of Bhutanese Architecture lies not only in the architectural features but also in the symbolic relationship of different spaces and historic structures. The contextual study of the correlation of different historical structures and architectural spaces is discussed in the following paragraphs at three different scales – regional, city and local - focusing on the dzong and the structures around it.

2.2.1 Regional Scale

Dzongs and Chortens⁹ (Stupas)(see fig. 12 & 14) play an important role in the lives of the Bhutanese people. It not only has religious significance but also symbolizes the spatial order of the Bhutanese architecture. In addition to their religious property, chortens were also used as route markers, both visual and symbolic, usually placed along important routes during earlier times. They were placed on prominent sites, either on hills or on valleys along important routes in the country. One such route that existed in the earlier times before road network was established was the Chorten Lam (Chorten path) (see fig. 13) or the east-west caravan route that started from the eastern part of Bhutan to the west. (BAUSA, Thimphu) The route connected all the important dzongs and monasteries within the country and was frequented by travelers and pilgrims. This east-west caravan path was the only national route used by the Bhutanese people in the earlier times and as such has a very important historical significance. Most of these chortens along the route still exist today either in ruins or in restored condition.



Figure 12: Chendebji Chorten (Part of the Chorten Lam)

9. Chortens are stupas or type of pagodas usually built to commemorate important personalities and religious leaders or built to ward off evil influences from strategic locations like mountain tops, confluence of rivers and roads.

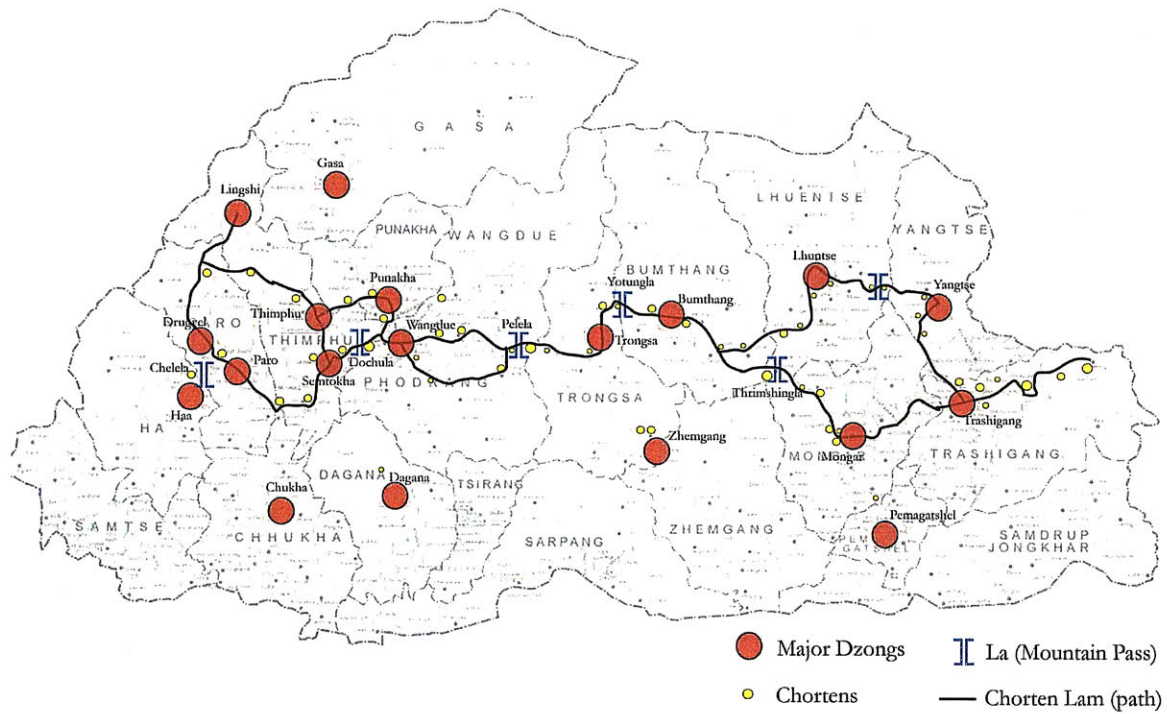


Figure 13: East-West ancient route (chorten lam) connecting all the important dzongs across the country. (reference: BAUSA, Thimphu)



Figure 14: Different types of Chorten in Bhutan (Photo: Erwin)

2.2.2 City Scale

At the city level, the physical arrangement of important historical structures within the valley and hilltops form an interesting relationship with the Dzong. The Trashichhodzong in Thimphu forms a central part of the visual corridor starting from the entry point in the south where Simtokha Dzong (see fig. 11) is located to the Pangrizampa Lhakhang (monastery) in the north. This set of visual corridors that intersect important historical structures in Thimphu valley highlights the essence of urban fabric in city planning. Therefore, it is critical to capitalize on these visual corridors in planning a traditional city such as Thimphu.

The sense of center and sphere of influence is a significant contextual principle of traditional Bhutanese architecture (BAUSA). For illustration, the earliest settlements of Kawangsa, Langjophakha, Hejo, Zhilukha and Jungshina in Thimphu are located around the Dzong. (see fig. 18) The centralized location of the Dzong itself possibly also derives its analogy from that of a mandala with concentric and diametric arrangement of structures on all sides of the dzong.

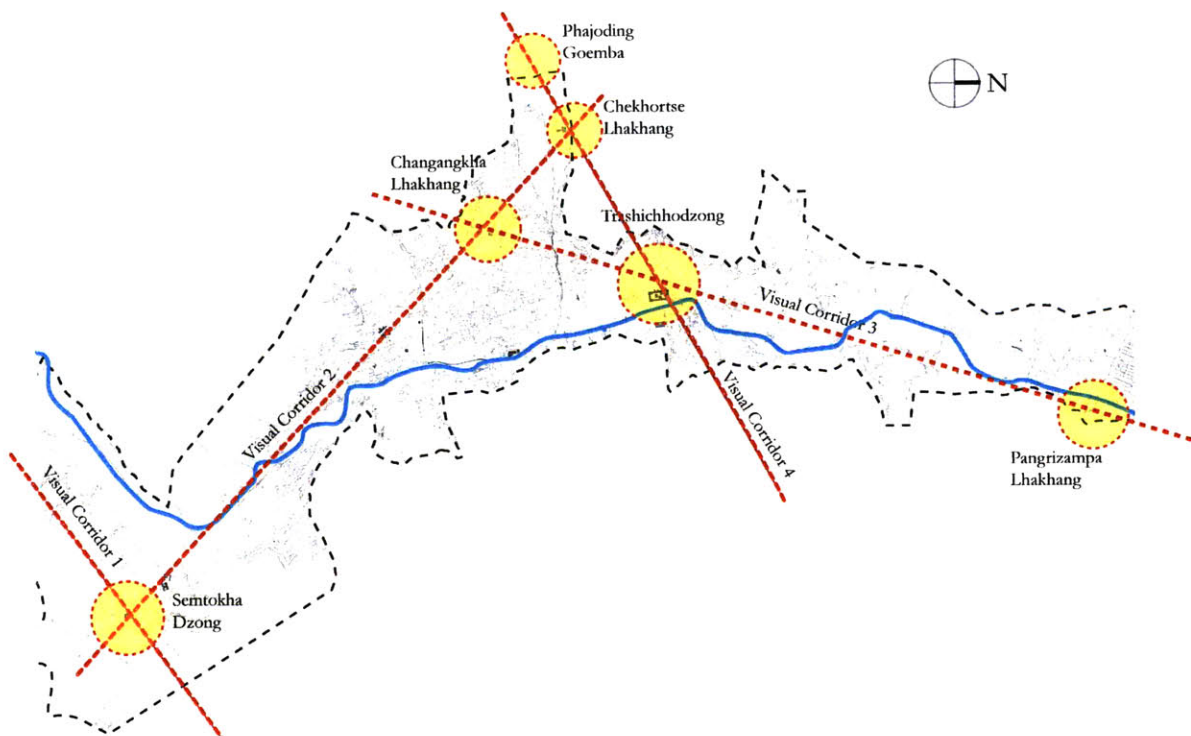


Figure 15: Thimphu valley – visual corridors connecting Trashichhodzong with the rest of the historical structures within the valley – both symbolically and visually (Reference: BAUSA, Thimphu)

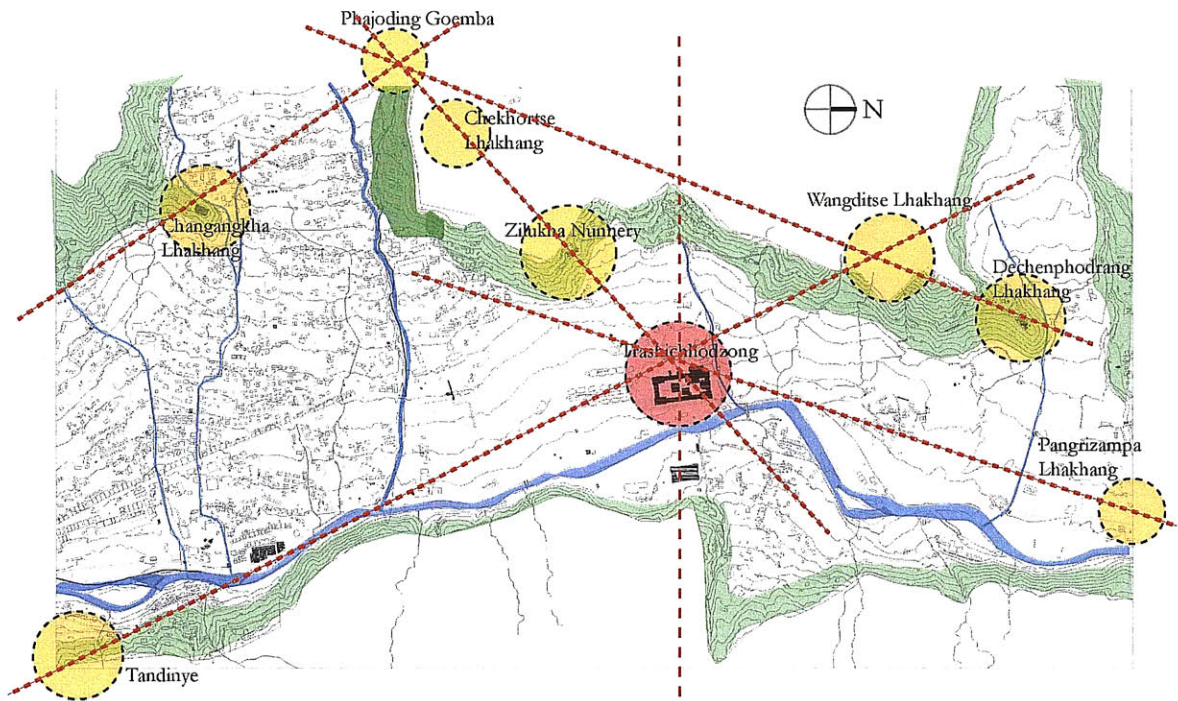


Figure 16: Trashichhodzong's relationship with the surrounding historical structures (analogy with the Mandala or the buddhist cosmological model)

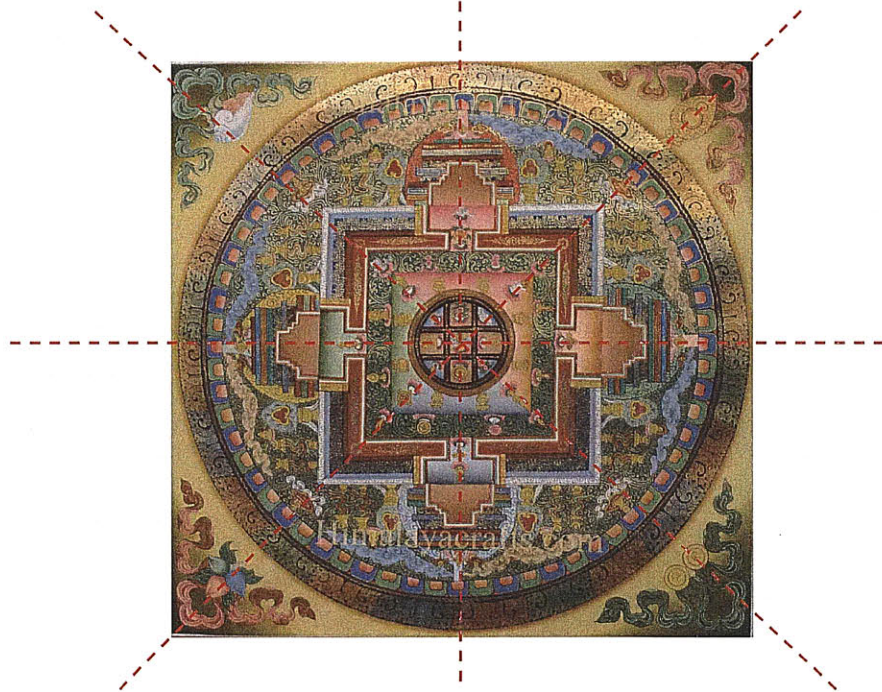


Figure 17: A type of Mandala (Buddhist Cosmological order) Source: www.thangkapaintings.info/.../mandala-paintings/

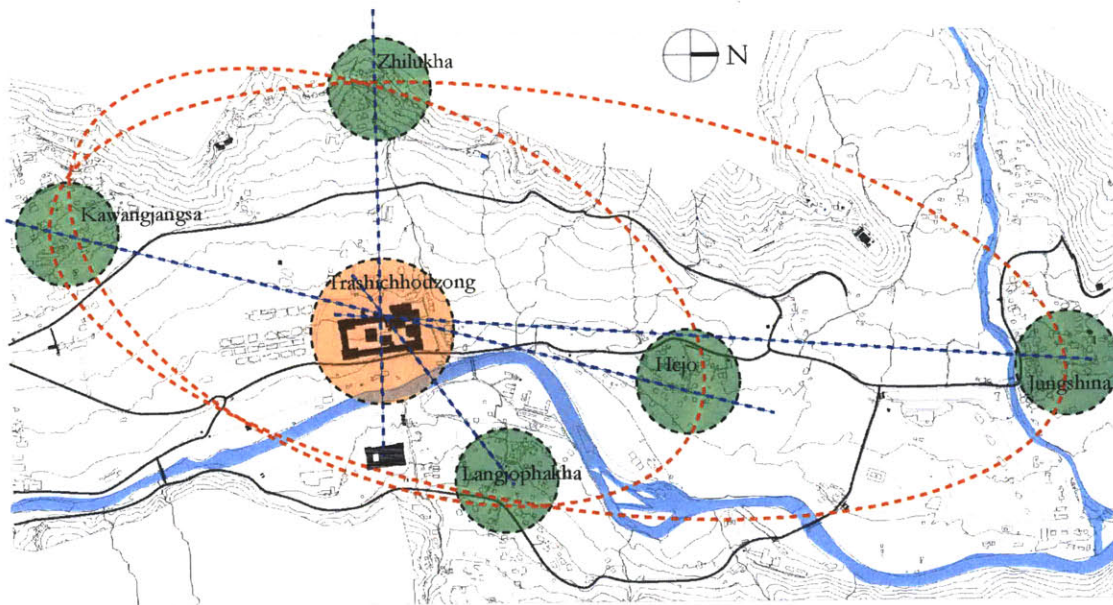


Figure 18: Trashichhodzong forms a focal point of the earliest settlements of the valley, Langjophakha, Hejo, Jungshina and Kawangangsa

Within the traditional villages themselves, the spatial order of settlement at the neighborhood level revolves around an important Dzong like structure such as a monastery. (see fig. 19, 20 & 21) Even within the Dzong, according to Amundsen (2001) the core principles of the mandala are applied to the architectural layout with the utse being the symbolic center.

These villages consisted of residential neighborhoods with mostly traditional houses until about a decade ago when people began to replace many of the old traditional structures with new concrete buildings. Presently it consists of a mix of concrete buildings and traditional houses.

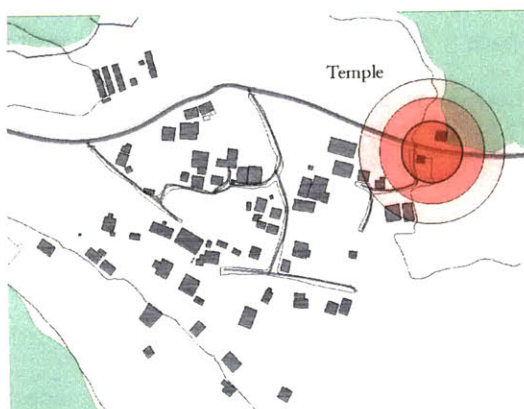


Figure 19: Hejo traditional village

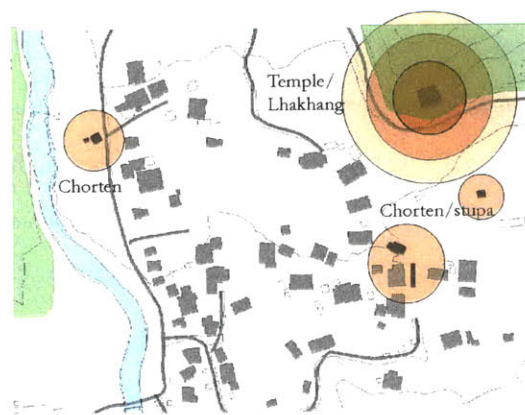


Figure 20: Jungshina traditional village

These traditional villages cluster around important monasteries and temples

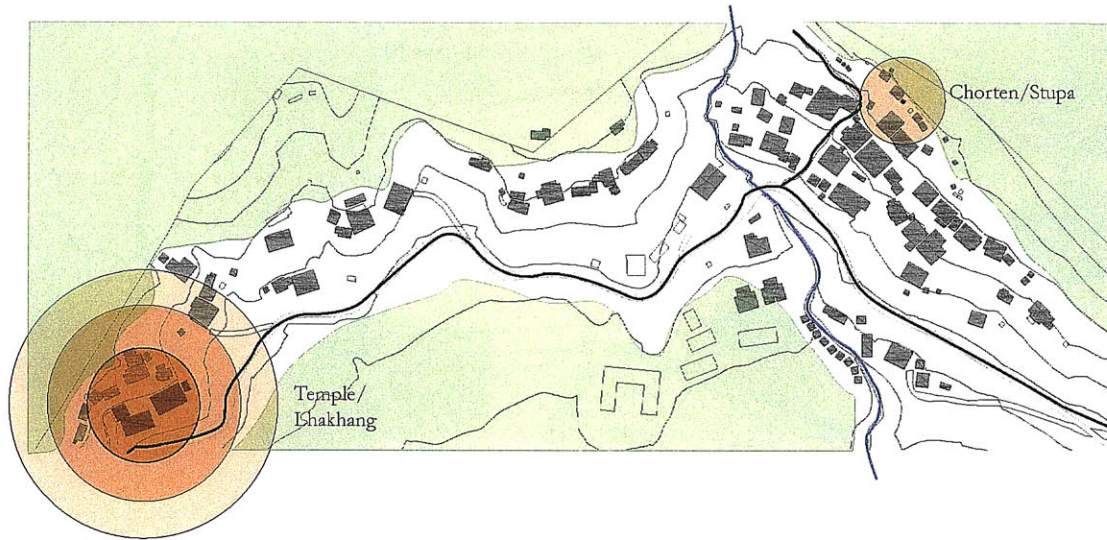


Figure 21: Zhilukha traditional village. (Source: Base map - MOWHS, Thimphu)

2.2.3 Local Scale

In addition to being a part of the urban fabric at the larger scale, Trashichhodzong forms an axial linkage with all other historical structures in nearby areas at a more intimate scale. The north-south axis through the Trashichhodzong connects Dechenphodrang Lhakhang¹⁰ in the North and Simtokha Dzong in the south. (see fig. 22) The three Tabap chortens (stupas) surrounding the Dzong are structures of symbolic as well as religious importance. These chortens were part of the overall system of markers placed along the important routes in the earlier times. Specifically Tabap chortens were used to demarcate the entry into sacred space of the Dzong precinct. Tabap means to dismount the horse (ta – horse, bap – dismount). These chortens (stupas) marked the entry point of the dzong precinct where the travelers and officials were to dismount their horses and proceed on foot to the dzong. Only rulers could past ride the chorten to the dzong. (MOWHS) Other types of chortens like maniwalls and mani-dungkhors (see fig. 22) are also located near the Dzong and are part of the historical Chorten Lam. The Dzong, therefore has a very special relationship with many historical structures within the valley. Hence, in understanding the essence of Bhutanese architecture, it is critical to include the larger context of the neighborhood fabric in addition to the individual structures.

