

Revitalizing Abandoned Mills in India The Case of Tamil Nadu

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Abstract-Revitalizing abandoned buildings contributes to the preserved building's heritage value, while also providing an opportunity for a new use. On the other side, art-driven adaptive reuse focuses on a unique type of adaptive reuse that promotes art and communal spaces. Based on the requirements, a representative building is selected, and a concise proposal for its resurrection is proposed. In addition, depending on the conditions of the sample building, this dissertation gives a set of basic rules.

Keywords- Sustainable techniques, renovate, open grounds

INTRODUCTION

Countries are constantly evolving with the state Architecture to which they have to respond. Growth, expansion, social and urban development, as well as new development techniques, all present opportunities as a result of transformation. The current trend of textile milling development in Tamil Nadu, India's second-largest economic region, is the subject of my research study. The idea is to keep the state's ancient fabric intact while integrating new growth.

The textile sector in Tamil Nadu is a forerunner in the province's industrial development and job generation. Tamil Nadu is home to 893 of India's remaining major and medium mills. The textile industry in the private sector has an important role in the industrial sector, in terms of employment opportunities, general economic activities, and trade. Industries enable Central and provincial governments to generate revenue, in addition to foreign exchange.

The empty factory buildings can now be found throughout our area, which is important in architecture. Industrial buildings and structures are amazing in terms of architecture, both in terms of their size and muted ornaments.

These walls that wish to tell stories about their history should never be silenced and it is up to us to keep them forever.

1.1 AIM

The goal of this study is to demonstrate the value of repurposing historic structures, which can be used as obsolete firms, and to renovate them by bringing them into the 21st century at the same time, preserving part of the memory and their vital contribution to their "life" course.

"The potential extension of life to buildings and their social and cultural significance"

1.2 RESEARCH OBJECTIVES

- Transform the old Mill Architecture and create affordable homes, playgrounds, cafes, green spaces, and new ones
- In a government that controls the economy, create new commercial initiatives.
- In line with the re-use of these buildings, public open spaces have been built in various recycling areas and integrated new activities that give the public access to a building that was demarcated in the past and now even after it has been abandoned.
- It should not be a change but a dynamic development that should be made gradually so that people can be part of this process and finally accept it.

1.3 RESEARCH QUESTION

What is the modern way of sustainable use of old mills left in the new useful buildings?

1.4.1 PROBLEM-1

Companies build factories to produce goods in bulk. They use them to the fullest extent possible and later, they build new and larger spaces to meet the growing demand. Old buildings are often converted into warehouses, abandoned, or sold outright - the latter often lead to their demolition to develop new ones, and the cycle continues.

1.4.2 PROBLEM-2

Existing economic power makes it difficult for mills to continue operating within the city. The textile mills are now available are the most valuable commodities in the city makes them subject to several economic and political forces. The buildings were made of basalt gray with a roof tile of Bangalore that provided strong and durable support

The industrial area should aim to preserve the memory of the area, considering that this area should serve as a historic site.

