

# ADAPTIVE REUSE OF HAVELIS

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## Abstract:

Adaptive re-use gives new cycle to a site, instead of freezing it at a particular moment in time, it explores the options of destruction to recreation. Planting a new layer without erasing the roots of earlier layers, an adaptive reuse continues with its identity of long history, along with addressing the concerns to scarcity of land.

## 1. Introduction

The opportunity to reuse anachronistic facilities in the urban core supports sustainability, economic factors and smart redevelopment in cities adding an effort to control urbanization. As an alternative to our increasing concrete jungle, adaptive reuse offers a sustainable solution site with existing infrastructure and materials. Historic buildings help define the spirit of our society by providing a bridge between the past and present. Today, historic districts around the country are experiencing unparalleled revitalization as cities use their cultural monuments as anchors for revival. Sometimes, efforts to preserve and revitalize historic buildings run up against financial hurdles, restrictive zoning, codes, contamination, and structural problems that create obstacles in restoring these unique structures. Adaptive reuse antecedent has a minimal of at least two phases of physical existence:

- (1) The original conventional design containing its original function; and
- (2) The new altered structure, containing its new function, after the adaptive reuse process.

## 2. LITERATURE STUDY

### 2.1 The Concept of Adaptive Re-use

To re-use a building or structure for the purpose of giving it new zest through a new function. In instances where the building or structure carries a heritage impediment, it requires prior to any material impact, to meet current building codes to accommodate the new uses. Adaptive re-use plays an important role in promoting urban environments with the revitalisation of familiar built fabric and less energy consumed during construction than that of a new building.

2.1.1 Process Adaptive reuse is a process by which structurally sound old buildings are developed for economically viable new uses.

1. Adaptive reuse
2. Restoration
3. Addition of spaces and modern services followed by the criteria of conservation.

(a) **Adaptive reuse** Study reveals that adaptive reuse has been carried out with due respect to the ideologies of traditional dwelling with added intervention. Two types of spatial usage pattern are identified. The first

type is assigning similar use to the original use of the space and second type, is assigning different use for the space but with minimum intervention like closing doors and passages, adding a partition wall, providing lighting fixtures etc.

(b)**Restoration** It is observed that restoration measures are done to in two ways.

(i) Regular/Conventional restoration measures

(ii) Material restoration, as some of the materials and techniques are very unique and practiced only in that region, skilled labourers are required to carry out this restoration. Material restoration measures example:

- i. Replacement of broken/worn out tiles on the roof and floor to restore the existing pattern and colour.
- ii. Typical plaster is prepared at site by craftsman and applied on the wall surface wherever required.

## 2.2 Principles of Adaptive Reuse

The challenge comes in finding the desired balance between change, adaptation and restoration to appease the stakeholders. In finding the right balance, adaptive reuse projects should integrate five principles into the design as stated by:

- 1) Perform the functions well for which they are redesigned.
- 2) Be long lasting and adaptable to new uses.
- 3) Respond well to their surroundings and enhance their context.
- 4) Have a visual coherence and create 'delight' for users and passers-by.
- 5) Be sustainable – non-polluting, energy efficient, easily accessible and have a minimal environmental impact.

## 2.3 Advantages of adaptive reuse

- 1) The ability to reuse the materials is mainly due to the fact that older buildings are often constructed with materials of a higher grade and quality that therefore have a longer lifespan than those used in current construction.
- 2) Moreover, with the envelope of older buildings generally consisting of stronger materials and containing numerous windows, the energy efficiency of the heating and cooling can be improved.
- 3) The social benefits of reuse projects include rejuvenating the historical and cultural values of a building.
- 4) During the time period when the building was originally in use, it served a specific purpose in the neighbourhood to which people, in one way or another, were connected. Older buildings have the ability to provide character to an area and create a 'sense of place'.

## **2.4 Benefits of adaptive reuse**

### **Environmental**

Adaptive reuse of buildings has a major role to play in the sustainable development. Environmental benefits are more significant, as these buildings offer so much to the landscape, identity and amenity of the communities they belong to.

One of the main environmental benefits of reusing buildings is the preservation of the original building's "embodied energy". That is, the energy consumed by all of the processes associated with the production of a building, from the attainment of natural resources to product delivery, including mining, manufacturing of materials and equipment, transport and administrative functions. By reusing buildings, their embodied energy is retained, making the project much more environmentally sustainable than entirely new construction.

### **Social**

Keeping and reusing buildings has long-term benefits for the communities that value them. Adaptive reuse can restore and maintain the significance of a building and help to ensure its survival.

### **Economic**

There are several financial savings and returns to be made from adaptive reuse of buildings. Embodied energy savings from not demolishing a building will only increase with the predicted rise of energy costs in the future.

While there is no definitive research on the market appeal of reused buildings, they have been popular because of their originality and historic authenticity.