10. A monastery in the northern part of “Trashichhodzong” which also houses the monk body

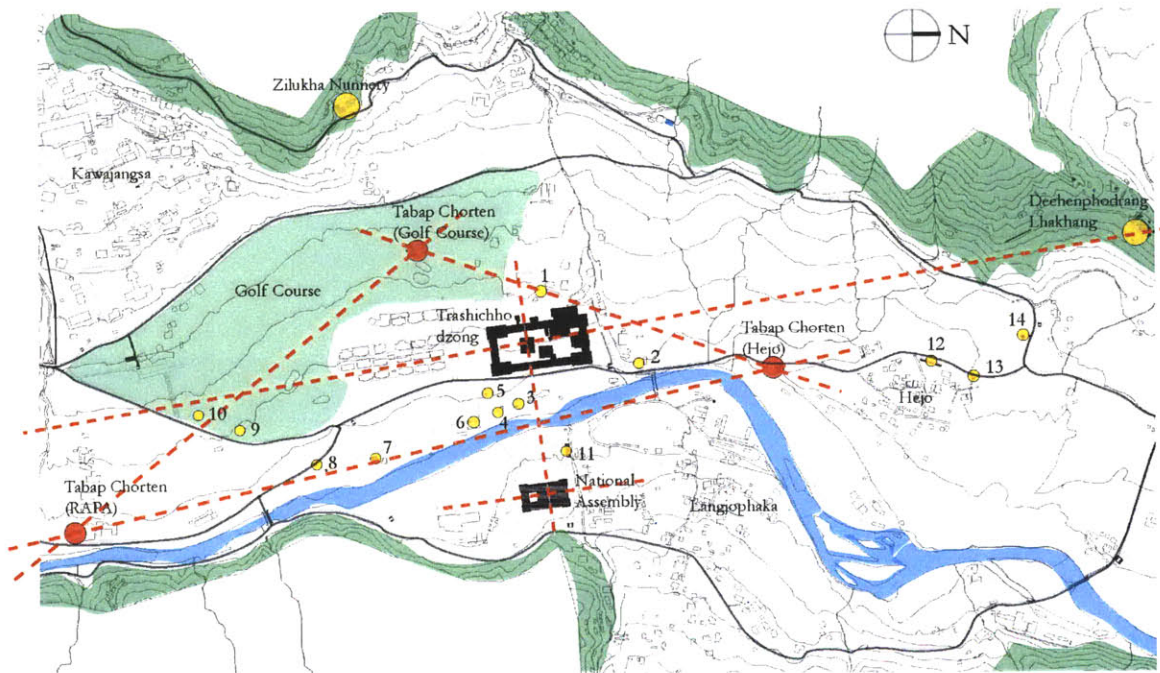


Mani-walls



Mani-Dungkhor

Different types of chortens



Legend

- | | | |
|--------------------------------------|---------------------------------|--------------------------------------|
| 1 Neykhang (Thimphu Deity) | 6 Royal Cottage | 11 Prayer Wheels (National Assembly) |
| 2 Sona Gyelkha | 7 Mabja Chorten (Royal Cottage) | 12 Mani Wall (Hejo) |
| 3 Twin Chortens near Royal cottage | 8 Bjangchub Chorten | 13 Hejo Dhungkhor |
| 4 Royal Kitchen | 9 Chorten (Golf Course) | 14 Chorten (Hejo) |
| 5 Loo-Khang Chortens (Royal Cottage) | 10 Chorten (Golf Course) | |

Figure 22: Thimphu Dzong Precinct: The relationship of the Dzong with the surrounding historical structures. (reference: BAUSA, Thimphu)

2.3 Architectural Features

2.3.1 Roof

The roof features and its elements signify hierarchical order and one's status in the society. Traditionally wooden shingles were used as roofing materials with stone boulders to hold the timber shingles in place. Roofing elements like sertog and gyaltshen signify the status of the building in the society and are permissible on Dzongs, Royal Palaces, Monasteries and Institutional buildings.

Types of Roofs:

a. Gable Roof: (see fig: 23)

This is a standard traditional roofing method which is most suitable for timber shingles over other roofing materials.

b. Hip Roof:

This is a new form of roofing method similar to gable roof but with slopes on all four sides and a hip at the ridge. This is suitable for roofing materials like corrugated sheet and roofing tiles and is permissible on all types of buildings.

c. Lean to Roofs: (see fig: 24)

This type of roofing structure is usually built at the gable end to protect the timber members from rain.



Figure 23: Gable roof

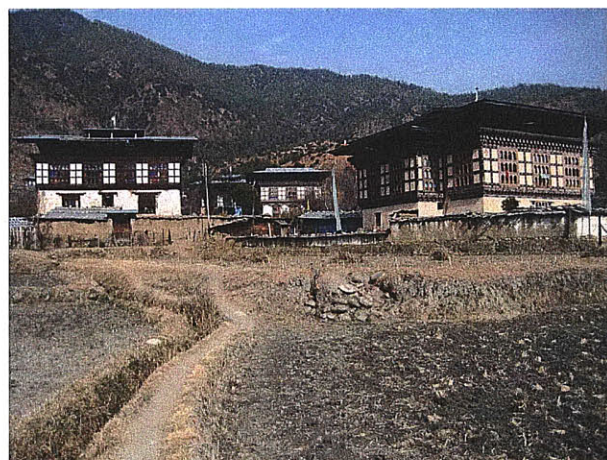


Figure 24: Lean to roofs

2.3.2 Rabsel

Rabsel is a timber structure constructed with a series of vertical and horizontal members usually found on the upper storeys of the traditional structures with symmetrical distribution of infill panels called ekra and window openings. The rabsel projects out of the superstructure and rests on the ground floor joists known as tsechukhanyim (Cantilevered joists) which consists of pedma and dhung (see fig. 25&26) The rabsel will always have cornices (phagna, bogh, choetseg, pedma and dhung – (see fig. 25&26) and can be continuous, covering the whole façade or can be broken into smaller units. Rabsel is usually lighter than any other structure and hence is usually found on the upper levels of a traditional building to reduce its structural load on the load bearing walls. The hierarchy and entitlement of these elements are significant in Traditional Bhutanese Architecture.

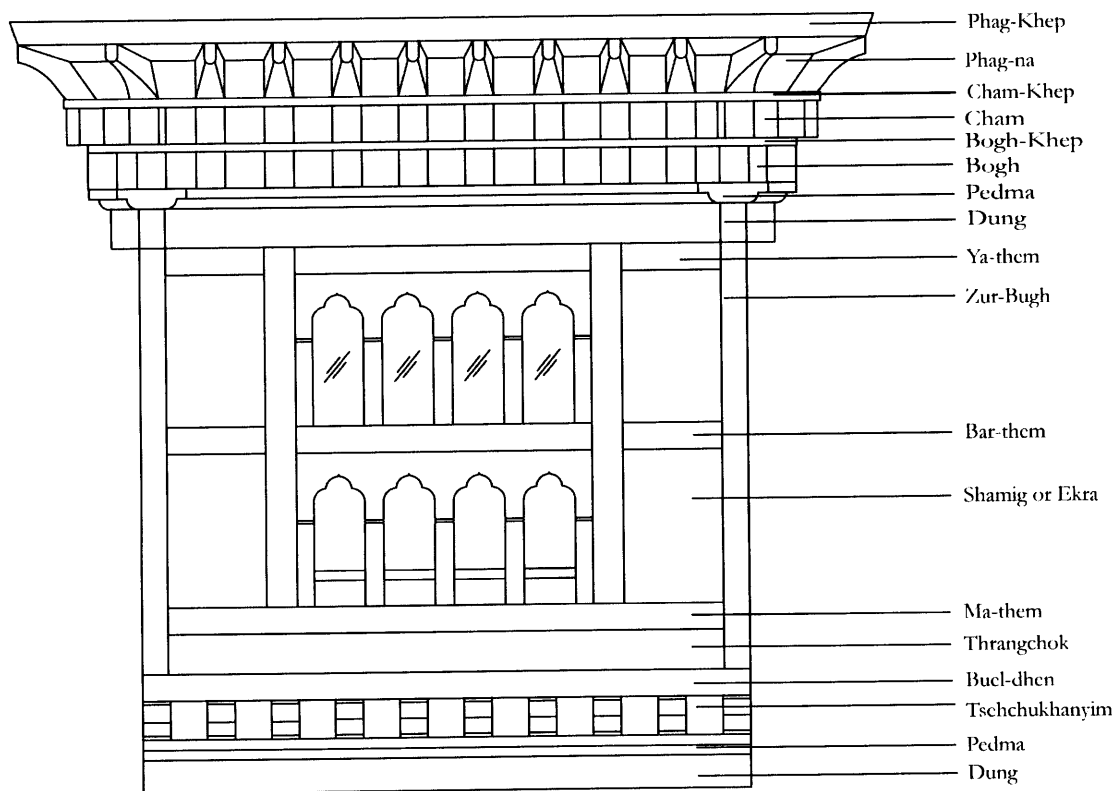


Figure 25: Rabsel detail. (Drawing: Department of Culture)

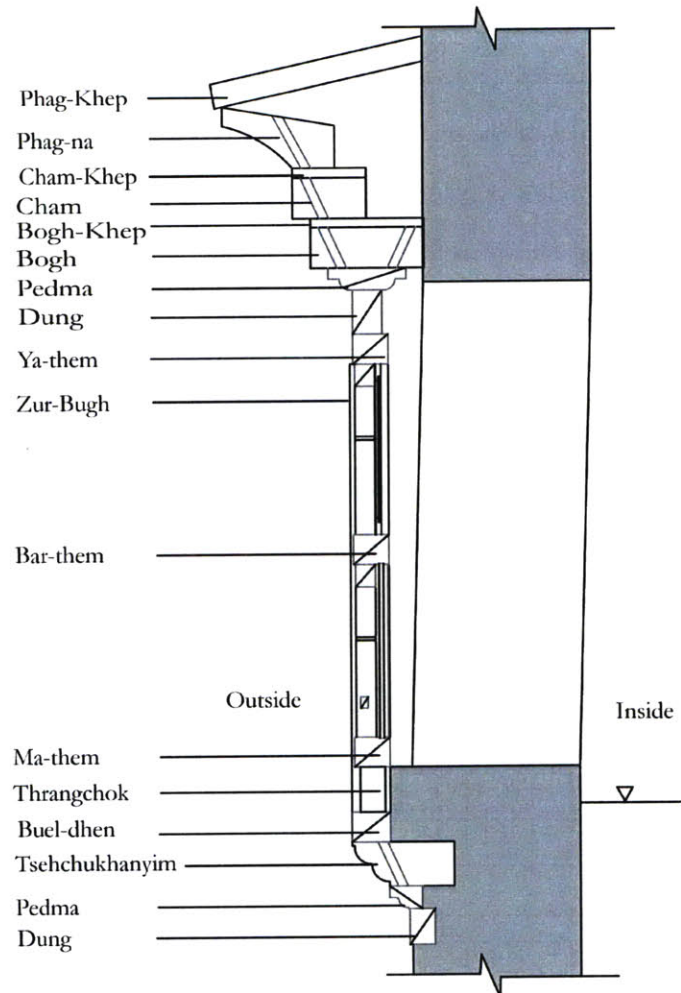


Figure 26: Section through the Rabsel. (Drawing: Department of Culture)

There are different types of rabsels based on the geography of the region and the height of the structure some of which are discussed below.

Parop Rabsel (See fig.27)

The rabsel is believed to be originated in the Paro valley. It has three layers of window openings and ekra infill panels that cover the whole façade at the upper level of the structure



Figure 27: Parop Rabsel

Rabsel Go-chham Thognyim (See fig.28)

This rabsel is similar to the Parop rabsel except that it has two layers of window openings and infill panels. This type of rabsel is more popularly used all over the country.



Figure 28: Go-chham Thognyim Rabsel

Lobur Rabsel (See fig.29)

This type consists of smaller units of rabsel that doesn't cover the entire façade of a building. The traditional details are similar to the other rabsels.



Figure 29: Lobur Rabsel

Drey-Zhu Rabsel (See fig.30)

This type of rabsel is supplemented by Drey-zhu, another traditional detail that increases the architectural richness by supporting the timber frame structure above.



Figure 30: Drey-Zhu Rabsel (Photo: Yeshey Wangdi)

Gomang Rabsel (See fig.31)

This rabsel has many layers of openings and is only seen in Dzongs and monasteries. The vertical and horizontal timber frames with infill panels and openings project out of the stone wall.



Figure 31: Gomang Rabsel (photo: BAUSA)

Nimchong Rabsel (See fig.32)

This rabsel literally means a sunroom and is an enclosed balcony either supported on tsechukhanyim (cantilevered joist) or on columns or built over the ground floor with cornices.

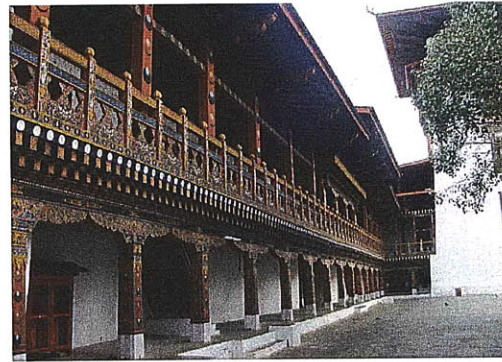


Figure 32: Nimchong Rabsel

Shamig (Ekra) (See fig.33)

This is the infill panel used in the rabsel originally built with mud plaster over a bamboo mat inserted between timber frames.

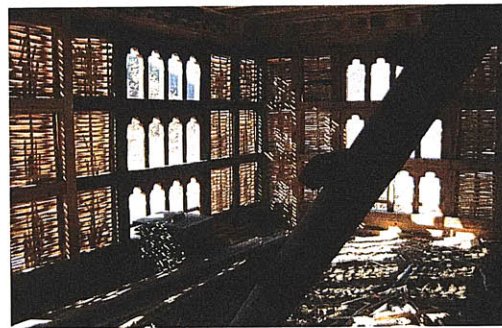


Figure 33: Ekra wall – (Bamboo frame)

2.3.3 Doors and Windows

Payab window (see fig. 34)

This type of window is normally used in the ground floor and embedded in the wall with few traditional components. It has Dhung, Pedma, Choetseg, Bogh and Zangshing on the main window frame or Zimchung and bogh with zangshing. (See fig. 26)

Payab windows are of two types: the horgo type (see fig. 30 & 31) with two layers of openings and the Boedgo type (see fig. 34) with one layer of opening.

Horzhing is the curved motif used at the head of the traditional window. (see fig. 34)



Figure 34: Payab Window (Boedgo type)

Geykar Window (see fig. 30)

These are tall rectangular windows embedded in the wall with or without cornices with zangshing or the wooden vertical planks at the sides. (See fig. 30)

The openings are narrow, tall and divided into two or more layers and are usually found in the lower part of the building. In a traditional building, the structural walls are usually rammed earth and stone masonry which are load bearing walls and hence the openings at the lower level are small and narrow.

Mago (Door) (see fig. 35)

This is the main entrance door of the building which has all the traditional details like Dhung, Pedma, Choetseg and bogh.



Figure 35: Mago or the main entrance door

2.2.4 Kachhen and Zhu (see fig. 36)

Kachhen is the timber column that is usually tapered with intricate carvings and zhu is the intermediate bow shaped timber bracket between the column and the beams above. The bracket shaped like a bow reduces the length of the beam to increase the load bearing capacity

2.2.5 Cornices (see fig. 25 & 26)

Cornices are intricate timber details consisting of Phagna khep, Phagna, Cham, Bogh, Choetseg, Pedma and Dhung. (Fig. 25 & 26) These cornices are usually a part of the rabsel and form an integral element of the Traditional Bhutanese Architecture. The cham or the joist that runs horizontally across the structure usually has a structural property to it as it supports the roof above in Traditional buildings.



Figure 36: Kachen (wooden columns)

Traditional Bhutanese Architecture is one of Bhutan's best expressions of its rich cultural heritage giving a unique identity to the country. Preservation of its traditional architecture is therefore an important aspect of the country's development philosophy or the Gross National Happiness (GNH) which is the guiding philosophy that drives the economic and development plan of the country. As a result, conservation of architectural heritage is an important initiative undertaken by the Royal Government of Bhutan. The following chapter discusses in detail the conservation practices in Bhutan.

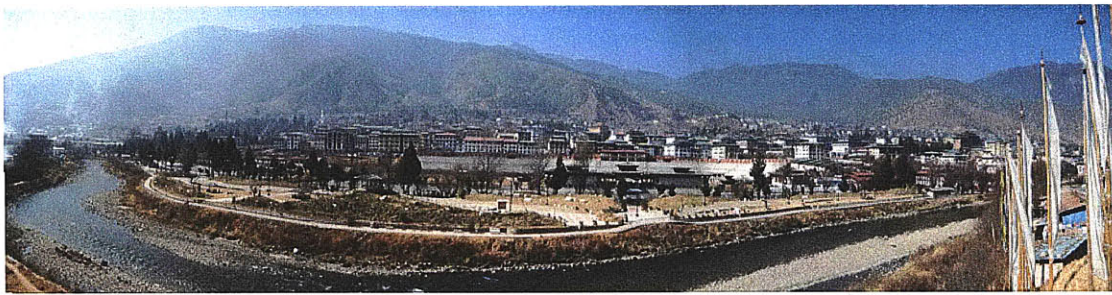


Figure 37: Thimphu Valley (Capital city of Bhutan)

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3.