1.5 LIMITATIONS

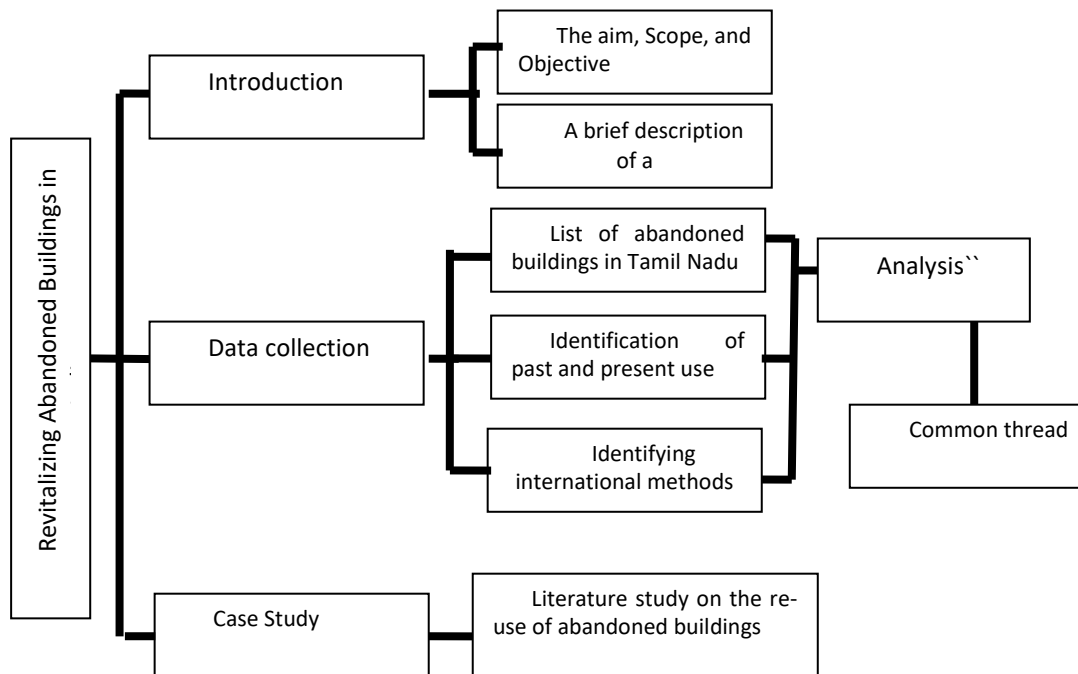
- Research is limited to the construction of a module structure, which is not a popular concept in India, so the research conducted will be very international and will be based on information in books and online.

- Because the study is based on a demolished structure. There is a scarcity of data on abandoned structure.

1.6 METHODOLOGY

- Introduction
- Data collection
- Technical data
 - survey
 - impact analysis
 - Reversal instructions
 - Conditions for selecting a sample structure
- An economic development analysis
 - Artists' money
 - Tourism
 - Local retailers
 - Accommodation
 - Renewable Recycling Art Performed by Discarded Spaces
- Community development analysis
 - Normal lifestyle improvement
 - Vendors benefit
 - Artist recognition

FLOW CHART OF METHODOLOGY OF WORK



CHAPTER 2: LITERATURE STUDY

2.1 INTRODUCTION

As a budding architect, I see that abandoned industry buildings could get redeveloped and transformed into museums, art galleries, or apartments, tourists, artists, and journalists see the ruins of the industry as a beautiful but sad reminder of the past. "When some people see ruins, others see homes in a state of disrepair."

Buildings that were abandoned but not built in the past were considered modern ruins. They collapsed or collapsed or became a place for criminals in society.

2.2 TYPES OF MILLS ABANDONED IN TAMIL NADU

- Tamil Nadu's first wind energy plant now lies abandoned.

- Textile mills mainly in Coimbatore
- Chemical mills
- Cassette factories

2.3 RECOVERY STRATEGY

Flexible Re-use:

People have viewed the underdeveloped structure as an opportunity to transform it into a functional new building. Earlier it was known, gentrification. Today it is called flexible re-use. It contrasts with the redesign, which is to change the facade structure of a building.

Description:

The process of adapting an abandoned site or building, for a new use different than for what it was planned is known as flexible re-use. It depicts the relationship between preservation and annihilation. Instead of

demolishing the building, this approach allows for the development and use of a culturally and historically valuable edifice.

2.4 Interior's Restoration Standards are a set of guidelines developed by the Secretary of the Interior Dept., India

The building needs to be used for its historical purpose or to be relocated which requires minimal changes in the main features of the building and its surroundings.

The building's historical context must be preserved and protected. It is wise to avoid eliminating historical items or changing features and areas that represent the structure.

Most constructions will change throughout time; nevertheless, those alterations that have historical importance must be conserved and protected. Chemical or physical treatments that harm historical objects, such as sandblasting, should be avoided unless essential. If necessary, buildings should be over-cleaned using the most adaptable means possible. The project's impact on important archaeological resources must be protected and conserved. Recovery steps will be implemented if such resources are affected.