### **Promoting innovation**

The adaptation of buildings presents a genuine challenge to architects and designers to find innovative solutions. As development pressures increase in our cities, more buildings are being reused, producing some excellent examples of creative designs that retain its significance.

## **2.5 Criteria for adaptive reuse**

- 1) The societal value of a given site and building; that is, the importance to the community of the use of a site by its members or visitors.
- 2) The potential for the reuse of a particular site and building; the physical damage sustained to the site and its support of future use, the character of the existing form in terms of the proposed reuse.
- 3) The historical importance of the site and building; in terms of both the physicality of the streetscape and the area, as well as of the role of the site in the community's understanding of the past.
- 4) The natural ecological conditions of the site and building; whether it is suitable climatically or can support the proposed environmental work.

## 2.6 Impact of adaptive reuse on city development

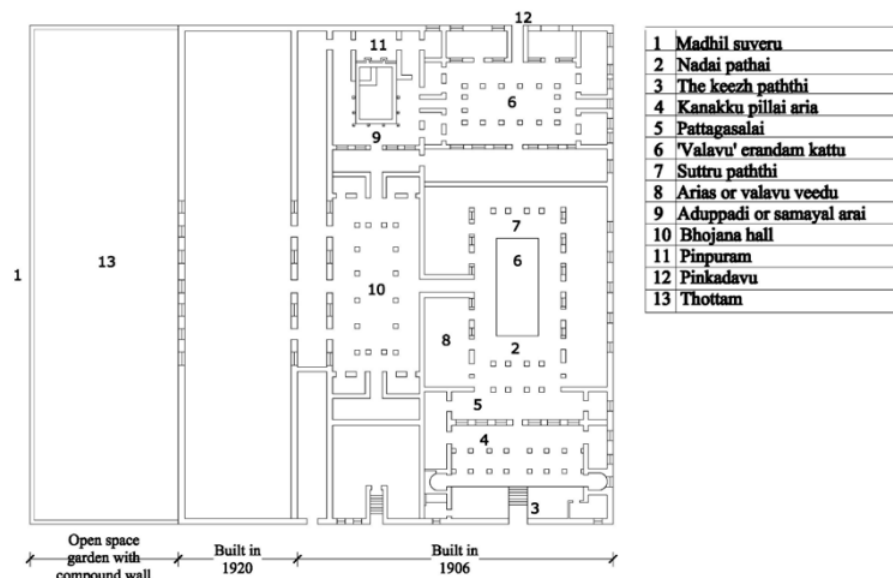
Today, one controversial concern in urban expansion is the adaptive reuse of aged urban industrial sites or structures. These sites are known as brownfields instead of Greenfields due to the fact that they may contain chemical contamination; it is necessary to deal with this problem before the structures can be put to residential or commercial use. A successful adaptive reuse project can offer growth and also bring historical tourism to its city and new life to its neighborhood.

## 2.7 Reuse Strategy

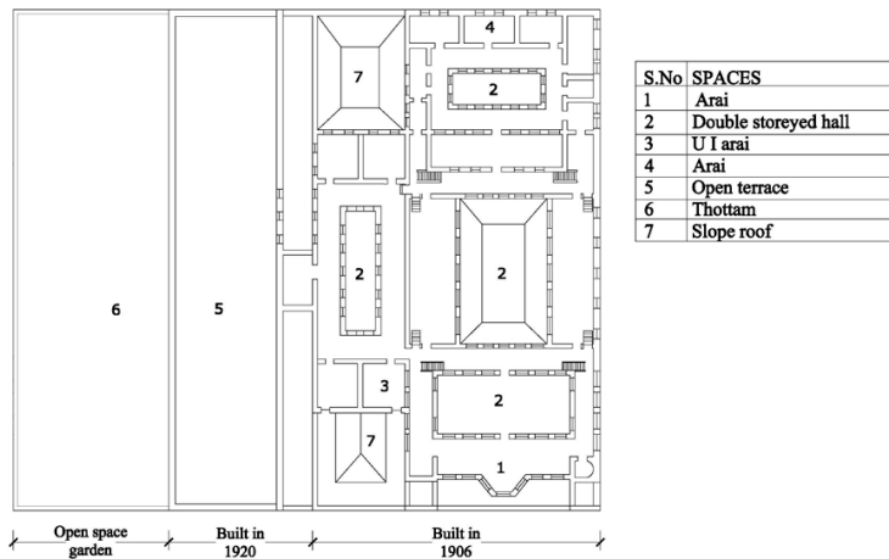
- 1) Technical: To study and analyses the structural system of the existing structure.
- 2) Strategically: The building along with its surroundings should be taken into context thus reusing the building while keeping in mind the 'character, sense and spirit' of the place.
- 3) Typological: To understand the typology of the building of the existing and new use.