An analysis of current conservation practices

Conservation practice in Bhutan focuses firstly, on the preservation of historical public buildings like Dzongs and monasteries in their ancient grandeur and secondly, the continuation of traditional architecture in new construction. As a result, two sets of guidelines exist, one for the preservation of architectural heritage, which strives to retain all features in their original form, and the second for the inclusion of traditional details in current structures. In both cases, the approach taken is a piecemeal approach, taking into consideration individual structures and disregarding the surrounding environment. There are two main drawbacks to the current means of conservation. While a piecemeal approach works well in preserving the architecturally rich Dzongs and monasteries themselves, it is not applicable in the conservation of the traditional village fabric, an important component of Bhutanese Vernacular Architecture. Additionally, the guidelines for current construction concentrate on replicating traditional details on the

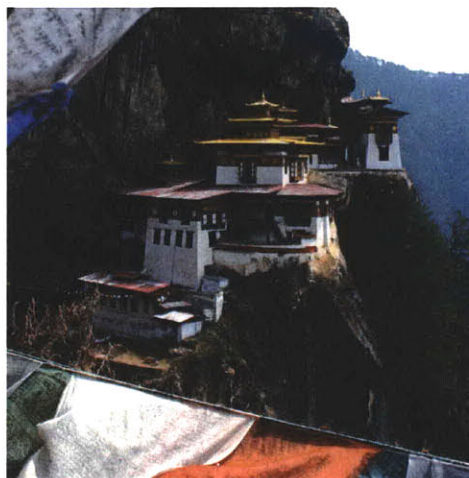


Figure 38 Taktshang Monastery (Tiger's Nest)
Reconstructed in its earlier grandeur in 2003 after it caught fire in 1999.



Figure 39. New Apartment Building (2009) with traditional architectural features incorporated

façade for every structure, irrespective of its uses. (see fig. 39 & 40) Requiring traditional details in their original form, without considering context or function, has often times led to a combination of low-grade construction with out-of-place details - a mockery of traditional form.

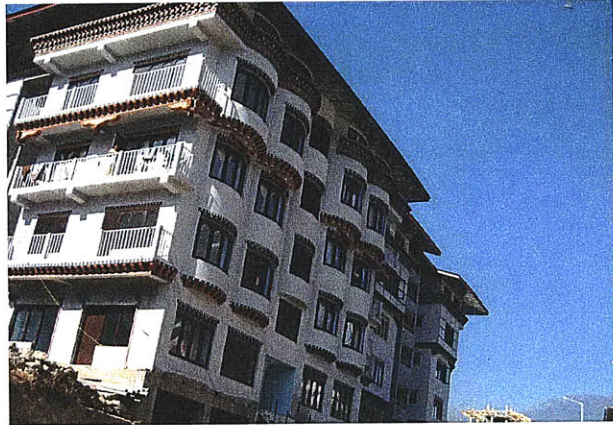


Figure 40 New Construction with traditional architectural features incorporated at the façade level

I analyze the current conservation practices in Bhutan related to historic architectural monuments (Dzongs and monasteries) and to current construction separately in sections 3.1.1 and 3.1.2 respectively. As an alternative to the piecemeal approach in Bhutan, I analyze the implementation of historic districts in the US with case studies based in Charleston, S.C, and Beacon Hill, MA. And finally I compare this approach, preservation through the implementation of historic districts, with the existing system in Bhutan.

3.1 Conservation Practices in Bhutan

Presented below are the analyses of the current approaches to conservation in Bhutan through the preservation of architectural heritage sites and through the incorporation of traditional design in all other construction. The main focus, however, is on the preservation of heritage sites.

3.1.1 Preservation of Architectural Heritage Sites in Bhutan

The preservation of architectural heritage sites in Bhutan is primarily the preservation of Dzongs, monasteries and other public buildings in their original forms. The central government today plays an important role in preserving Bhutan's rich traditional architecture. And while the process of preservation is centralized in its final decision on projects, the selection of potential projects are highly decentralized in an effort to focus on projects that also have symbolic value to the people. Further, the central government also takes an active role in nurturing the expertise required for traditional Bhutanese architecture through the establishment of a School of Arts and Crafts called the "Zorig Chusum"¹¹.

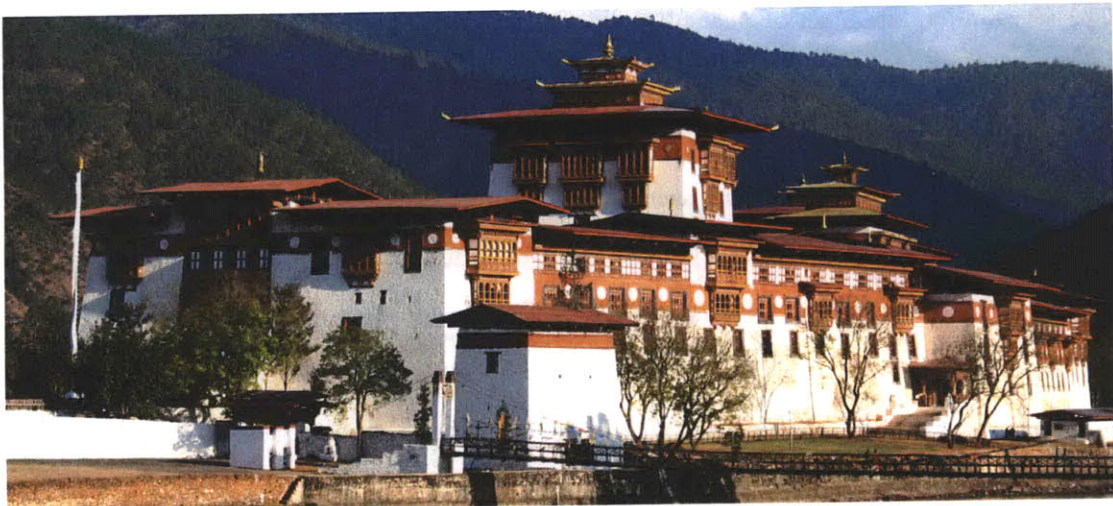


Figure 41 Punakha Dzong: Restored to its earlier grandeur after it caught fire in 1986 (Photo: Yeshey Wangdi)

11. Bhutan's thirteen traditional visual arts and crafts. these are painting, carving, sculpture, calligraphy, carpentry, gold/silversmithing, bamboo work, wood turning, weaving and embroidery, pottery, blacksmithing, masonry, and incense-stick making. This institute is also the national training center of the officers in the local government who are involved in the conservation project.

The central agency responsible for the conservation and development of Bhutan's cultural heritage is the Department of Culture under the Ministry of Home and Cultural Affairs. Within this department, the Division for Conservation of Heritage Sites (DCHS) oversees the conservation, promotion and development of the architectural heritage of Bhutan. The DCHS at the central government level is primarily involved in the formulation of policies and regulations for the protection of historical sites in the country. It also maintains an inventory of all historical sites within the country and approves and monitors projects concerning heritage sites and also provides technical expertise to the local government when required. It also implements and manages large scale conservation projects of national importance.

While the policies are framed by the central government, the implementation of these policies is the shared responsibility of the three tiers of the government - central, district and local. The approval process itself starts at the local level with the identification of potential projects to be preserved. These proposed projects, which are mostly public buildings such as monasteries, are then put forward to the Dzongkhag¹² (District) Office for further selection and approval through the DYT¹³ (Dzongkhag Yargye Tshogchung). Only projects that are privately funded and those considered critical by the central government can by-pass the local government and forwarded directly to the Dzongkhag Office. The final approval of all projects must however come from the DCHS. The selection criteria, a set of general qualitative criteria used by the DYT and the Dzongkhag Office prior to final approval from the DCHS, are presented in the table at the end of this section.

In addition to the selection and management of conservation projects, the central government also takes an active role in nurturing the expertise of local artisans. Local artisans, including carpenters and masons, who are specialized in the traditional craftsmanship do most of the conservation work in Bhutan. These skills are traditionally passed on through apprenticeship usually at a conservation or new construction site. With conservation being the primary area where these skills are used today, as new techniques take over current construction, the continuum in these professions are now becoming harder to achieve. Therefore the central government, in an effort to keep the skill sets of these professions alive, has institutionalized the study of these skills by establishing a School of Arts and Crafts ("Zorig Chusum").

12. Dzongkhag is the Bhutanese term referring to district equivalent to a state in the United States.

13. DYT is the district development committee which consists of representatives from the villages and the district. The chairperson is elected by the members themselves. DYT also have non voting members who are civil servants within the district.

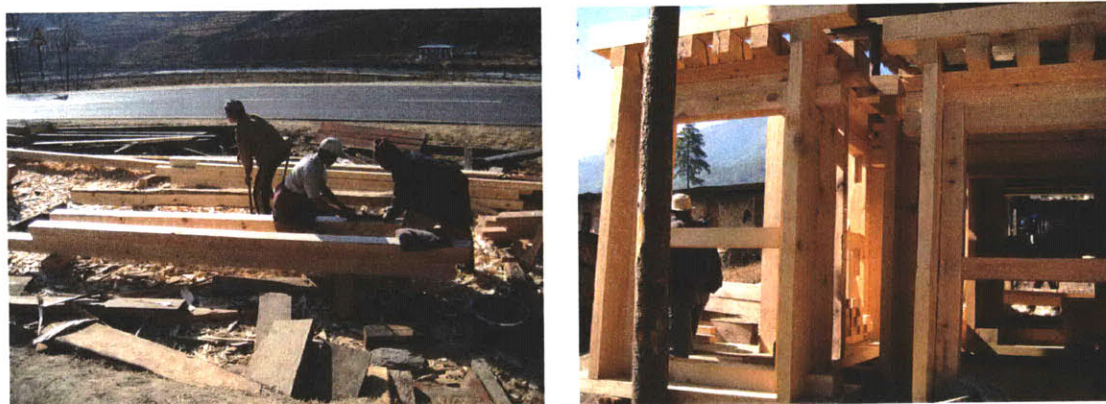


Figure 42 Carpenters working on traditional timber details for conservation works

Table 1: Selection Criteria for listing historic structures (DYT and the Dzongkhag Office)

| Criteria | Description |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rarity Value | A structure which is unique compared to structures from the same time period, region and of the same type is considered rare and eligible for conservation. |
| Identity Value | A structure which relates to the emotional ties of society with respect to sentiments, spiritual, religious, political and symbolism is considered for listing. |
| Political or Historical Value | A structure which is related to specific events in the history of the heritage resources with respect to its region or country is considered for listing. |
| Relative Artistic or Technical Value | A structure with technical importance in terms of its structural character and artistic workmanship is considered for listing. |
| Social Value | Any structure that facilitates social values or interaction in the community by its spatial and architectural character is considered for listing. |
| Educational Value | A structure that promotes educational value with respect to its role in the history is considered for listing. |

3.1.2 Urbanization and current construction practices

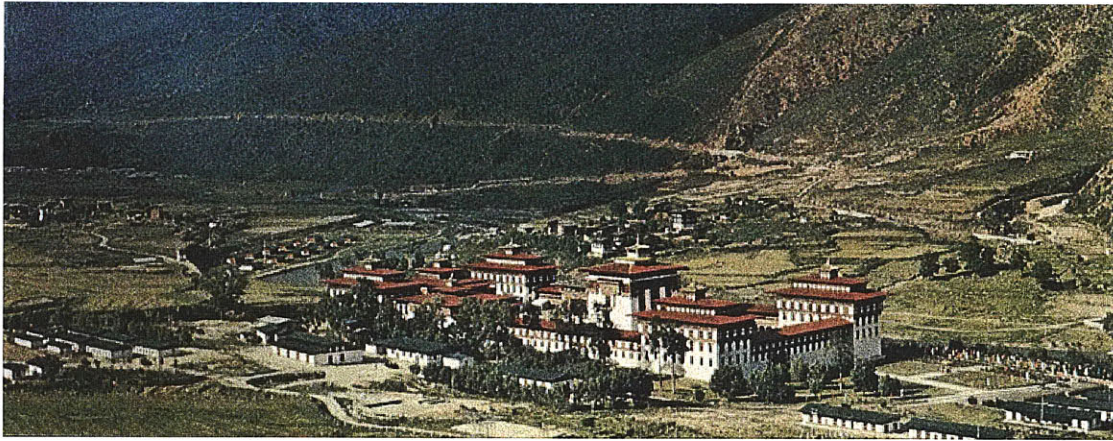


Figure 43 Thimphu Trashichhodzong (1976) Photo: National Geographic)

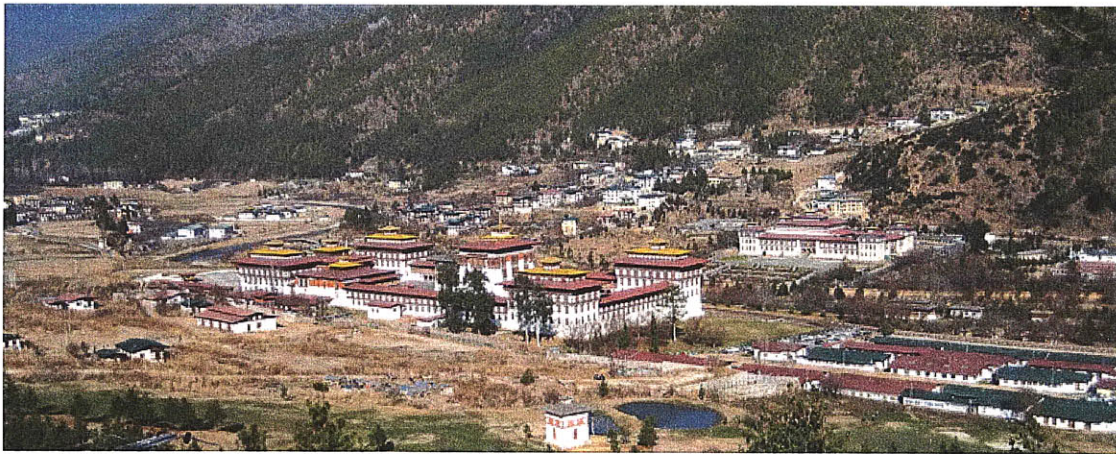


Figure 44: Thimphu Trashichhodzong (2009)

Urbanization in Bhutan started only in the late 1960s as the country ended its period of self-imposed isolation. With the introduction of contemporary construction methods and sudden influx of cheap materials and cheap labor from across the border in India, it seemed imminent that the standardized universal methods and design would replace what had been an important aspect of Bhutan's cultural heritage. This led to the formulation of the guidelines that required what was considered the critical components of vernacular design, to be incorporated in all structures.

Although these guidelines contributed towards the continued application of the Vernacular Bhutanese Architecture in current construction techniques, the inception of these guidelines happened without the integration of the skills/knowledge of traditional experts and led to an emphasis on

features only at the façade level. For example, irrespective of building type, materials used, all buildings require similar traditional details on windows and doors and other façade treatments such as cornices externally. These details in many buildings exist today only as guideline requisites, while traditionally they were designed for wood based construction and in most cases had functional uses. Thus, in some cases the combination of low-grade construction with out of place traditional features, which do not consider the original form or function of such details, seem like a gimmick of traditional design.(see fig. 45 & 46) These traditional features in their original use had not only symbolic value but also had structural functions. However, present construction practices, by making it an additional requirement in every building, often times nullify their symbolic property in addition to having no structural use. These kinds of building therefore, devalue the authentic architecture of the region and in doing so, lose the cultural significance of traditional Bhutanese architecture.



Figure 45: New constructions with traditional features used only as guideline requisites



Figure 46: New Constructions with Traditional Architectural Features incorporated at the façade level

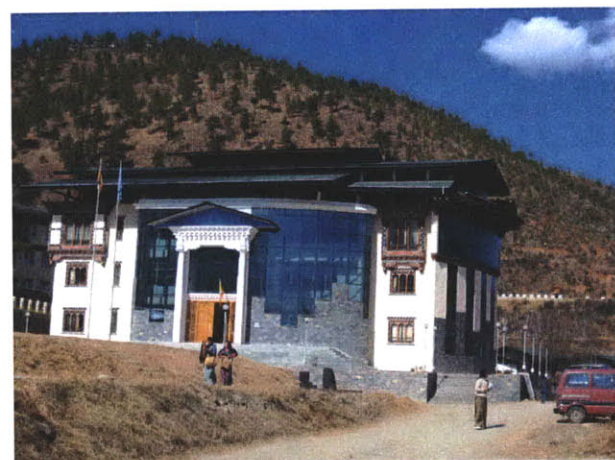


Figure 47. An attempt to integrate Traditional Bhutanese Architecture with modern construction materials

The traditional feature requirements have in some cases restricted the spatial layout of a building, making it challenging for architects to incorporate these features and achieve innovative design. For example, the cornice requirement and traditional window features in the exterior of all constructions not only limits the plan of a building to a rectangular or semi-circular block, but also limits the size of window openings. This limits the potential for innovative ideas in design. Therefore, the greatest challenge today is to readapt the principles of vernacular Bhutanese architecture that value form and context with the current societal needs. This is only possible through in-depth analysis on the principles of vernacular Bhutanese architecture and the current socio-cultural environment.

While, many countries struggle to preserve traditional/historical architecture, Bhutan has managed to embark on this objective at the national level. However, for the effort to succeed it is critical to acknowledge the need for architecture to constantly re-adapt to the evolving socio-cultural environment. This calls for the re-interpretation of the building guidelines every 5 to 10 years so as to cater to the prevailing societal needs. Doing so would require an in depth analysis of the guidelines and their applicability to the present context. I leave this as an area for further research. The proposed research unit within the Ministry of Works and Human Settlement and the Royal Bhutanese Institute of Architects discussed in the following chapters would be an excellent forum to initiate this research. In December 2008, the RBIA and the Works and Human Settlement Minister had a discussion on the need to revise the building guidelines.

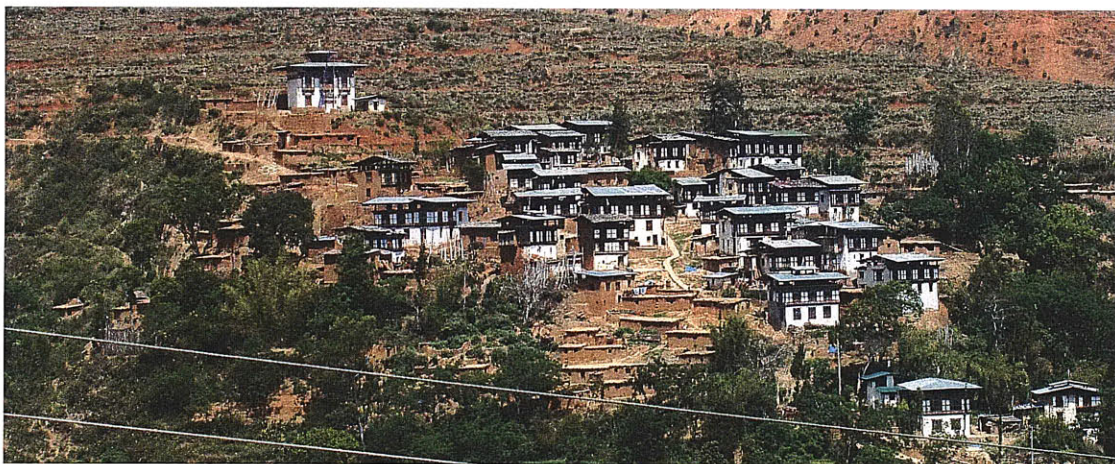


Figure 48. A traditional village in Wangdiphodrang

Further, as an alternative to the piecemeal conservation approach, Bhutan can adopt the holistic approach to conservation as a complement to the current system. For example, if the country were to adopt the idea of historical districts, enforcing strict guidelines within the district, the building guidelines outside of the historic districts could afford more flexibility

3.2 Conservation Practice in the United States.

Conservation in the US takes the form of both the piecemeal approach for certain historical structures and a holistic approach in the form of historic districts. While giving due importance to conservation of identified historical structure, whether individually or within historic districts, all other construction is not bound by restrictions in terms of architectural styles. I focus here on analyzing the historic districts as an alternative and holistic approach to the preservation of traditional village fabric in Bhutan. Specifically, I discuss two cases in the US as examples of historic districts in the US – Charleston and Beacon Hill – and consider the suitability of such an approach in the Bhutanese context. These two cases are particularly chosen because, firstly both are successful implementations of historic districts in the United States and secondly the preservation approaches taken in these two districts are significantly different from each other. Finally the conservation practices in these historic districts bear similarities to the Bhutanese context – Beacon Hill, with strict design guidelines and Charleston which uses tourism as an instrument for historic preservation.