2.5 MATERIX OF POTENTIAL BUILDINGS IN TAMIL NADU

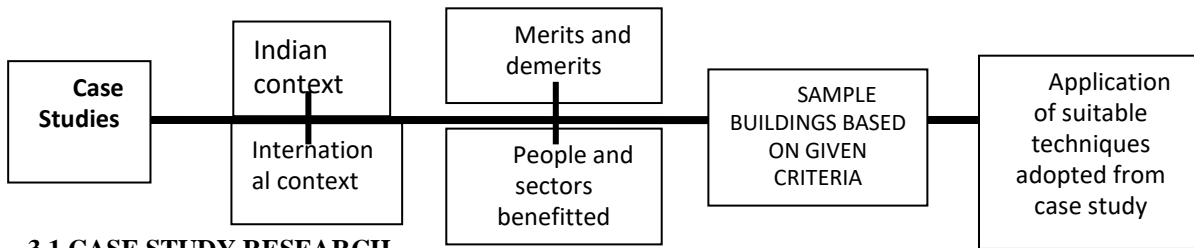
Sr No.	Name	Past use	Present use	Structural condition	Defects	Date of Lock & Seal	Source
1	Tmt.Uma Gopalakrishnan & Others, Kilpauk, Chennai	Steel industry	abandoned	Good , Structurally stable	minor	17.09.2021	www.cmdachennai.gov.in
2	lani,M/s Arumugam Enterpriswes (P) Ltd., Chromepet' Chennai	ommercial building	Biennale venues	Bad , major damaged	Major	24.02.2010	www.cmdachennai.gov.in
3	amil Nadu Chromates and Chemicals Limited (TCCL) factory, Ranipet	Chlorine Industry	Abandoned	Good , stable	minor	2007	www.cmdachennai.gov.in
4	Unknown, Comboitore	Rice storage	unknown	Good , stable	minor	2004	www.cmdachennai.gov.in
5	Kamal Abdul Khader, Anna Nagar	Special building-commercial	Tea godown	Good , stable	minor	19.09.2009	www.cmdachennai.gov.in
6	K.Karuna, T. Nagar, Chennai	Lodge Building (Commercial)	abandoned	Partially stable	major	07.11.2012	www.cmdachennai.gov.in

CHAPTER 3: CASE STUDY

There are certain parameters identified for conducting the model study. These studies have been done based on the typology of the building, Reason for rejection, and community rehabilitation due to new interventions.

Whether the intervention was successful at the levels or has caused loss to the society. Economic development, cultural cohesion, physical fitness or infrastructure

Selection of sample



3.1 CASE STUDY RESEARCH

Discarded buildings used for galleries and art installations around the world are as follows:

- Flourmill Studios
- Highline Park - New York
- Pepper House, India

Therefore, there are two international and one national case study done by me

3.1.1 FLOURMILL STUDIOS



INTRODUCTION

Flourmill Studios is a commercial development of 47 strata studios in nineteenth-century Crago Flour Mill in Newtown, Sydney, with common spaces and cafes. In an area with a clear industrial heritage, the flour mill is adjacent to the railway line and near to the station. Small creative firms can rent studio space at a decent cost in this development.

HISTORY AND HERITAGE HISTORY

By the time the mill has been closed, most of the machinery is removed, but the large mill, hopper and wheel drive, and lifting equipment are still left behind. The buildings are used for storage, a dancing school, and artist and artist studios. The mill was crumbling spaces on four buildings when the developer bought it, with little access from one part to another and no obvious entry. In many ways, it violated the Australian Building Code, particularly in terms of fire and safety. The Crago Flour Mill is on Marrickville Council's local historical registry.

THE WAY AND THE EFFECT

The adjustment was intended to keep the digestive system active during re-use while measuring rotation. A

large, new entrance yard and a state-of-the-art cafe have an impact on road conditions and the urban environment.

The new rotating line begins at the road's front and proceeds to a central course with an elevator, stairs, and utensils, and an east-west circulation spine connecting



portions with varying levels. This modified system involves opening up each floor and constructing internal corridors. Flourmill Studios near the paved courtyard.