## 3. CASE STUDY

3.1 Adaptive reuse and restoration of a Chettinadu mansion, Pudukottai, Tamil Nadu, India. The reuse of a heritage or existing building becomes necessary for its social, economic and cultural sustainability. One such historic building, 'Chidambara Vilas' at Chettinadu region, Pudukottai, Tamil Nadu, India is a 110-year-old palatial mansion once a residence of a Nattukottai Chettiars, today turned in to a heritage hotel.



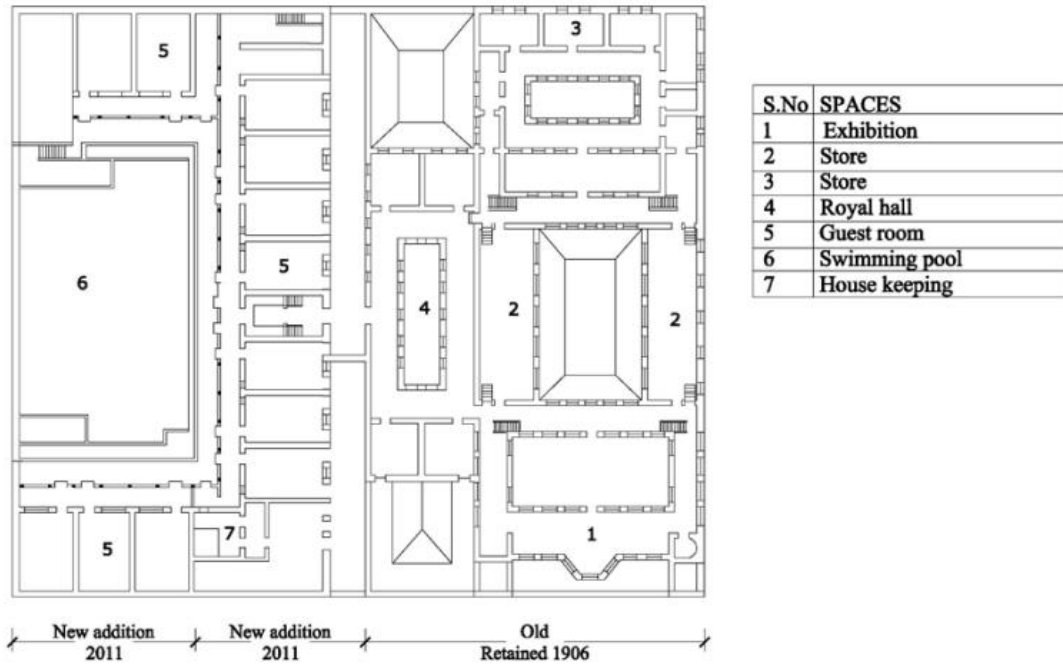
(a) Ground Floor Plan – Original mansion



(b) First Floor Plan – Original mansion.



(c) Present Heritage Hotel: Ground Floor – After restoration and adaptive reuse.



d) Present Heritage Hotel: First Floor – After restoration and adaptive reuse

	ORIGINAL SPACES	ORIGINAL USE	PRESENT USE
1.	Mathil suveru - compound wall	Security	Height increased and used as gallery to exhibit culture of Chettinadu.
2.	Munpuram – front open space	With kinaru (well) and related bathing and washing activities of men.	Kinaru retained as a cultural artifact
3.	Thinnai – raised platform with columns	Greeting and entertaining male guests	receiving guests.
4.	kannakkupillai arai - accountant's room	Office room of the family's male accountant	Hotel's office and accounts room
5.	valavu - single central courtyard	Conducting religious festivals and ceremonies	Demonstration of the traditional activities during the festivals times to experience.
6.	Arais - rooms	Sleeping, storing valuables and other grocery	Store
7.	Pattagasalai - men's greeting room	For business discussion	Display area of Chettinadu artifacts
8.	Pendir arai – women's room	Exclusive women's room for sleeping and other activities	Dining hall for guests