The concept of historic districts includes a group of buildings, objects, sites and landmarks grouped together under one regional administrative policy and regulated strictly with respect to any spatial or structural alterations, demolitions or new additions. Also the guidelines for new development within the district are typically aimed to keep constructions consistent or complementary of the character of the district.



Figure 49. King st. Charleston, South Carolina (source: <http://www.panoramio.com/photo/2917867>)

The historic districts are designated by various entities at all levels of the government as historically or architecturally significant. The first public historic district in the United States was set up in Charleston in 1931 with the main objective of preserving the natural environment and architectural heritage. (Karolin Frank 2002). The formation of these historic districts along with the efficient neighborhood initiatives succeeded in the conservation of not just the historic structures but also the neighborhood physical fabric. To better understand the preservation practices in the historic districts, it is critical to get an overview of the framework under which conservation practices in the US are implemented. The three-tier system currently set up to achieve conservation goals in the US has not only ensured participation at the local level but also, by setting clear responsibilities for all authorities, helped create an efficient framework under which conservation targets can be met.

As such, the Department of the Interior is the central body that carries out the conservation efforts in the United States through the National Park Service Bureau whose main function is to look after the cultural resources of the country. The cultural resources include National Heritage Areas, Historical Structures & Cultural Landscapes and Heritage Preservation. The National Park Service is responsible for the policy and regulatory formulation, program guidance, budget formulation, legislative support and is held accountable for programs and activities they initiate. In addition they also manage programs that can be effectively implemented from a central location. In addition to the federal government, the National Trust for Historic Preservation which was founded and chartered by Congress in 1949 also undertakes historic preservation works in the United States. This is a private non-profit organization at the national level that aims to provide leadership, education and advocacy to preserve historic places and revitalize communities. It has six regional offices and works with thousands of local community groups nationwide.

At the state level, each state has a State Historic Preservation Office (SHPO) with an Officer who is appointed by the respective states. This is the highest office that regulates historic preservation activities and the use of funds for historical preservation within the state. The State Historic Preservation officers are accountable for their activities to the US Department of the Interior and

act as the mediating body between the State and the local Government. (Karolin Frank, Patricia Peterson)

At the local level, there is the Local Historic Preservation Office or the Historical Commission that actually initiates the historic preservation work in the historic districts. The Boston Landmarks Commission and the Charleston Special Commission for zoning are two such organizations at the local government level. The main conservation works within the historic district are generally initiated by the local people themselves with the formation of neighborhood organizations or trusts that look after the design, construction implications and guidelines within the neighborhood.

Finally, the holistic approach to conservation undertaken in the form of historic districts in the US has managed to preserve the neighborhood fabric and also historic buildings. This strategy of streamlining the conservation practices by identifying historic districts and not binding the areas outside of historic districts with strict architectural guidelines has contributed towards achieving the conservation objectives while also allowing for freedom to translate innovative ideas into practical solutions in architecture.

Criteria for selection of Historic Buildings

Typically cities in the US specify in their preservation policies, a time limit according to which a structure is considered historical. For the cities of Boston and Charleston the time limit for considering structures as historical are stated in the table below.

Table 2: Criteria for selection of Historic buildings in Boston and Charleston (Karolin Frank 2002)

| City/Institution | Minimum Age |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Boston | All buildings that are at least 50 years old or have exceptional designation by the Boston Landmark Commission (BLC) are considered Historic. |
| Charleston | Buildings at least 75 years old or are listed in the Historic Inventory Map of Charleston city are considered Historic. |

3.2.1 Case Study 1: Beacon Hill, Boston.

The Beacon Hill Historic District is a residential neighborhood in the City of Boston, Massachusetts and consists of buildings from 1800's to 1850's. A wave of immigrants in the 18th and 19th century informed the architecture of the neighborhood. The residential neighborhood is located on the Trimount hill, one of the erstwhile three hills of the Boston peninsula that was cut down to fill the Boston shore and river lines. With the construction of the State house in the late 1790's, Beacon Hill developed rapidly triggering the movement of people from the low-lying area towards the hill. The buildings in the neighborhood therefore are predominantly Federal Style, Gregorian Style, Greek revival and Victorian buildings. Beacon Hill today is home to about 10,000 people, of which 58.6% have college education and are predominantly in the higher income group. (Frank. Peterson)

Beacon Hill was declared a National Historic Landmark in 1955. The district has succeeded in preserving the neighborhood fabric along with a strong sense of community within the district. This cooperation among the people in the neighborhood dates back to the early 1920's when the Beacon Hill civic association (BHCA) was founded. This association is a volunteer neighborhood

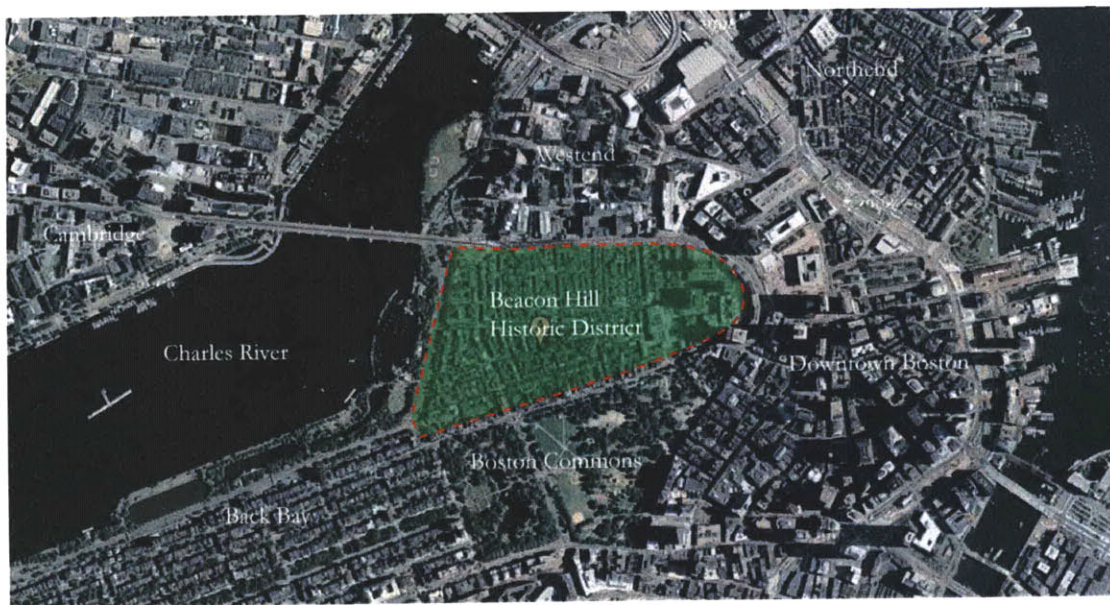


Figure 50. Beacon Hill Historic District in Downtown Boston (source: Google map)

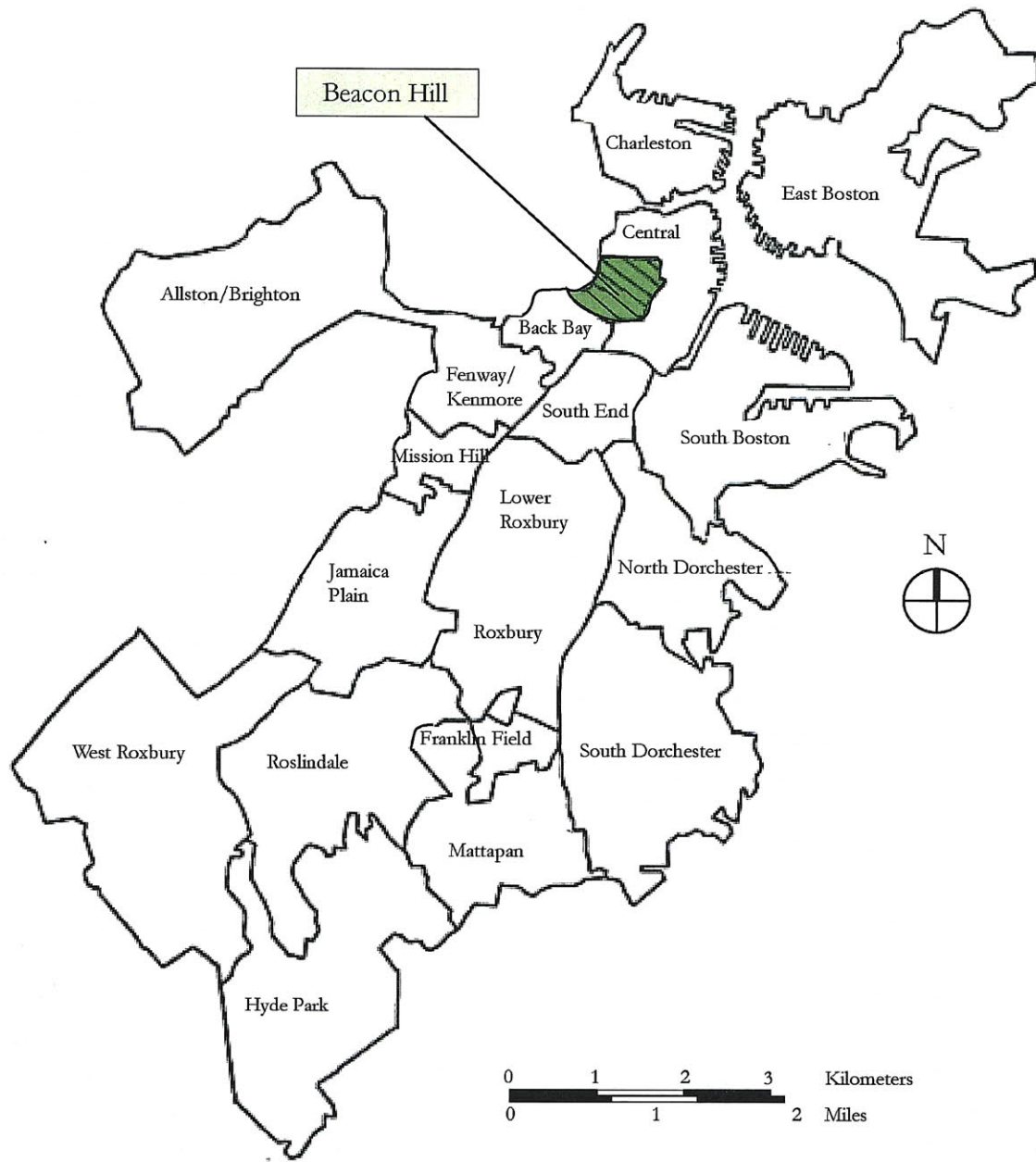


Figure 51. City of Boston showing the location of Beacon Hill (source: Karolin Frank, Patricia Peterson, modified)

organization formed by some concerned residents to help preserve and enhance the residential quality of the district. The BHCA has a small number of professional staff, active board members, vice presidents and a director whose support is offered through donations of time and money. Today this association forms an active platform for the community to voice their concerns for historic preservation and residential character.

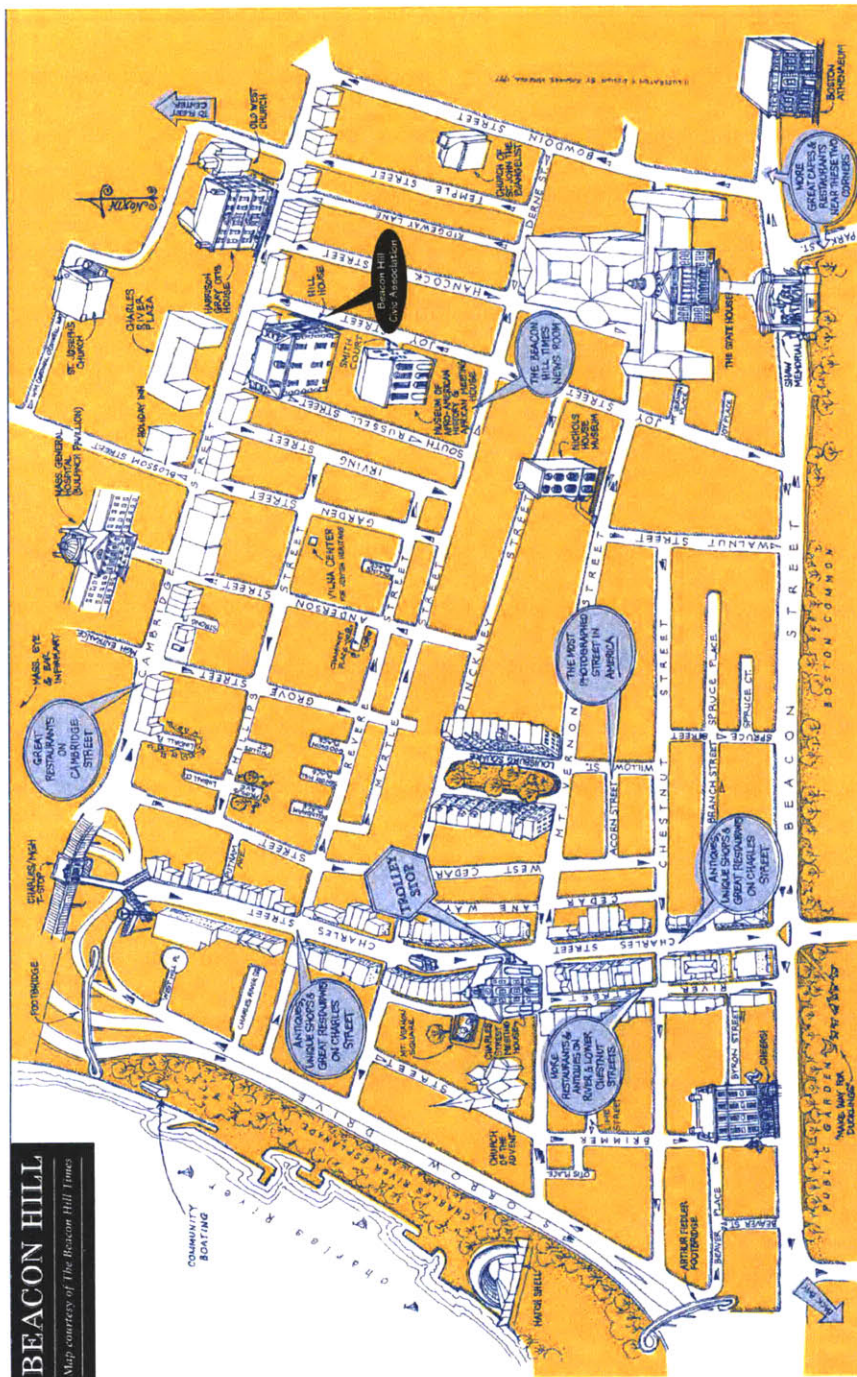


Figure 52. Beacon Hill Historic District (Source: Beacon Hill Civic Association, 1975)

Since the creation of the Beacon Hill Historic District in 1955, all changes to buildings such as alteration, demolition, renovation and new construction has to be approved by the Beacon Hill Architectural Commission, a body charged by the Massachusetts legislature to supervise all constructions within the district. The commission also has easement rights over the property, i.e. the right to protect against changes to a property that would be inconsistent with the preservation practices such as demolition, inappropriate alteration and subdivision of land. The easement is binding both on the present owner and all future owners of the property. This historic district is an example of a successful conservation effort initiated by the local people themselves. The strong neighborhood organization and the Beacon Hill Architectural Commission, which enforces strict design guidelines, have succeeded in keeping the historic district alive even to this day.

The sense of community and the presence of an organization such as the Beacon Hill Architectural Commission not only follows the architectural guidelines strictly but also maintains the historical environment of the neighborhood by proactively participating in all issues concerning the physical and historical infrastructure in the neighborhood. The narrow gridded streets of varying widths and lengths with a complex one way system of traffic has succeeded in keeping the traffic away by

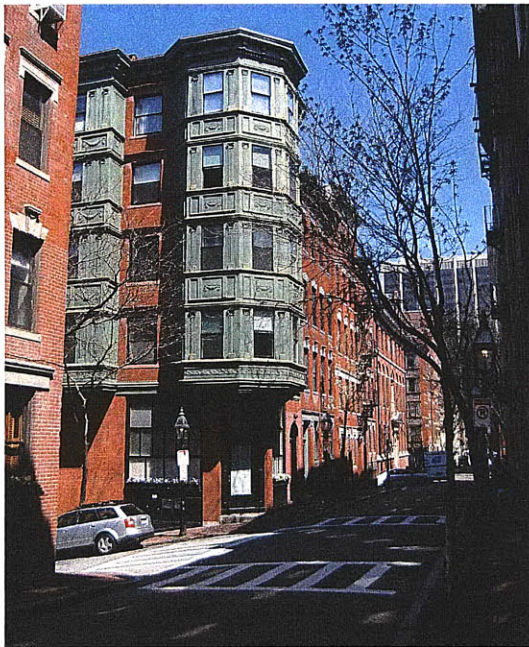


Figure 53. Beacon Hill Historic District (Homogeneous architectural features)

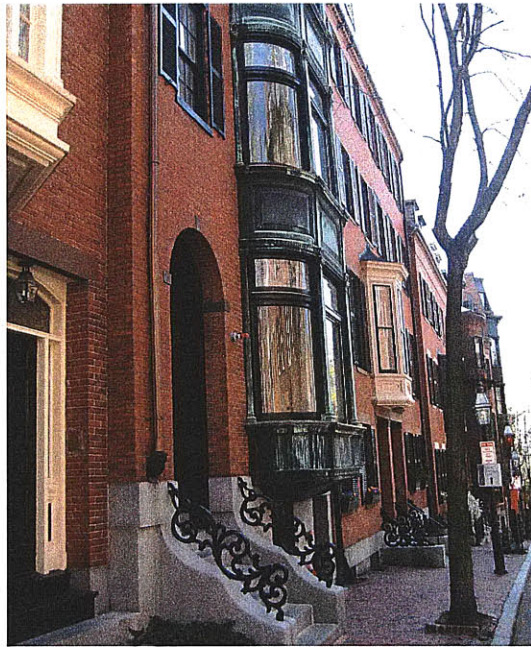


Figure 54. Beacon Hill Historic District (Homogeneous brick buildings)

keeping the neighborhood from being used as a thoroughfare. In 1997, the BHAC announced the removal of the newspaper boxes which has been a subject of much litigation from the hill. (Beacon Hill Times, 1997). This strong move initiated by the Beacon Hill communities also impacted the adjacent neighborhoods. The inappropriate signs and the messy newspaper boxes on Cambridge Street, right outside of the historic district led the City Councilor Mike Ross to propose the inclusion of the south side of the Cambridge street within the Beacon Hill historic district so as to clean away the “grime and graffiti filled” news paper boxes from Cambridge Street. (Beacon Hill Times, 11th March 2008)

The success of conservation of the district can be attributed to the strong sense of community within the neighborhood and their constant involvement in the upkeep of the homogeneous street appearance. In the 1960's, even before design guidelines were put in place, gas lamps replaced the non-historic authentic street lamps. In addition, many successful campaigns to keep heavy tour buses and food chains, which cause traffic congestion and take away from the environment of the city, out of the neighborhood have been carried out. (Frank. Peterson). Such unusual phenomenon where a neighborhood organization maintains the district, shows that participative planning in the United States is very effective and in no way marginal. (Frank. Peterson)

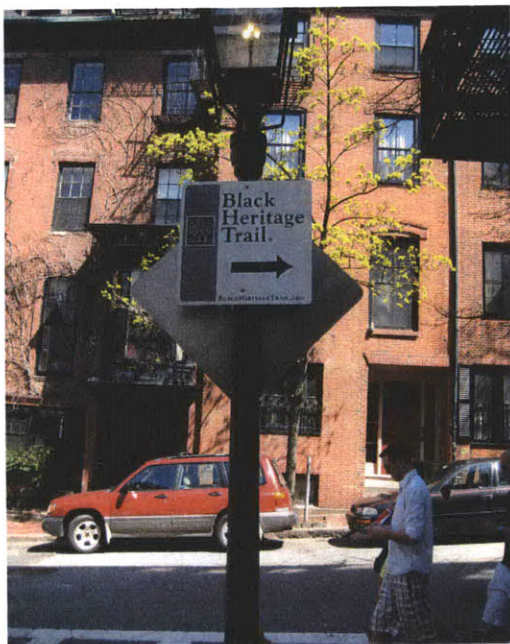


Figure 55. Black Heritage Trail runs through the Beacon Hill district.