OPPORTUNITIES

The flour mill - itself serves as an opportunity. Structure of thick logs and beams, along with metal tools and residual equipment.

They can be a desirable employer in the target market. It is smarter small businesses, responsive to the beauty of the green industry and the inner city. It is smarter small businesses, responsive to the beauty of the green industry and the inner city.

NATURAL STEPS

The carpets are made of recycled pet bottles. The thermal mounted roofs have a great sustainable approach. Open comfortable windows for fresh air and active skylights and roof windows. Solar panels on the roof supply major electricity. Rainwater is collected from the roof to conserve space while also preserving it from moisture. Ultimately, reusing existing building materials and structures helps to reduce economic waste and increase sustainability

VARIABLE RE-USE

Maintains a strong wood, concrete, and steel structure; a timber loading depot; and metal-clad fire doors (now painted in bright red). The rest of the apparatus, which includes huge hoppers, driveshafts, wheels, and belts within the studio

grounds, as well as a three-story pulley shaft mounted on a large rotating shaft, is protected by fire-retardant glass panels. Unnecessary detection has been deleted. It revealed the structure's true nature, produced the perspective, and enhanced the levels of natural light within. Internal partitions were removed, restoring the original volumes' spaces.

DESIGN FEATURES

At Outside, the new balconies with a metal frame to the south and west. Restored timber windows and loading bay doors. Heritage bricks with blocked windows were reopened for better ventilation. New ground-breaking entrance yard with original metal structure and loading area

Exposed wood or steel beams and columns in their usual location. The first floor is made out of a combination of wood and polished concrete. Each level's kitchen shared balconies. Equipment replacement, slick fire doors, and interpretation signboards.

At Estudio, Paint solid entry doors with glazed aluminum side panels. Studios recycle floor carpet and concrete finish. Fluorescent lighting suspended through the exposed cable system

3.1.2 HIGHLINE PARK, New York



INTRODUCTION

Highline Park, also spelled Highline Park, is 1.45-mile-long Line Park. The top line has been redesigned and planted as a green area and rails to trail park, promoted by the Promenade planted near Paris. The Highline proves that a specific site reusable site is a fully functional one that combines both flexibility and continuity.

REASONS FOR DISMISSAL

Trains were built in the 30s and used until the '80s. It was discontinued for nearly 25 years until the rehabilitation work began, at that time one-half of the tracks were cut off. Diller Scofidio + Renfro is the architect behind the Highline project. It is a design office of various components, which has a visionary effect of the combinations of landscapes, functions, and building materials in this work.

APPROACH

The program aims to restore the abandoned railway building to revitalize the neighbourhood and build a community park.

From 2009 to 2015, it was completed in three stages. The final phase, in which roads were built, was finished last year.

OBJECTIVES

- Integrating the environment with building materials and greenery as a major of the experience.

- Develop a sense of length by designing to experience different lengths of time in the pedestrian space.

- They had a careful sense of size and scale while designing the visual space.

- By using of 201 plant species were incorporated into building materials to give various impacts- wild, cultivated, close, and social habitats

DESIGN

This proposal includes more than a dozen access points to the main park. Whatever entry point is made, the important part will attract users to spend time exploring the entire park.



FEATURES

PAVEMENT

Encouraged by a wild area with seed left over after the lines were discarded, the team is developing a paving system that promotes natural growth that creates a 'no-frills' environment. Agri-ecture strategy - agricultural part, structural part –

SEATS

Peel-up technology is utilized to keep the chairs in order.

TRAIN TRACKS

Before the new Upper Line location became operational, every aspect of the structure was inspected and maintained to ensure structural strength. The pieces of the train were been removed. It was marked and mapped for later restoration to its original position as a compact plant plot.

LIGHT

Energy-saving LED lights gradually illuminate the park's walkways, allowing the eyes to acclimate to the ambient light of the metropolitan sky. The subway is illuminated by the lights built beneath the High Line.