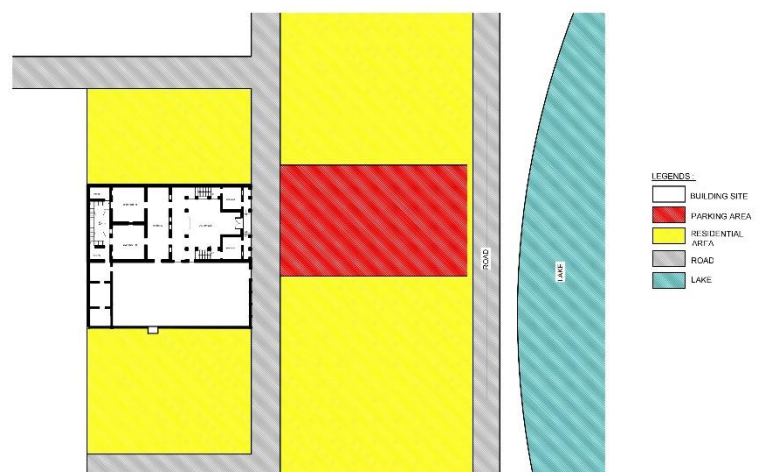
9.	Kottagai – double storeyed hall	Conducting life cycle ceremonies	Exhibition space of paintings and experimental kitchen.
10.	bhojana hall (dining hall)	Dining for guests	restaurant
11.	Samyal arai - kitchen	Cooking using traditional choola (open hearth)	Cooking with modern gadgets
12.	Suttrupathi - Corridor	Sleeping, relaxing	For circulation and accommodating modern services
13.	Thottam - garden	Cattle sheds and garden	Swimming pool and ancillary facilities

#### 4.Adaptive Reuse of Virsad Haveli

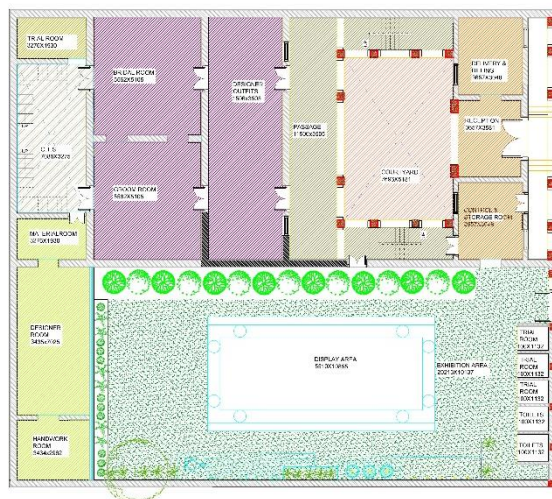
Virsad is the village near Anand District in Gujarat, India. The haveli is named as “SHREEJI SADAN” The site of virsad haveli measures 595.5sqm approximately. and it is owned by Mr. Maganbhai Patel. It was in abandoned condition from couple of years as before the haveli was used as school, but it has been stopped after years. This haveli has many attractive points in itself as it is 100 years old structure with the beautiful minor carvings in it and some of the elements give reflection of renaissance architecture. Decorative grills and railings with the double staircase look.



After the research I found it has some damages in the structure from interior of the house so it should be cure and then the challenge was to decide for adaptive reuse looking with the aspect of surroundings in the village as well the approach of the people to make it famous so it should be useful for the villagers as well for the people who are gonna visit then it will be worth reuse of the house with the proper maintenance. So after doing research and by having conversation with the village people I decided to use it as **cultural center of Gujarat** with the customized Designing of the outfits and to promote the Art of Gujarat with the classes for those who want to learn the art and the exhibition to display the art this would help the villagers to promote their art in conducting the classes and this will attract people to visit virsad. So then i started with the site analysis then with the step-by-step procedure and designed the proposed project with the theme of **fusion tradition**.



EXISTING PLAN OF VIRSAD HAVELI



PROPOSED PLAN OF VIRSAD HAVELI

## 5. RECOMMENDATIONS

### 5.1 Reuse Strategy

- ✓ Typological: Before the reuse of the building, Literature study is a must about the original and new use to be incorporated.
- ✓ Technical: Structural study and analysis with dimensions should be known and noted of the building.
- ✓ Strategic: The building along with its surroundings should be taken into context thus reusing the building while keeping in mind the ‘character, sense and spirit’ of the place.

5.2 Use and function Function and use of depends on building typology, location, environmental factors, social factors, and economic factors. Environmental factors should include site features, climatic conditions and embodied energy of existing building. Social factors draw attention towards the needs and wants of the society and preservation of the character, sense and spirit of the place. Economic factors include the budget for sustainable construction, reuse, and durability.

5.3 Quality of Design It should be suitable to the surroundings and the society, innovative designs, preservation of the historical and heritage elements should be carried out. It should also be structurally sound and strong to be durable.

5.4 Materials and Technology Use of old and new techniques can be merged resulting in innovative techniques. The materials of the original structure should be ideally maintained and used unless it is in a very dilapidated structure. The new additions and preservation that are proposed can be a combination of old and new techniques and materials in the construction.

5.5. Flexibility and reversibility the building should be able to undergo dynamic changes and adapt to other reusability options in case change of use.



## 6. CONCLUSIONS

This research is to study possible strategies for the successful adaptive reuse of buildings. It demonstrates that it is not only important to retain and restore but also to adapt them so as to give them new uses that are similar to their original intents. Adaptations for contemporary use have resulted in new forms based on old forms but adapted for contemporary use. The research also focuses on preserving the spirit of existing form and space; it introduces additional spaces that are necessary for modern use.