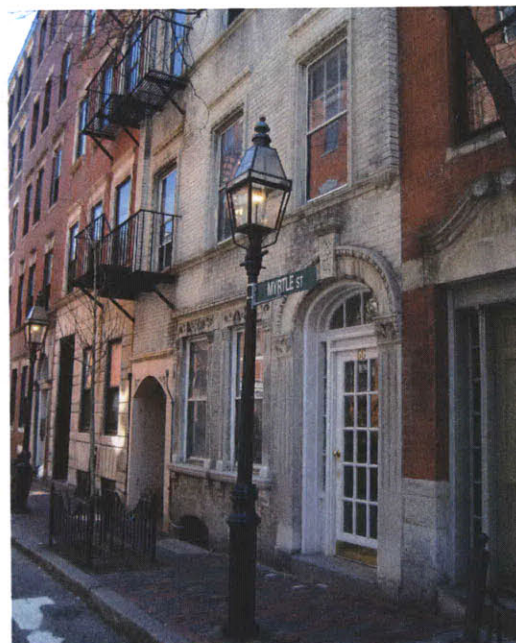


Figure 56. Street lamps, part of the Beacon Hill streetscape

The efficient neighborhood initiative with a strong sense of community and active participation of the people in the conservation practices of the local government contributed towards the success of this historic district. While this historic district is an extreme example of conservation by having strict architectural guidelines, the Charleston Historic district discussed in the subsequent chapter presents a more balanced approach to conservation guidelines by integrating private investment, tourism and preservation.

Bhutan, with a decentralized system of government also involves the local people in the decision making process whereby the local people identify structures to be conserved. However, the local people themselves do not have the authority to make the final decision unlike in the United States and must forward the proposed projects to the higher authorities for approval. Hence, one important lesson we could take from the Beacon Hill Historic District is the effectiveness of strong neighborhood initiatives and sense of community towards conservation efforts supported by active participation from the local people at all stages of the conservation project. With the decentralization of the government, the local people have the opportunity to participate in the identification of the conservation projects. However, their role in the conservation process should not just include identification of projects but also active participation at all stages of the conservation work, so as to strengthen a sense of community. This is possible through a well set-up management that is inclusive of the local people for the proposed historic district discussed in the following chapters.

The comparison between the Beacon Hill architectural guidelines and the traditional Bhutanese architectural guidelines are presented below for reference. Although one cannot compare these guidelines given the difference in culture and the contextual environment, one can at least get an idea of the two different approaches and the level of details incorporated in both. For instance, the attention to details like pointing, doors, shutters, colors, window grills, ironwork, landscape, etc in Beacon Hill reflects the importance of a holistic approach to conservation practices. These comparisons are analyzed to inform the guidelines for the proposed historic district in Bhutan in the subsequent chapters.

Table 3: Comparison between the Beacon Hill architectural guidelines and the traditional Bhutanese architectural guidelines

| Beacon Hill | Bhutan |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Masonry | |
| Cleaning of masonry is often discouraged whenever possible. Gentle cleaning method shall be used only when necessary after testing on an inconspicuous area to be certain that it will not damage or change the material. | Not applicable |
| Masonry façade shall not be painted unless there is evidence that the building was painted originally. | Painting shall be considered according to the architectural entitlement |
| Brownstone may require special treatments involving replacement materials and coatings. Each situation will be considered individually based on the existing condition of the material. | Painting shall be undertaken by skilled artists on any surface. |
| Repainting should be done with care so as to match the earlier brickwork. | Not applicable. |
| Roof and Roof Structures | |
| Original rooflines, including dormer windows, chimneys, parapets, end walls and firewalls shall be retained. | Sloping roof is compulsory based on the architectural entitlement on different types of buildings. |
| Materials used for replacement should match with the original. | Roofing material can either be timber shingles, Galvanized Iron sheet or tiles. |
| Roof decks and deck enclosures that are visible from a public way are discouraged. | Not applicable |
| Windows, Sash and Shutters | |
| If beyond repair, the existing openings, sash, glass, lintels, sills, shutter, hardware, frames, and surrounds, shall be retained or duplicated in the same material and style. | If beyond repair, new windows should match the earlier in material and architectural style. |

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Only clear-paned, non-tinted glass shall be used except to replace original stained glass | Any kind of glass use is permitted |
| Window blinds are not permitted on buildings on which they are inappropriate. Replacement blinds shall be wooden-constructed and should replicate a traditional blind. | Not applicable |
| Door and Entries | |
| New doors shall match the existing surround in style, material and proportions | New door should match the exiting door in style and material |
| Only paneled doors of appropriate design, material and assembly shall be permitted; flush doors and metal clad doors shall not be permitted. | Any type of door panel is permitted |
| Replacement door hardware should replicate the original or be of an appropriate design. | Not applicable |
| Buzzers, key keepers, and intercom panels shall be flush mounted onto the brick face of the building. Such panels should be of brass. | Not applicable |
| Paint | |
| Paint colors should be based on evidence of an original scheme or use colors from the historic collections. Off-white paints are preferable to brilliant white. | Painting should be based on the architectural entitlement on different types of buildings. |
| Materials and features that have never been painted like, copper, brick, sandstone, lintels and sill shall not be painted. | Not applicable |
| Ironwork | |
| New or replacement iron features shall be compatible with the style of the property on which they are installed. | Not applicable |
| Window grilles for most buildings should have pierced horizontal rails or butt-welded joints. | Not applicable |
| Fire escapes on street facades of buildings will be permitted only when required for safety and an alternative egress route is not possible. | Not applicable |

| Sign | |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| In addition to design review, all signs shall conform with the requirements of the Boston Sign Code. | Not applicable |
| Approval of a given sign shall be limited to the owner of the business or building and shall not be transferrable. | Not applicable |
| Antiques signs or faithful replicas may be considered favorably. The historical appropriateness of a sign for a building should be considered. | Not applicable |
| The commission will consider the appearance of a proposed sign on the building and on nearby buildings. | Not applicable |
| Exterior walls may not be used for display of merchandise or temporary advertising boards. | Not applicable |
| Illumination of signs is discouraged. | Not applicable |
| Freestanding signs are not permitted. | Not applicable |

3.2.2 Case Study 2: Charleston, South Carolina

The conservation practices in Charleston has achieved careful and continuous planning and is a comprehensive effort from a good mix of stakeholders including private investors and public organizations such as the Board of Architectural Review and the Charleston Preservation Society. Despite a lot of criticism, its focus on tourism as one of the elements of conservation practices has strengthened the local economy while consciously countering the possible gentrification often resulting from such initiatives. Charleston has, thus achieved a balanced approach to conservation by including real estate developers, having efficient neighborhood organizations, enforcing strict design guidelines, and by promoting a sense of community while banking on tourism as a source of revenue. (Karolin Frank 2002)

The city of Charleston, South Carolina is based on the regular US grid system of city planning and most of its historic structures are still intact today mainly because of acute shortage of funds that lasted until the 20th century. At the time it was considered more profitable to use old structures or convert them into different uses rather than constructing new structures. (Karolin Frank 2002) As a result most of the historic fabric and the old structures are more or less intact to this day.



source: doublebassblog.org



source: picassaweb.google.com



source: www.howderfamily.com



source: www.superstore.com

Figure 57. Charleston Historic District

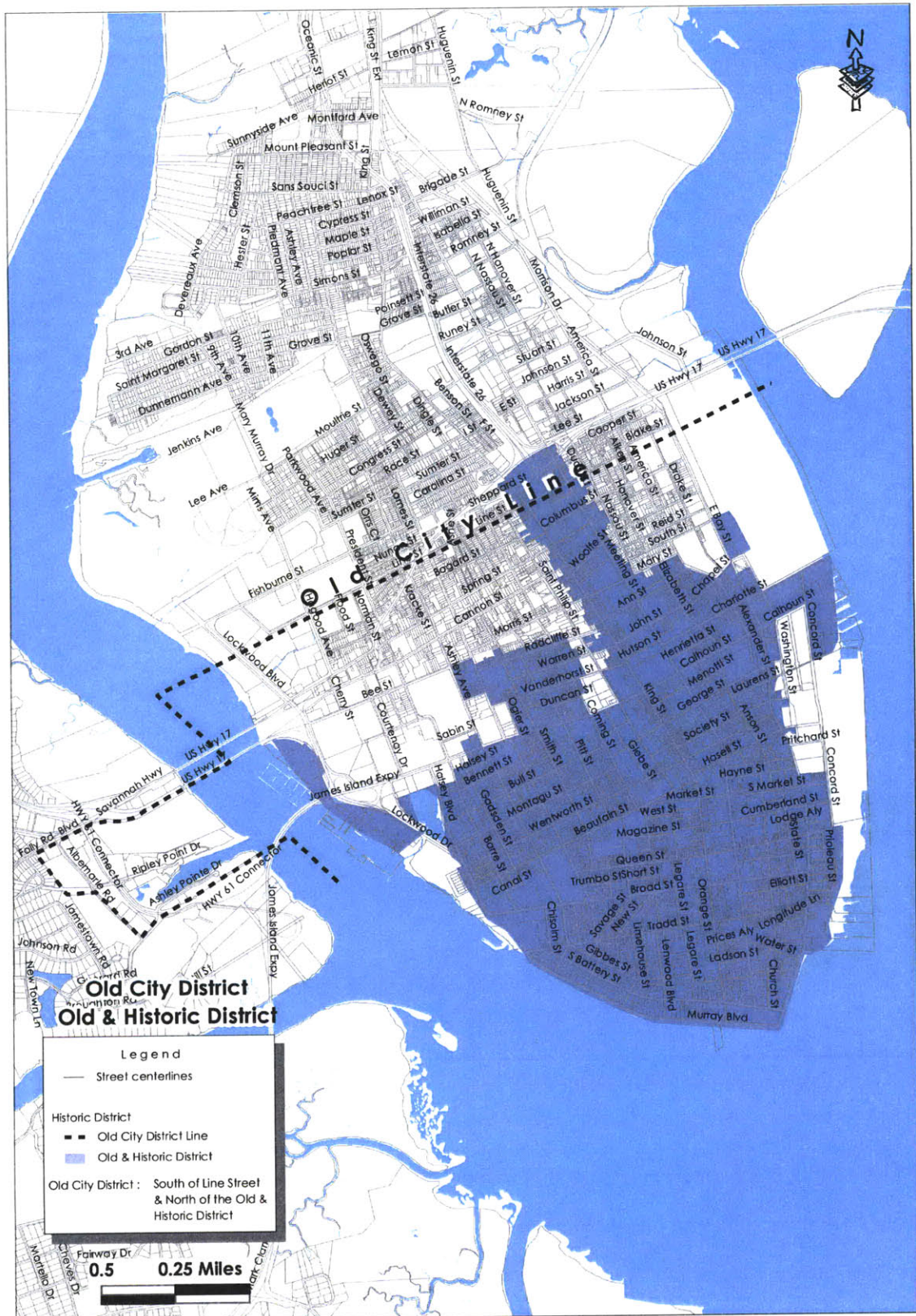


Figure 58. Charleston Historic District: shaded region (source: Charleston Preservation Society)

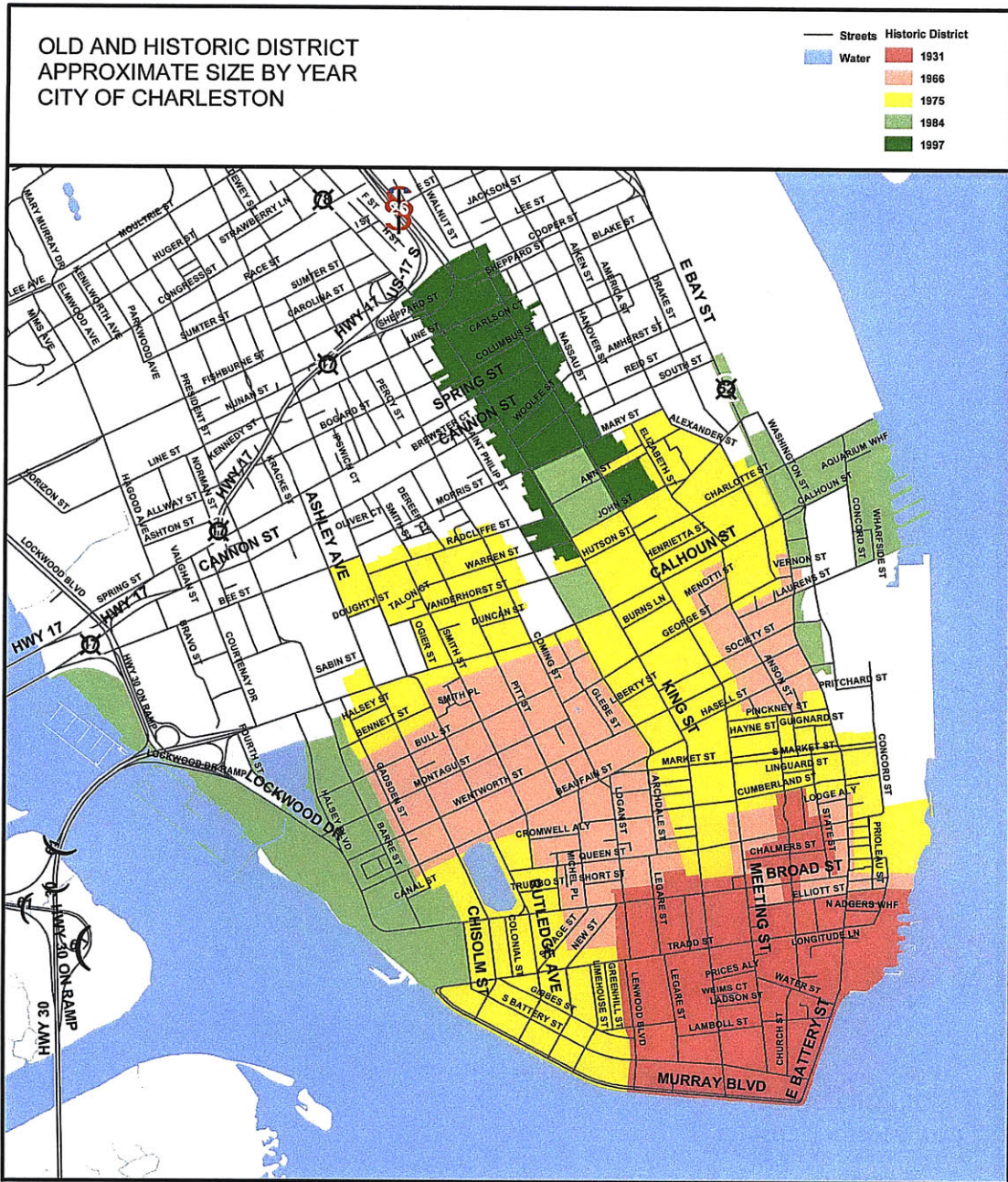


Figure 59. Charleston Historic District : approximate size by year (source: Charleston Preservation Society)

The Charleston Preservation Society was founded in 1920 when the historic Joseph Manigault house was about to be demolished to make way for a gas station. The organized opposition to this act by the citizens led to the formation of the Charleston Preservation Society. This non-profit organization is a private advocacy group that consists of private individuals from the city of Charleston and works toward cultivating and encouraging interests in the preservation of buildings, sites

and structures of historical and aesthetic significance. In 1931 the Charleston Preservation Society persuaded the city of Charleston to pass the first zoning ordinance enacted to protect historic resources. The Board of Architectural Review (BAR), therefore was established after the city adopted its first zoning ordinance in 1931.(Karolin Frank 2002). The BAR is the official zoning body that administers policies and guidelines on architectural preservation. It consists of seven members who are assisted by the city's department of design, development and preservation. The primary role of the Board of Architectural Review is to regulate demolition, renovation and new construction within the district. (Bures 2001)

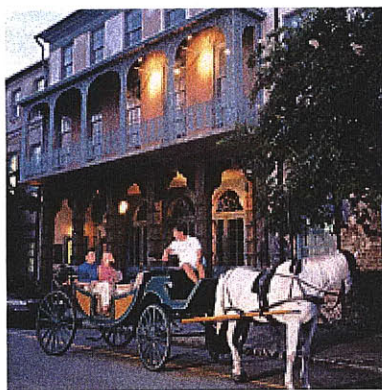


Figure 60. Joseph Manigault House: A National Historic Landmark in downtown Charleston. (Source: <http://www.charlestonmuseum.org/topic.asp?id=19>)

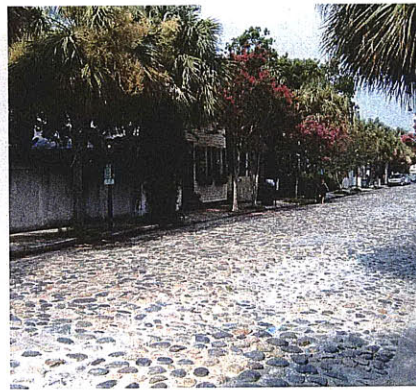
In 1947, the Historic Charleston Foundation was formed for the purpose of becoming directly involved in renovating and restoring historic properties. This foundation acquired its first property, a three-storey brick house at 329 East Bay Street, through donation in 1958. This strategy of acquiring and selling properties led to the formation of the Historic Preservation Revolving Fund. As of 1999, the foundation had acquired and sold around 200 Charleston properties. (Karolin Frank 2002) The properties acquired, renovated and offered for sale have been made subject to restrictions/easements which assures that any future renovations undertaken are compatible with their historic character. This initiative from the private sector complemented the conservation practices in Charleston.