LOCATION

In the large garden, the soil was brought in and distributed to some places. A crew of horticulturalists planted over a hundred plant species chosen from the east coast to meet the architects' plans.

3.1.3. PEPPER HOUSE, Kochi

INTRODUCTION

Pepper House is a marine historical site on Kalvathi Road, which connects Fort Kochi and Bazar Road. The building contains two historic 'godown' (an Indian word

meaning storage area next to the booth), one facing the road and the other facing the water.

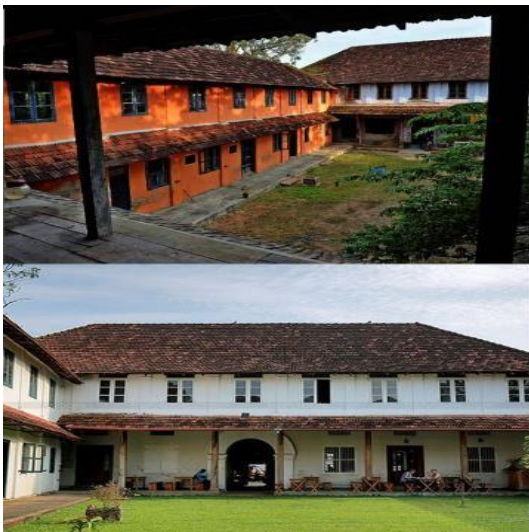
The two-story clay roof are separated by a large courtyard, which was once used for storage and is now used as a courtyard cafe, gallery, art studio, and event space to create a multi-purpose space to manage and promote year-round visual arts in Kochi

BUILD BEFORE FLEXIBLE REUSE

The structure contains a central courtyard with seating on all sides. The centre yard was used for pepper loading, unloading, and drying. Two levels were constructed on each of the three sides, with one floor on the third story. For the construction, laterite, woods, stones, and glasses were employed. It is supported by wooden columns and has a smooth traditional hardwood roof with Mangalore tiles.

Build for reusability. Private ownership currently owns a mixed-use building (library, design store, cafe, biennale venue).

The ramp from the street begins with a step that provides easy access to the wheelchair in the building. The library and cafe's layout encourages people to spend more time inside the building. Artists from all over the world who could come and run their classes were one of its best venues to design as



workshops. Your yard plan adds fresh air and lighting to all display halls. Planting with mountains stretched on the wall

creates the appearance of an ancient rustic building. Build after flexible reuse currently has mixed-use (library, design store, cafe, biennale location) under private ownership. The building has good stability and has minor flaws, such as the demolition of the wooden floor. Additional changes include repaired roof, floor material replacement, paint, and additional steel beams for stability.

3.2 Analysis

Finding the common thread

The examples of studies were selected based on what they were all connected with the industrial era and located in cities of great importance for development and trade. They are located in industrial areas but have lost their value as technology advanced. These three frameworks went through stages of abandonment where some informal renewal efforts keep them busy for a short time. It is evident in each study as a manifestation of structural changes or remodelling scars. So, it is concluded, that people would be better off associating well-constructed buildings with cloth than buildings that adhere to the same thumb.

VIEWING

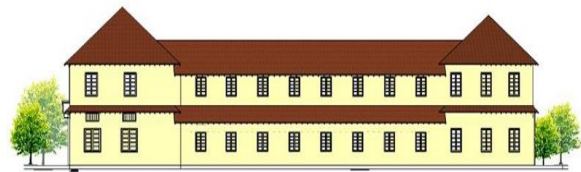
The three primary heads can be subjected to a final examination:

- sociocultural
- economics
- Physical/infrastructure

West elevation



East elevation



Case study	Sociocultural	Economic	infrastructural
Flourmill studio Sydney	-New jobs for artists and performers -People began viewing art as a real-time job	Value of land increased	-Addition of structural elements to make the building stronger -Introduction of new character
Highline park New York	The number of community places was increased, and as a result, the quality of life rose significantly.	-Small businesses increased -Land value increased	Old rail tracks were removed, and a contextually appropriate park was created.
Kochi Biennale	-Community space increased -A sense of third-place instilled -No elite were participatory -A cleaner city Less public menace like drugs etc	-Small vendors were benefitted -Homestays were benefitted -Restaurants made income -Transportation was modified for better	-Old structures were mildly retrofitted, and structural components were installed where necessary. -Weeds and other menaces were effectively removed

Based on the course analysis, a sample structure in the same location was chosen, and efforts were made to propose suggestions for the building's rehabilitation.