In the 1970's and 1980's preservation process in Charleston was greatly accelerated by low interest loans and tax credits for rehabilitation. Such incentives transformed old Charleston into a clean, new, painted and preserved city. (Rosan 1997) As a result tourism flourished and the number of tourists visiting Charleston increased from an estimated 2.1 million in 1980 to 4.7 million in 1990. (Rosan 1997) As the preservation movement grew and gentrification became profitable, many of the low and moderate income people who used to live in the historic districts could no longer afford to live there and ended up being displaced.(Bures 2001) To address to this issue, the city began to focus on affordable housing programs to avoid displacement and the Historic Charleston Foundation also made the conscious effort to resell the houses to residents already in the neighborhood or living nearby. In 1996, the city reported that it had exceeded its own goal of creating 1800 new or rehabilitated affordable housing units. (Gene Bunnel 2002)

Charleston today is a good example of historic preservation that includes private interests, urban planning, neighborhood organizations and public initiatives. Its stance towards capitalizing on tourism has not just helped preserve the historic district, but also strengthened the local economy. Such conservation practices where tourism plays an important role is similar to the Bhutanese context where a major component of the county's economy is the tourism sector. (RGOB 2005) Conservation in Bhutan could, thus strive to achieve a good mix of private investment, design guidelines, people's participation and public initiatives to help guide the conservation practices into the future. Including the private sector will facilitate sustainability in terms of job creation and strengthening of the local economy.



source: www.marinalife.com



source: outdoors.webshot.com



source: 2009 Novastock photo

Figure 61. Tourism in Charleston/stone paved streets of Charleston

The comparison of Charleston BAR's general guidelines for rehabilitation and new construction within its jurisdiction and the traditional Bhutanese architectural guidelines is laid out in the table below. The BAR's guidelines are comprehensive, yet more flexible and moderate compared to the Beacon Hill guidelines. Its requirement for paintwork, fences, walls and signs are dealt on a case-by-case basis depending on the character of the neighborhood. Its stance on the importance of contextual environment is reflected in the guidelines defining new construction or alterations where all new buildings should strongly consider the context of the neighborhood in terms of height, scale, mass and materials in adjacent buildings and immediate surroundings.

Table 4: Comparison between Charleston's Board of Architectural Review's guidelines for rehabilitation and new construction and the traditional Bhutanese architectural guidelines.

| | Charleston | Bhutan |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Repair Work | | |
| Materials | Where repair is not possible, new material should match the existing in type, size, profile and material. | The guidelines do not address repair work specifically. However, new construction is considered when repair is not possible. The feature that is being replaced should match the original in profile, color and type depending on the traditional architectural entitlement. |
| Masonry | Damaged bricks and mortar should be replaced with new bricks and mortar to match existing. | The damaged wall should be replaced wherever possible with the same kind of material or have a new construction if it's not reparable using similar material. |
| Siding | When necessary to replace deteriorating siding, the new ones should match the old in size, thickness, exposure, and profile of the original. | Not applicable |
| Paint | Color approval is given case by case. | Paintings should comply with the traditional entitlement of the structure. |

| | Charleston | Bhutan |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Windows | If beyond repair, exact replicas should be installed. | If beyond repair, similar material and traditional feature should be incorporated. |
| Shutters | If repair is not possible, replacement shutter should match the existing in appearance an material | Not applicable. |
| Roofs | Historic roofs like standing seam metal, standing seam copper, terra cotta tile and slates should be repaired wherever possible rather than replaced | Galvanized Iron sheets are allowed for roofing in place of traditional wooden shingles. |
| Chimneys | Chimneys should be retained | Not applicable |
| Gutters/ Downsoputs | Galvanized metal, aluminium or copper, half and full rounded downspouts should be used and the metal surface should be painted to match the adjacent structure. | Not applicable |
| Porches | Character defining features on buildings in Charleston. If beyond repair, the replacement must match the existing in design or be appropriate to the period of construction. | Not applicable |
| Site Work | | |
| Fences/Walls | Considered on a case-by-case basis, taking the character of the neighborhood into consideration. | Not applicable |
| Driveways/ Hardscaping | Asphalt and plain poured concrete are not permitted in the historic districts. Gravel will be permitted on a limited basis. | Not applicable |
| Mechanical equipment | HVAC units, satellite dishes, antennae, etc should be placed at the rear of the property and should be screened appropriately. | Not applicable |

| New Construction | | |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| New Buildings/Additions | Any new buildings or addition should strongly consider the context of the neighborhood in terms of height, scale, mass and materials in adjacent buildings and immediate surroundings. | All New constructions should incorporate the traditional architectural features depending on the entitlement. The overall context in the neighborhood is not considered. |
| Signs | Evaluated on a case-by-case basis. Signs shall incorporate materials, colors and design elements that are appropriate to the surrounding context. | Not applicable |
| Awnings | Awnings should fit within the window or door frame over which it covers. | Not applicable |
| Demolition | | |
| | Demolition is discouraged. Demolition of any historic building must be reviewed by the Board of Architectural Review. | Demolition of historic buildings is prohibited. Approval has to be sought from the Department of Culture if demolition is inevitable. |

3.3 Historic preservation in Bhutan and the USA

Although comparison between USA and Bhutan in its historic preservation strategy may not seem logical given the difference in size, culture, population, economy, government organization and gross domestic product, some of the values and strategy used in the US can be interpreted in the Bhutanese context. Especially the concept of historic districts which introduces a holistic approach to conservation practices. Some of the major differences in the historic preservation between the two countries are outlined in the tables below.

Table 5: Comparing the Preservation Practices in the United States and Bhutan

| Characteristic | United States | Bhutan |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Extent of Historic Preservation | Historic preservation includes the formation of Historic districts. (Holistic approach) | Historic preservation is limited to Individual structures which are mostly public buildings and historic sites. (Piecemeal approach) |
| Institutional Framework | The historic district commission that administers the guidelines are public bodies enabled by the state government while civic associations like the Beacon Hill Civic association and Charleston preservation society are non profit neighborhood organizations that work towards the preservation of the district. | Initiated by local people themselves but final approval rests with the central body (from the top down) |
| Funding | The historic district commissions enabled by the state government are public funded while the neighborhood organizations like the civic or preservation societies are privately funded through membership fees, donations, trust funds and tax benefits. | Mostly publicly funded including donor agencies and individual donations. Small scale maintenance is usually funded by the community. |

| | | |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State authority | The historic district commissions enabled by the State government have land use control. The federal government does not have the authority to intervene when private property is involved. | The local people identify historic structures for preservation. However, the national government has the final authority over the listing of historical properties. |
| Legislation | Many law exists on a local level | There is no formal central legislation for conservation yet Many policies exists on a national level which are implemented and followed. |
| Regulations | Local authorities decide the extent of historic preservation in the construction plans | It is mandatory to follow the traditional architectural guidelines (state regulation). |
| Historic districts | An active element of historic preservation | Still mainly focused on individual structures |
| Conservation Attitude | Concentrated on return on capital | Government policy on preserving both the tangible and intangible aspects of the traditional Bhutanese architecture. |

Table 6: Comparing the Secretary of the Interior's Standards for Historic Projects and the Traditional Architectural Guidelines in Bhutan)

General standards

| | USA | Bhutan |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensitivity | Distinct architectural features or examples of skilled craftsmanship, which characterize a building or a structure, are treated with sensitivity. | Important public buildings like dzongs and monasteries are treated with sensitivity. |
| Character | The original qualities or character of a structure or a building are not destroyed. The removal of any historic material or features is avoided when possible. | The original character of a building or structure is retained. The removal of any historic features is avoided when possible. |
| Attitude | Any alterations to a building or structure are based on authentic historical evidence. | Since very little documented evidence of historical monuments exists, any alterations to a structure could be based on the verbal history that is passed on from generation to generation. |
| Conservation | Any changes in the architectural features have acquired significance in their own right which will be recognized and respected. Hence different layers of architectural changes have been documented and conserved. | Conservation in the international sense in Bhutan is a recent phenomenon, yet its traditional architecture has been preserved well mainly due to the self imposed isolation until the 1960's. Hence Bhutan has not seen many changes in its architectural history. |
| Alteration | More importance given to repair than replacement whenever possible. In the event of replacement, the new material should match the material being replaced in color, composition, texture and other visual qualities. | Attention given to architectural features in the event of alteration or replacement. The features should comply with the traditional architectural entitlement. |

| | USA | Bhutan |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maintenance | Surface cleaning of the structures are undertaken with the gentlest means possible. Any cleaning methods that damage the historical structures are not undertaken. | The guideline doesn't include cleaning and maintenance of the structures. |
| Rehabilitation | Contemporary design for alteration and additions to existing properties is not discouraged when such alterations do not affect historic and architectural significance. Such alterations should also be compatible with the size, scale, color, material and character of the property and also the neighborhood. | Adaptive reuse of historical structures is a new concept in Bhutan and as such has not been practiced commonly. |
| New construction | New constructions have to comply with the distinct features like size, scale, mass, color, materials, landscape features, roofs, porches and stairways that give a neighborhood its distinguishing character. | Constructions of dzongs and monasteries strictly follow the traditional architectural entitlement while all other constructions only have to incorporate certain traditional features. |

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4.

Pinciple recommendations

My recommendations are an effort toward realigning the current conservation guidelines in Bhutan to better reflect the conservation objectives. The current policy aims at conserving Traditional Bhutanese Architecture while embracing new construction practices. This conscious attempt to strike a balance between the Traditional Architecture and modern construction technology has been the basis of the architectural guidelines that are being used today. However, as elaborated above, these guidelines take a piecemeal approach and do not consider the conservation of surrounding neighborhood fabric, an important component of vernacular architecture.

The following recommendations suggest addressing two distinct approaches to conservation in Bhutan that not only helps in readapting the vernacular architecture to current social needs but also conserves the traditional Bhutanese architecture. The first approach is the holistic approach to conservation by adopting the concept of historic districts. The second approach, for all construction outside of the historic districts, is based on the recognition that culture evolves and along with it the design preferences, a reflection of the culture. Accordingly, the design guidelines should be re-interpreted and adapted as required to meet the changing societal needs. In both, it is critical to engage the design community, in particular the already established Royal Bhutanese Institute of Architects (RBIA).

The identification and implementation of historic districts allows for a holistic approach to conservation. This recognition of separate historic districts will not only help preserve the village fabric but also the vernacular architecture of a particular district. My recommendations include a set of design guidelines for these historic districts that will be more comprehensive and holistic by considering the village fabric as a whole. The inclusion of adaptive reuse and private investments within these districts will ensure a degree of sustainability by engaging the private sector.

The second approach addresses areas outside of the historic districts, by allowing more flexibility in the architectural guidelines to enable adaptation of traditional design to accommodate current needs of the society. To this end, the establishment of a strategically placed research unit dedicated to exploring best practices which not only develops concepts but also helps put these into practice – by implementation or through education – is critical.

Under the two broad approaches the principle recommendations, as a set of processes and instruments are presented below and explored in-depth in subsequent chapters. Whereby a process is defined as the method of readapting Traditional Bhutanese Architecture with current societal needs through an inclusive effort from all the stakeholders and an instrument as the tool used in implementing the processes.

Table 7: Principle Recommendations for Realigning Conservation practices in Bhutan: to better reflect the current prevailing social conditions.

| Process: Methods of readapting | Instrument: Actual implementation of the principles |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Historic Districts: Using Historic Districts will allow for the holistic conservation of traditional village fabric while leaving room for more accommodative guidelines outside these areas to reflect both current conditions and personal preferences.</p> | <p>Reinterpreting national conservation guidelines to be more accommodative. The creation of local historic guidelines that are comprehensive and strict and include well-defined identification criteria in addition to the design guidelines.</p> |
| <p>Adaptive Reuse of Traditional Buildings: Providing economic incentives.</p> | <p>Incentivizing the owners and developers by giving tax benefits (both income and property related) and easy loans for renovation. Also giving technical assistance wherever possible with regard to its structural stability and construction details by the proposed research unit within the Ministry of works and Human Settlement.</p> |
| <p>Private Investment: Involvement of the private sector in the historical conservation efforts so as to be a sustainable approach. Primarily aimed at the Tourism Industry.</p> | <p>Formation of a semi-private sector company that would buy and restore old rundown traditional buildings and re-adapt it into its earlier use or a different use while keeping its traditional character alive. Tax benefits and more accommodative loan terms can be used to make this an attractive investment. This would be most attractive to the Tourism Industry – a dominant industry in Bhutan.</p> |
| <p>Architectural Education: Dedicated effort to the evolution of concepts that aim to adapt Traditional Architecture to current societal needs and the inclusion of these developments in the current conservation education programs.</p> | <p>Setting up a research unit within the Ministry of Works and Human Settlement (MoWHS) that would bridge the conservation efforts of the Department of Culture with the standardization of construction practices/materials by the Standard and Quality Control Authority (SQCA). Further, current applicable research should be included in the existing conservation education programs.</p> |
| <p>Strengthening the role of Royal Bhutanese Institute of Architects (RBIA): The RBIA should play an active role in encouraging innovations in the design field. It should be involved in policy decisions regarding construction projects and architectural conservation in particular.</p> | <p>RBIA should have a permanent office with full time workers and should start recognizing architects for their exemplary works so as to motivate them to produce good work. Clear and formal channels of communication should be established with the authorities involved in the formulation of policies in the construction industry.</p> |

4.1 Historic Districts

An alternative and complementary approach one can take, for the conservation of traditional architecture, is by adopting the concept of historic districts. This holistic approach to conservation can be achieved by identifying certain neighborhoods based on well-defined criteria for historical preservation. Having a separate set of design guidelines for these districts which are stricter in terms of the structure, yet accommodative in terms of their use, will facilitate the conservation of “traditional districts”. While adopting the historic district concept will help justify more flexible and accommodative design in areas outside of the historic district in comparison to the existing restrictive guidelines. This will streamline the conservation practices without compromising on the conservation objective, which is to preserve the traditional Bhutanese architecture while also acknowledging the evolution in culture, and the need for architecture to readapt itself to the current societal needs.



Figure 62. Ura village in Bumthang (traditional village fabric)
source: <http://www.baralynka.com/galleria/bumthang/index.html>

The current conservation practice in Bhutan is focused on the conservation of public buildings such as Lhakhangs and Dzongs (Monasteries and fortresses) by acknowledging these structures individually without considering the importance of the context of the surrounding environment. This has led to the replacement of villages and paddy fields to accommodate urban infrastructure in some towns in Bhutan. The Paro town for example has seen some effects of this process where the town boundary was extended into the paddy fields and traditional neighborhoods. (see fig. 63 & 64) Given the inevitability of urbanization and the change in societal needs, it becomes critical to find solutions to preserve these traditional village fabrics. Another such example is the Changjjii Affordable Housing Project that was built over an area of 53 acres at the outskirts of Thimphu in the erstwhile Chang village, which consisted of traditional houses and paddy fields. (see fig. 66) The project features 71 buildings with 676 residential units and 48 shops with a small patch of traditional village sandwiched within the huge complex. (NHDC)

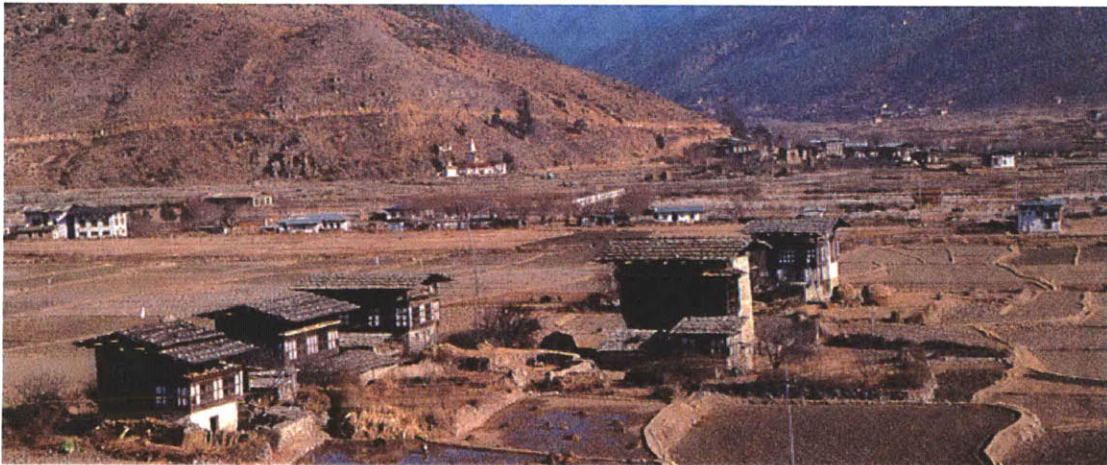


Figure 63. Paro Valley in 1989 (Photo: National Geographic Magazine)

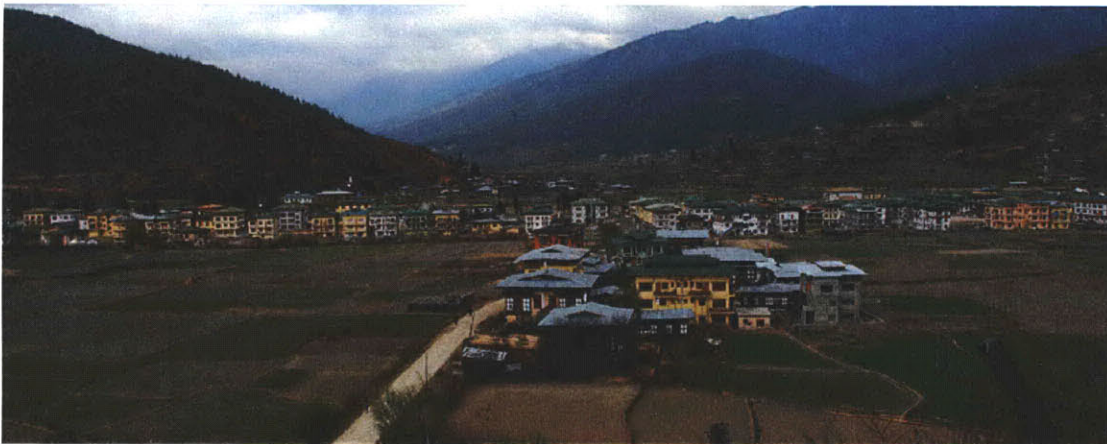


Figure 64 Paro Valley in 2009 (Photo: Lhendup Gyaltshen)

According to the head of the National Heritage for Architectural Sites, Ms. Dorji Yangki, the Ministry of Culture's involvement in the project managed to save a small patch of the traditional settlement at the site that now exists only as a group of abandoned traditional buildings surrounded by a sea of concrete structures. (see fig. 65) Therefore the identification of historic districts becomes vital in preserving these village fabrics from disappearing entirely as urbanization continues. In addition, while having strict and comprehensive design guidelines within these districts, the use of the structures must be accommodative so as to attract private sector initiatives that will help sustain the district economically and strengthen the conservation practices.

For the concept of Historic Districts to work, there has to be economic incentives for house owners within the district and/or for developers to be willing to invest in these historic districts. The incentives could either be tax benefits, loan availability, income tax deductions incase the structure is used for commercial activity and also property tax reductions. Without economic benefits, there will be no motivation for people to embrace such concepts given the other profitable option of undertaking the standard construction method.



Figure 65 Abandoned Traditional House within the Changjiji Housing Complex

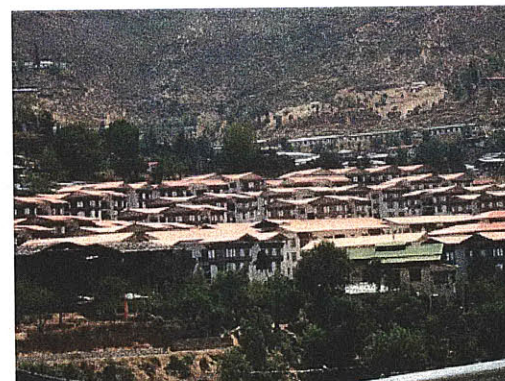
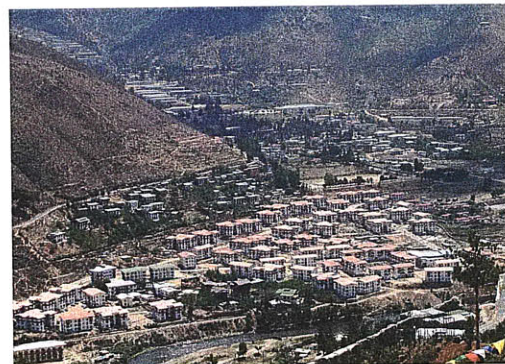


Figure 66 Changjiji Affordable Housing Project (Photo: NHDC)

In the USA, most of the historic districts function through tax benefits giving people incentives and motivation to preserve their neighborhood. The US tax reform act of 1976 (public law 94-445) established important tax breaks for the preservation and rehabilitation of commercial and income producing structures if they are recognized by the US department of interior as being historic. Also the Economic Recovery Tax Act, 1981 gives a 25% tax reduction for the renovation of historical buildings. (Karolin Frank 2002). In general tax incentives have been shown to work in the preservation context. A similar approach could be taken in Bhutan.

Economic incentives within the historic districts for current property owners will also help curb rapid rural-urban migration, a growing concern in urban Bhutan. According to a study conducted by the Ministry of Works and Human Settlement, 50% of the country's population would have left the village home for an apartment in town or a slum dwelling by 2020. (Kuensel 17 March, 2007) The study also reveals that urban population would have reached 73% by 2020. This rural urban drift has decreased agricultural production in the villages because of shortage of labor and also increased the growth of slums in the urban areas. According to the chief town planner, the urban towns and cities in Bhutan does not have the resources to absorb such a large scale migration. (Kuensel, 17 March, 2007) Therefore implementing the concept of historic district and making it sustainable, for example, by capitalizing on tourism as a primary source of revenue will not only help create job opportunities within the district but also boost commercial activities and strengthen the local economy. Thus, helping control Rural Urban migration.

Having this concept of historic districts in place, which will help achieve the conservation objective of preserving the Traditional Bhutanese Architecture, one can afford to be more flexible and accommodative in terms of its design guidelines in the areas outside of the historic districts. Acknowledging the need for readapting traditional Bhutanese Architecture to suit both the evolving culture and the prevailing construction practices calls for the need to reinterpret architectural guidelines in the areas outside of historic districts every 5 to 10 years based on the current societal needs. This is an area of further research that can be undertaken by the Royal Bhutanese Institute of Architects in the proposed research unit within the Ministry of works and Human Settlement

discussed in the subsequent sections.

Therefore streamlining the conservation practices by identifying historic districts and enforcing strict design guidelines within the district, while being sensitive to changing societal needs by having less strict design guidelines in the areas outside of the district will not only help preserve the Architectural Heritage of the country but also ensure design guidelines that reflect the current societal needs. Further, the adoption of the historic district concept can also help address the challenge of curtailing rapid rural-urban migration.

To begin with, identifying traditional neighborhoods within Thimphu valley as potential historic districts is critical. The diagram below shows some traditional neighborhoods in Thimphu within the Dzong precinct which has the potential to become a historic district

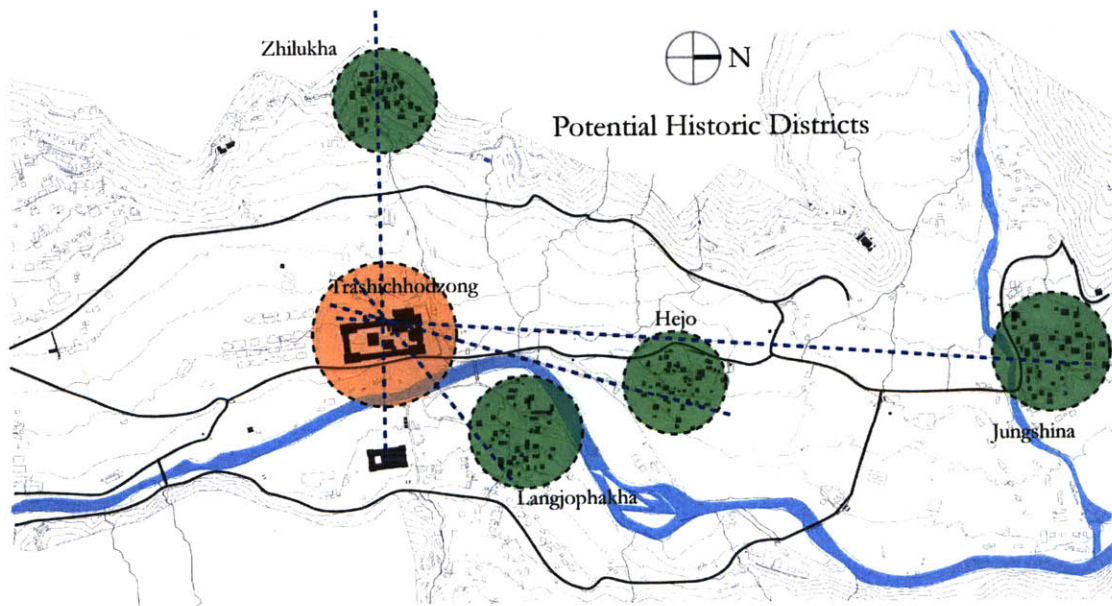


Figure 67 Identification of potential historic districts within Thimphu valley

4.1.1 Design Guidelines within the historic district:

Based on the case studies of Historic Districts in the US (Beacon Hill in Boston and Charleston in South Carolina) and analyzing their design guidelines for its applicability in the Bhutanese context, a set of design guidelines has been proposed for the historic District. The proposed guidelines are based on the need for preserving the traditional village fabric including the structures individually in a manner that is sustainable economically. Hence by encouraging adaptive reuse of traditional structures and allowing private investments in these historic districts will not only preserve Traditional Bhutanese Architecture but also help achieve sustainable economic growth within the district.

The following table includes a set of general standards and comprehensive guidelines for the Historic District.

Table 8: Proposed general principles for historic districts.

| | |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensitivity | Every structure should be treated with sensitivity. Attention to detail is encouraged, both to the individual structures and to the neighborhood fabric. |
| Character | The original character of a structure in terms of its architecture should be retained. |
| Attitude | Any alterations on the traditional form and façade should be based on known facts |
| Alteration | In the event of replacement of traditional features, new material should match the material being replaced whenever possible at the façade level. However, the internal layout of a structure could be readapted to suit the current societal needs. |
| Maintenance | Maintenance of the building in terms of its structural safety should be given importance. |
| Rehabilitation | Old rundown structures should either be restored to its earlier use or rehabilitated for different uses. Adaptive reuse is encouraged to preserve the traditional form and features. |
| New construction | New constructions within the historic district should have to comply with the existing traditional features in terms of its style, materials, scale and form. |

Table 9: Proposed design guidelines for historic districts.

| | |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Demolition | Demolition of a structure within the historic district should be prohibited. Approval should be sought from the Department of Culture in case of demolition of a structure for the larger benefit of the public. |
| New construction | <p>The height should not exceed the maximum number of storeys allowed as per the zoning requirement.</p> <p>The materials used for new construction should match or blend in with the existing structures within the historic district.</p> <p>The architectural style of the building should match the existing structures in terms of its use of traditional features based on the type of building.</p> <p>The interior of a structure can be readapted and put to a different use based on societal needs.</p> |
| Cornice | Cornices should match in color and material with the traditional cornices in case of new construction. The paintings on the cornices should be according to the traditional architectural entitlement. For construction requirements, refer to the Traditional Architectural Guidelines |
| Roofs | <p>Roofing slope should follow the Bhutan Building Rules. The slope angle should be between 8 degrees to 15 degrees.</p> <p>The eaves projection should follow the Bhutan Building Rules. The projection could be anywhere from 3ft. to 6ft. depending on the height of the building.</p> <p>Roof truss details should be according to the structural standards.</p> <p>The use of Traditional roofing material, i.e. timber shingles is encouraged. However, galvanized iron sheet and tiles are also allowed as roofing material.</p> |
| Landscaping | Landscaping of the courtyard and pathways is encouraged using traditional material such as doleps (flat stones) as the main paving material. Other paving materials like, bricks, stones and concrete slabs are also allowed. |
| Window | <p>If beyond repair, new replacement window should comply with the traditional feature requirements as per the traditional architectural guidelines.</p> <p>Paintings on the window should be according to the traditional entitlement.</p> <p>Glass panes are allowed in place of timber shutters due to harsh weather conditions.</p> |

| | |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Masonry | <p>The use of rammed earth and stone masonry is encouraged in all new constructions within the historic district. However the use of bricks and stone blocks is considered as long as the traditional features are incorporated.</p> <p>Paintings on the masonry should be according to the traditional entitlement.</p> <p>The sloping of the masonry walls is required in special building types like monasteries and important public buildings. However, it is not mandatory to have sloping walls in other building types.</p> |
| Doors | <p>Traditional features should be incorporated as per their architectural entitlement in both renovation and new construction. For entitlement details, refer Traditional Architectural Guidelines.</p> <p>Timber should be used for door panels and traditional features.</p> <p>Paintings on the door should be according to the traditional requirement.</p> |
| Signs | <p>Signs or boards within the historic district should match the building in terms of its material and color. Its use is allowed only for commercial and institutional purposes.</p> |
| Paint | <p>Painting of the building should be according to the traditional architectural requirement and should match the existing structures.</p> |
| Fences/Walls | <p>Considered on a case-by-case basis according to the character of the neighborhood. Only use of timber and stone is allowed as fencing material.</p> |
| Mechanical equipment | <p>All the mechanical equipments and satellite dishes should be placed at the rear of the house or hidden appropriately by enclosures.</p> |
| Adaptive Re-use | <p>Adaptive reuse of traditional structure is encouraged to preserve the traditional architecture of the neighborhood.</p> <p>A structure can be used for uses other than its original intended use to cater to the current market needs while preserving the traditional neighborhood fabric provided it gets approval from the department of culture.</p> |

4.2 Architectural Education

While there exists the potential support for integrating traditional Bhutanese architecture and current construction practices through the various government organizations, a unit dedicated to the research on how best to do so is essential. Currently the two main organizations – the Department of Culture and the Standard and Quality Control Authority - that are involved in overseeing the construction industry both have clear and independent mandates. Therefore, despite the resources available to each, the independent objectives and functioning of each leave a serious disconnect between the preservation of architecture as a cultural heritage and the construction practices.

A primary charge of the Division of Conservation of Heritage Sites (Department of Culture) is to preserve vernacular Bhutanese architecture through the creation of public awareness. They do so by organizing workshops and training programs. (MOHCA 2008). Although the initiatives taken by the government in creating awareness is noteworthy, the programs focus mainly on teaching the significance of Bhutanese architecture and the importance of preserving it with no emphasis on how we might do so. The education of the public on the need for readapting traditional architecture with the prevailing social conditions of the people and examples of such a successful adaption would bridge the gap between theory and practice. Thus a unit such as the one proposed would complement the objectives of the Department of Culture and become a knowledge resource which provides implementable design solutions.

The second organization, Standard and Quality Control Authority (Ministry of Works and Human Settlement), established in January 2000 as the main body that develops standards and ensures quality in the construction sector has now been entrusted as the focal agency for national standards.(RGOB 2005). One of their main visions is to review and adapt the standards so as to keep them effective and relevant to the present market and the societal conditions. However they focus primarily on the standards within the construction industry while research on the vernacular architecture is not explicitly done. While the Department of Culture aims to preserve the vernacular architecture, the SQCA governs the standards of construction with no formal lines of

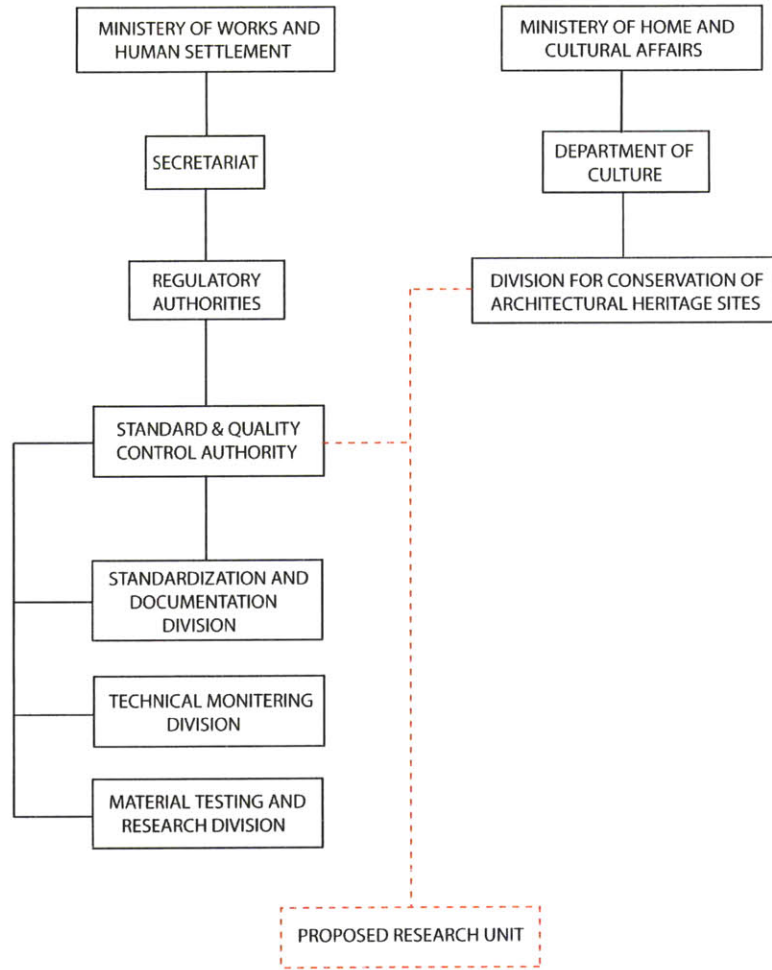


Figure 68 Organogram of the Ministry of Works and Human Settlement and Department of Culture showing the proposed research unit.

collaboration. Therefore, there is a need for a unit that would bridge together both the research on traditional architecture and current construction practices.

The establishment of a research unit within the Standard and Quality Control Authority would provide an excellent platform for exploring the adaptation of Bhutanese vernacular architecture to take advantage of the current construction practices. A research unit attached to this Ministry, with its involvement in policy formation and implementation of large-scale government projects, would ensure that the ideas developed materialize into technical solutions that demonstrate these concepts. This unit would not only bring concepts and practice together but also help disseminate information by educating the public and play an integral role in shaping policy guidelines. This unit could be a part of Standard and Quality Control Authority with full time research personnel.

4.3 Adaptive reuse of Traditional Buildings

A traditional house (see fig. 69) which used to house a joint family in the earlier days no longer requires the same amount of space it did years ago with the increasing number of nuclear families. The spatial requirement for a family now is much lesser than it used to be decades ago. This change in the societal needs often leads to the demolition of old traditional houses to give way for concrete apartment buildings which are economically profitable in terms of its rental value. This phenomenon is rampant in the towns of Bhutan, particularly along the outskirts. (see fig. 70) The need to readapt the spatial requirements of the people given the evolution in the culture while also preserving the vernacular architecture of the structure is critical. These two important principles of our cultural heritage could be bridged together by the concept of adaptive reuse.

Adaptive reuse is a concept of reusing the old structure for new uses to cater to the spatial needs of the society and has been successfully implemented in many instances. One such example is in Amsterdam in the 1950s.



Figure 69 A typical traditional bhutanese house
Ground floor: Space for livestock
First floor: Storage/living
Second floor: living
Attic: Storage

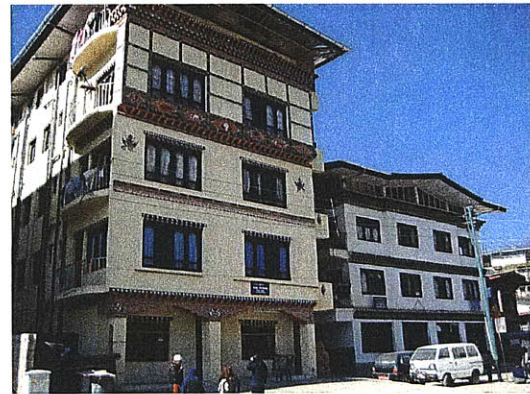


Figure 70 Concrete apartment buildings in towns housing many nuclear families

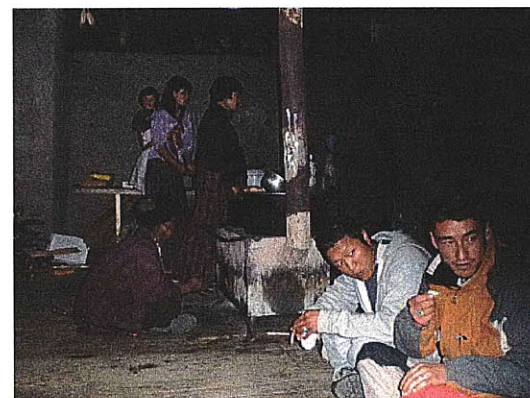


Figure 71 living/kitchen space in a typical traditional house.

source: www.molesoup.com/bhutan.html

After the Second World War, historic parts of Amsterdam and other European cities were in urgent need of restoration. The local government started urbanization of the historic city by converting canals into roads and pulling down houses to widen roads and other commercial developments. This led to a shortage of housing space within the inner city as most of the new buildings were constructed in new areas. This policy was resisted by the inhabitants of the city in the 1950's which led to the formation of a nonprofit company called the Stadsherstel whose objectives were to buy and restore the run down structures in the inner city district and construct modern dwellings in these buildings for the benefit of the public housing sector.(Leon Deben 2004). The association succeeded in keeping the traditional features alive while catering to the prevailing societal needs of the people. It has been touted as “a marvelous resolution of social equity, modernization and architectural preservation” by practitioners like Prof. A.M Tung, (Tung 2001).

Although Bhutan cannot be compared to the economically developed countries in terms of its resources and market demand, the concept could prove vital in preserving the old structures. Public/private partnership organizations like Stadsherstel bring real estate developers and conservation architects together in identifying run down traditional buildings and readapting it spatially to cater to the prevailing social conditions of the people. Such initiatives lead to successful implementations of this concept of adaptive reuse. The main driver for this concept to work could be incentivizing owners or developers with tax benefits, easy loan approvals or interest reduction for renovations, special calculation of property tax rate and income tax reduction. Creating economic benefits is necessary to incentivize people to adopt this concept which otherwise may not be able to compete with economically profitable concrete buildings. Although the concept of adaptive reuse is fairly new in Bhutan and has not been initiated nationally, there have been instances where this concept has been carried out successfully in the country. One such case is the Gangtey Palace Hotel in Paro which was converted from a residential use to a semi-luxury hotel.

Gangtey Palace Hotel (figure 72,73&74), a luxury hotel in Bhutan, is a good example of adaptive reuse. Gangtey palace was built over 100 years ago by Paro Penlop Dawa Penjor, uncle of the first king of Bhutan (Gongsar Ugyen Wangchuck) and the then Governor (Penlop) of Paro, as his residence. The palace belonged to the royal family until the 1930's when it was given to a member of a prominent aristocratic family, that of Raja S.T.Dorji's. His grandson is the present owner of the structure who converted the palace into a hotel in 1995. The structure is based on the principle of Dzong architecture with a central tower in the courtyard and surrounding habitable structures enclosing the courtyard. The traditional architecture of the structure is still preserved in its earlier grandeur and despite being converted into a hotel, the structure still maintains its residential character.