CHAPTER 4: LIVE RESEARCH

Tamil Nadu Chromates and Chemicals Limited (TCCL) factory

Since the Tamil Nadu Chromates and Chemicals Limited (TCCL) facility was closed in 1995, a lot of water has flowed down the Palar, but little has been done about the 2.27 lakh tonnes of chromium sludge that accumulated on its grounds.

Building selection criteria:

- Has rich cultural significance and historic evidence linked to the building which makes it a potential property for conservation and reuse.
- The building is not intact, and additional deterioration can be avoided if properly cared for.
- Continuous maintenance is required; thus, it should be changed into something that has regular activity taking place in it.

4.1 LOCATION

RANIPET: More than 25 years after a factory's shutters were withdrawn, chromium sludge left behind contaminated groundwater. While a plan to discard hazardous garbage and cleanse water accumulates dust, officials are concerned about how to pay for the cleanup.

- Structures with considerable damage can be reconstructed using the same materials as before.
- Exposed timber or steel beams and columns can be utilized for this
- Reuse of existing building materials and structures

4.2 INTERIORS

Can be turned into art spaces and art cafés, where diverse historic information and artist works can be shown to convey the cultural significance of the building and its surroundings.

4.3 GUIDELINES BY GOVERNMENT

- Only minor adjustments should be made to preserve the historic character. Regular maintenance should be performed to ensure the safety of visitors.
- Architectural details, finishes, materials, and construction methods should be preserved.
- The addition of inner walls should not result in structural alterations that are large enough to change the identity of the structure.

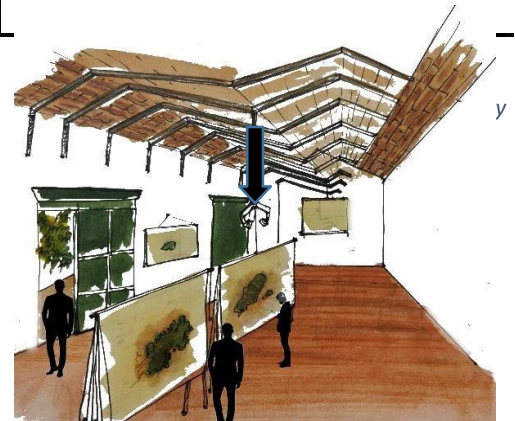


Figure 47 sketch of modified interior:

Terracotta flooring, interior painted white and boards installed for hanging art works. Sufficient lighting etc.

- If mending is not possible, damaged or degraded elements may be replaced or even reconstructed.
- Landscaping must compliment the surrounding and natural landscape must be allowed to flourish in a controlled manner
- Ambiance must be maintained from outside as well as inside

CHAPTER 5: CONCLUSION

The study's findings indicate that flexible reuse is one of the finest strategies to renovate a building without compromising its integrity. Anything the designer can do to extend the life of the structures should be done. Buildings with a strong foundation and a structural structure are the greatest candidates for re-use. A historically significant structure has remained in its location for a long period, and as a result, it has layers of local context and extra history. They are in the middle, have a strong feeling of community, all of the required resources, and are already constructed.

The significance and breadth of reuse related to art are attempted to be understood via this research. In this approach, a wide range of foreign and Indian issues have been investigated. Contributions from these case studies have also been accepted to regain the discarded structure identified by these characteristics.

The research sheds light on the need for art-driven growth via building public spaces, as well as their significance in creating a lively city.

The numerous strategies that were employed end up being adopted, in a sample structure that meets these criteria for larger expansion. And certain guidelines are being developed to help with this.

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