Bhutan, as evidenced by examples such as the Gangtey Palace Hotel, has the capacity to successfully implement the concept of adaptive reuse. Therefore, given the right economic incentives and support from the government, private sector involvement in historic conservation through adaptive reuse will contribute greatly to achieving the conservation objectives in Bhutan.



Figure 72 Gangtey Palace Hotel
Photo: Lhendup Gyeltshen



Figure 73. Gangtey Palace Hotel (Internal courtyard)
source:<http://www.gangteypalace.net/page.asp?idno=1>



Figure 74. Gangtey Palace Hotel (typical room)
source:<http://www.gangteypalace.net/page.asp?idno=1>

4.4 Private Investment

Private Sector involvement in the process of conservation is vital. The formation of a public/private company that functions as a real estate developer but with the objective of a non-profit organization is important for the success of the historic districts. The public sector will always focus on political, administrative and cultural aspects of historic preservation while private investors would be driven by the economic aspects of it as well. If both the players are left to operate independently, there will be frequent conflict of interest some of which are laid out in the table below.

Table 10: Differences in objective between private and public sector (Karolin Frank 2002)

| Factors | Private sector | Public sector |
|--------------------|-----------------------------------|----------------------------------|
| Main motivation | Return on capital, profit ability | Political |
| Who makes decision | Centralized | Varies, socially oriented |
| Goal | Clearly defined, short term | Extremely wide, often long term |
| Selection criteria | Specific with economic parameters | Ambiguous motives (eg. Economic) |
| Conservation focus | Short term | Long term |

It is therefore, important for public/private organizations to take initiatives in historical preservation. Such an organization will bridge the differences in objectives between the public and private agencies and hence play an effective role in the historical conservation process. The long term focus of the public sector along with its political clout could complement the clearly defined objectives and economic motive of the private sector. Stadsherstal in Amsterdam, described above, is one exemplary example of successful private sector involvement in conservation. Another successful effort worth exploring is the Historic Charleston Foundation in Charleston, South Carolina, USA.

The historic preservation in Charleston is greatly benefitted by the combination of private interests and urban planning. In the late 1950's, the Historic Charleston Foundation (HCF) began to revitalize the entire neighborhood by creating a revolving loan fund and implementing projects and selling it off to buyers that are willing to maintain and restore the newly acquired properties. (Karolin Frank 2002) The HCF basically functioned as a real estate developer but with a historical preservation objective. Charleston today is one of the successful historic districts in the USA that not only has a strong neighborhood initiative but also capitalized on the tourism industry to strengthen its economy. It has successfully used private investment as a tool for historical preservation.

Tourism today in Charleston is one of the main drivers of the local economy.(Karolin Frank 2002) The historic districts along with efficient neighborhood initiatives, private sector involvement and a thriving tourism industry contribute towards the conservation efforts in Charleston. Although capitalizing on tourism brought in gentrification, the effective mix of all objectives including, historical conservation, tourism industry, private sector inclusion and neighborhood initiatives provided people with better livelihoods through the creation of jobs and services. The 1978 Tourism and Management study concluded that there was a need for understanding the criteria for locating major "activity generators" within the city in order to curb gentrification. This tourism study had a major impact on the land use and development policy of the City of Charleston.(Gene Bunnell 2002). One way that the city minimized the impact of tourism on residential neighborhoods was by limiting the operation of "bed and breakfast" in the residential neighborhood as the conversion of residential properties posed a threat to the residential character of the historic district. To this end, regulations were adopted that required every "bed and breakfast" to apply for approval to operate including those already in operation.(Gene Bunnell 2002)

Likewise, Bhutan with a unique cultural heritage has seen the tourism industry grow over the decades and has become a major source of revenue for the country. The rich architectural heritage including monasteries, Dzongs and the intangible heritage has made Bhutan a unique tourist destination. The number of tourist visiting Bhutan has increased every year from only 287 in 1974 to

2850 in 1992 and over 7000 in 1999. (Dorji 1999) The figure is increasing every year with more than 21,000 tourists visiting the country in 2007. Correspondingly the revenues from the tourism industry have also been increasing steadily. For example, in 1992, the tourist's revenue contributed as much as US\$ 3.3 million and accounted for as much as 15 to 20 % of the total of Bhutan's exported goods and services (Dorji 1999) and in 1996, tourism earnings was more than US\$ 6 million.(SonamTobgay 1996)

Hence implementing the concept of historic districts will have a positive impact on the tourism industry that capitalizes on the unique cultural heritage. While at the same time, capitalizing on tourism will also help strengthen the local economy within the historic district by creating job opportunities, promoting small scale businesses and enhancing economic activities. Thus, tourism industry is a natural and likely candidate for private investors in the historic preservation effort and could play a vital role in making conservation sustainable, in addition to providing economic benefits to the neighborhoods.

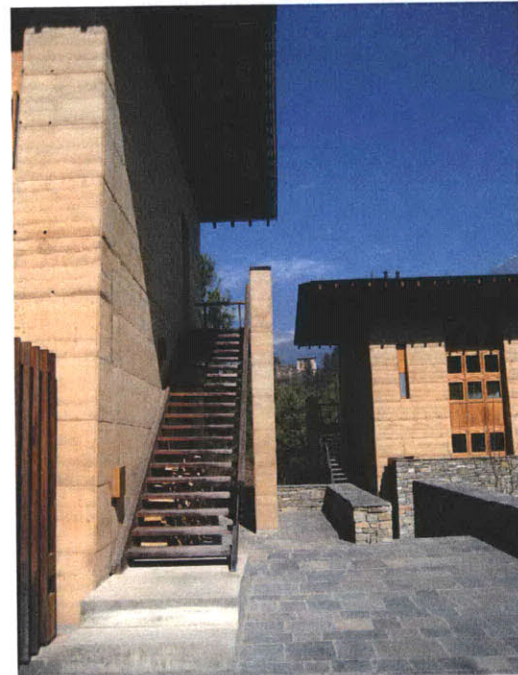


Figure 75. Aman Resort, Paro.
Unique Bhutanese architectural features incorporated into modern amenities - meeting the increasing demand for tourism infrastructure

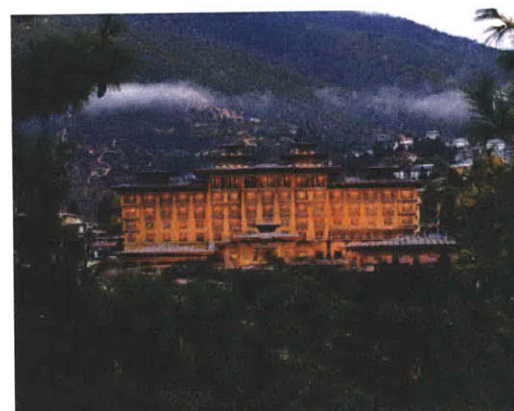


Figure 76. Tashi Taj, Thimphu (source: <http://www.scottdunn.com/accommodation/taj-tashi.html>)
Addressing the demand for tourism infrastructure

4.5 Royal Bhutanese Institute of Architects

In 2002, a group of Bhutanese architects recognized the need for an association of architects to address the concern over the rapid urbanization taking place in the country. With only a handful of Bhutanese architects, most of the construction industry relied on the engineers and other construction personnel. The need to streamline construction practices in the country by involving architects in every construction project was acute. This led to the formation of an architectural association called the Royal Bhutanese Institute of Architects lead by Karma L. Dorji (then, the Joint Director of the School Planning and Building Division) one of the first Bhutanese Architects.

The RBIA is registered under the Nongovernment Organization Act of Bhutan 2000 (Section 2, RBIA Constitution) with its main objective being to assist and advice the government, local authorities and the community on any matters related to the science and art of architecture, including designs and construction of buildings, development of property and urban and rural planning. (Section 4, clause 4.3, RBIA constitution).

While the Royal Bhutanese Institute of Architects has the potential to influence policy decisions in the construction industry, in its current state it is unable to realize such potential. Currently it is an informal association of architects with no clear and formal channels of communication with the authorities that formulate and monitor construction projects. As a result, as an organization the RBIA's role in affecting policy is limited and while it would seem rational for such a body to actively participate in planning policy related to architecture, the reality is the contrary. Strengthening the role of RBIA and including it in the policy making process of the government particularly in the construction sector will provide for a more informed approach to the formulation of construction standards and a holistic approach to urban planning in Bhutan. Further the RBIA is in a unique position to create incentives for architects to not only produce good work but take an initiative toward achieving a balance between vernacular design and modern construction technology.

In order to strengthen RBIA's role in policy, it is imperative that the RBIA have clear and formal channels of communication with the authorities that formulate policies in the construction industry. To begin with, the RBIA should have a representative in all meetings that relate to construction projects and architectural conservation in order to enhance RBIA's involvement in the decision making process of the government. Furthermore, should the proposed research unit within the Ministry of Works and Human Settlement be implemented, RBIA should at the very least hold a seat on its Board and ideally occupy the same office space in order to facilitate greater involvement in the research process.

The RBIA, being in its nascent stages and with only a few architects in the nation, can learn how to shape itself to be most effective from well established institutions such as the Royal Institute of British Architects (RIBA). Specifically, RIBA's strategy of incentivizing architects to produce innovative designs helps motivate architects to produce good work and its ability to actively participate in government projects allow them to affect the built environment. Unlike RIBA (Britain), RBIA (Bhutan) cannot afford to have a permanent office with full time workers given the lack of both the funding and the human resources. Therefore while the RBIA (Bhutan) may not have the capacity to influence policy through involvement in large projects, it can play a key role in creating incentives for architects to take an initiative in adapting vernacular architecture to best suit the current societal needs.

Recognizing architects for their exemplary works by organizing architectural competitions and conferences could incentivize and motivate architects to produce innovative designs. For example, the RBIA could host two types of competitions, one for traditional Bhutanese architectural design and another for innovative design that incorporates both the vernacular architecture and modern construction technology. Such initiatives not only encourage architects to work with professionalism but also work towards achieving another important objective of the RBIA – to conserve, promote and develop Bhutan's rich Traditional Architectural Heritage. (Section 4, clause 4.7, RBIA Constitution).

The Royal Bhutanese Institute of Architects therefore has the potential to play an important role in streamlining the conservation practices to better achieve the conservation objective. In both the approaches to conservation practices outlined above – holistic approach that includes the historic district concept and conservation practices in areas outside of historic district, RBIA could involve itself in planning policies related to architecture and effectively participate in the decision making process of the government.

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5.

Conclusion

The government's noteworthy effort to preserve Traditional Bhutanese Architecture can be made more efficient by addressing the disconnect between the conservation objectives and the policy guidelines that neglect the holistic approach to vernacular design, which values form and context developed over centuries. The two-fold conservation approach, addressing the preservation of heritages sites and all other construction separately, has successfully aided in preserving the heritage sites in their earlier grandeur while also ensuring the continuity in traditional architecture. The drawback of this approach, however, is that it neglects the surrounding neighborhood fabric, a critical component of Vernacular Bhutanese Architecture. Further, the guidelines used for new construction, which strictly addresses the traditional design only at the façade level and by doing so, restricts innovation in design and limits the ability of design to adapt to the changing spatial needs of the society.

In an effort to address these concerns and help realign the conservation objectives with the policy guidelines, this thesis recommends adapting the concept of historic districts to the Bhutanese context as part of its conservation efforts. My recommendations include a set of holistic design guidelines for these historic districts, as a preliminary draft, that takes into consideration not just the individual structures but also the village fabric as a whole. In order for this concept to be economically sustainable and learning from the success of involving private investments in the Charleston Historic District, the inclusion of adaptive reuse and private investment within the proposed historic districts is imperative. Also learning from the success of architectural preservation in the Beacon Hill Historic district, heightened public awareness on the importance of conservation and architectural education becomes critical.

The second approach addresses areas outside of the historic districts, by allowing more flexibility in the architectural guidelines to enable adaptation of traditional design to accommodate current needs of the society. Accordingly, this thesis recommends the reinterpretation of design guidelines, as required, to meet the changing societal needs. This requires an in-depth study on the principles of vernacular Bhutanese Architecture and human anthropology especially in the Bhutanese context. Hence, it is left as an area of further research which can be conducted within the proposed research unit under the Ministry of Works and Human Settlement by engaging the design community, particularly the already established Royal Bhutanese Institute of Architects (RBIA).

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Bibliography

- Amundsen, I. B. (1999). On Bhutanese and Tibetan Dzongs. CNRS Paris
- Dorji, T. (1999). "Sustainability of Tourism in Bhutan." *Journal for Bhutan Studies*.
- Gene Bunnell, A. (2002). *Making Places Special: Stories of Real Places Made Better by Planning*, Planners Press, American Planning Association.
- Karolin Frank, P. P. (2002). *Historic Preservation in the USA*, Springer-Verlag Berlin Heidelberg, New York.
- Kincaid, D. (2002). *Adapting Buildings for Changing Uses: Guidelines for change of use refurbishment*, Spon Press, Taylor and Francis Group.
- Leon Deben, W. S. M.-T. V. T. (2004). *Cultural Heritage and the Future of the Historic Inner City of Amsterdam*, The authors & Aksant Academic Publishers, Amsterdam.
- MOHCA (2008). *Basic Guidelines for the Conservation of Heritage sites in Bhutan*: 48 pages.
- RGOB (2005). "Good Governance Plus." 39 pages.
- Good Governance Plus: In pursuit of Gross National Happiness
- Sonam Tobgay (1996). "Overview of Tourism in Bhutan and how it fits into the general development plans."
- Tung, A. M. (2001). *Preserving the World's Great Cities*, Clarkson Potter/Publishers, New York.
- Yangki, D. (2008). "Sacred Fortresses of the Himalayas: Dzong Architecture in Bhutan." *Orientalism: The magazine for collectors and connoisseurs of asian art*(january/February 2008).
- Amundsen, I. B. (1999). On Bhutanese and Tibetan Dzongs. CNRS Paris
- Bures, R. M. (2001). "Historic Preservation, Gentrification and Tourism: The Transformation of Charleston, South Carolina." *Research in Urban Sociology* 6(2001): 195 - 209.
- Dorji, T. (1999). "Sustainability of Tourism in Bhutan." *Journal for Bhutan Studies*.
- Gene Bunnell, A. (2002). *Making Places Special: Stories of Real Places Made Better by Planning*, Planners Press, American Planning Association.
- Karolin Frank, P. P. (2002). *Historic Preservation in the USA*, Springer-Verlag Berlin Heidelberg, New York.
- Leon Deben, W. S. M.-T. V. T. (2004). *Cultural Heritage and the Future of the Historic Inner City of Amsterdam*, The authors & Aksant Academic Publishers, Amsterdam.
- MOHCA (2008). *Basic Guidelines for the Conservation of Heritage sites in Bhutan*: 48 pages.
- NHDC "Presentation on Changjiji housing Complex."
- Leon Deben, W. S. M.-T. V. T. (2004). *Cultural Heritage and the Future of the Historic Inner City of Amsterdam*, The authors & Aksant Academic Publishers, Amsterdam.
- Wangmo, Kuenga, (2007). Masters thesis. *Dzongs in Bhutan*, Cambridge University.

MOHCA (2008). Basic Guidelines for the Conservation of Heritage sites in Bhutan: 48 pages.

NHDC “Presentation on Changjiji housing Complex.”

RGOB (2005). “Good Governance Plus.” 39 pages.

Good Governance Plus: In pursuit of Gross National Happiness

RGOB, R. G. o. B. (2005). “Good Governance Plus: In Pursuit of Gross National Happiness.” Planning Commission

Rosan, R. N. (1997). “A short history of Charleston.”

SonamTobgay (1996). “Overview of Tourism in Bhutan and how it fits into the general development plans.”.

Tung, A. M. (2001). Preserving the World’s Great Cities, Clarkson Potter/Publishers, New York.

Yangki, D. (2008). “Sacred Fortresses of the Himalayas: Dzong Architecture in Bhutan.” Orientations: The magazine for collectors and connoisseurs of asian art(january/February 2008).

Loeb, Rachel L., 2002, Preservation without boundaries: Transitioning Bhutan’s Traditional Settlements into an Urban Environment. MCP Thesis.

Bennet, Alexis Anne, 2002, Tradition, Housing, Development: A new Paradigm for Urban Bhutan, MCP Thesis.

Dudley, Rosemary Carolyn, Balancing Values: Development strategies that sustain the cultural heritage of Rice Paddies and the Natural Landscape in Thimphu, Bhutan.

“U.S. Department of the Interior - Organization Chart.” http://www.doi.gov/secretary/officials_orgchart.html.

“Gangtey Palace - History.” <http://www.gangteypalace.net/gangtey/page.asp?idno=796>.

“Kuensel Newspaper - Bumthang’s own heritage home.” <http://www.kuenselonline.com/modules.php?name=News&file=article&sid=12511>.

“Nangsi Lhenkhag - Ministry of Home & Cultural Affairs.” <http://www.mohca.gov.bt/culture.php?id=6>.

“The architecture of Bhutan | Architectural Review, The | Find Articles at BNET.” http://find-articles.com/p/articles/mi_m3575/is_n1186_v198/ai_17843645.

“The American Institute of Architects::About.” <http://www.aia.org/about/index.htm>.

“The RIBA.” <http://www.architecture.com/TheRIBA/Home.aspx>.

<http://www.municode.com/resources/gateway.asp?sid=40&pid=14049>.

<http://www.municode.com/resources/gateway.asp?sid=40&pid=14049>.

“U.S. Department of the Interior - Organization Chart.” http://www.doi.gov/secretary/officials_orgchart.html.

“U.S. National Park Service Organization.” <http://www.nps.gov/aboutus/organization.htm>.

“Secretary’s Standards--Archeology and Historic Preservation.” http://www.nps.gov/history/local-law/arch_stnds_0.htm.

“The architecture of Bhutan | Architectural Review, The | Find Articles at BNET.” http://find-articles.com/p/articles/mi_m3575/is_n1186_v198/ai_17843645.

“The Secretary of the Interior’s Standards for Rehabilitation & Illustrated Guidelines for Rehabilitating Historic Buildings- Standards.” <http://www.nps.gov/history/hps/tps/tax/rhb/stand.htm>.

“The Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings: Choosing an Appropriate Treatment for the Historic Building.” http://www.nps.gov/history/hps/tps/stand-guide/overview/choose_treat.htm.

“Anthony M. Tung | Preserving the World’s Great Cities.” <http://www.anthonymtung.com/excerpts.htm#intro>.

“Beacon Hill Online - About Beacon Hill.” <http://www.beaconhillonline.com/cgi-bin/index.cgi?cid=5>

“Gangtey Palace - History.” <http://www.gangteypalace.net/gangtey/page.asp?idno=796>.

“Gross National Happiness Web Site.” <http://www.grossnationalhappiness.com/>.

“Historic Charleston Foundation - Charleston, SC - A Preservation Philosophy.” http://www.historiccharleston.org/preservation/why_philosophy.html.

“Kuensel Newspaper - Eco-trail windfall for local economy.” <http://www.kuenselonline.com/modules.php?name=News&file=article&sid=12008>.

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