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Local materials and traditions in the conservation of vernacular buildings

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Abstract

What were the traditional techniques and materials employed to maintain and conserve vernacular buildings? If we study carefully, we could find the answers in analyzing existing vernacular constructions, related traditional building cultures, and the inhabitants' lifestyle practices. My research, particularly my Master's in Architectural Conservation dissertation, aimed to explore the tangible and intangible aspects of traditional living that contributed to the conservation of vernacular buildings. My research affirmed that people in the olden times had a deep understanding of their surrounding environment and microclimate. They effectively used local land resources to develop building techniques that preserved their buildings for several generations. E.g., In India, fruit resin was added to mud-plasters to strengthen them. The study also provided insights into traditions and social norms that contributed to the upkeep and longevity of vernacular buildings. E.g., In Portugal, every year, people lime-washed their walls before the village feast. Though it was a cleaning act, the whitewash served as a protective layer to the walls. The former practices were conscious efforts to preserve buildings. However, the latter often laid hidden in daily life routines and hence remained unrecognized as conservation efforts. This research paper highlights some traditional building and maintenance strategies native to different parts of the world that – consciously or not – contributed to the conservation and maintenance of vernacular constructions. It is intended to bring to notice traditional conservation methods, which could be integrated into modern conservation strategies by heritage professionals today.

Keywords: *tangible and intangible heritage; conservation.*

1. Introduction

Though some traditional buildings have stood the test of time and centuries-old buildings continue to exist today, the science of built heritage conservation of the olden times does not feature – at least boldly in heritage literature. Heritage conservation has today, of course, evolved into a formal practice and involves planned interventions. So what was it that ensured the health and survival of buildings in the olden days and has passed them to the current generation?

If observed intentionally, the conservation of traditional times can be read between the layers of traditional building cultures, life practices, and beliefs. They subliminally supported conservation, thus making it a way of life rather than a separate and disconnected activity reserved for professionals. It is thus little wonder that conservation in olden times necessitated no formal recognition. This paper explores tangible and intangible aspects of traditional living that – consciously or subconsciously – contributed to built-heritage conservation, and more so, almost eliminated the need for deliberate intervention.

2. Local buildings cultures

Back in the day, inhabitants in different regions of the world, with their profound understanding of their micro-environments and climates, effectively used local land resources to develop building techniques and structural designs that protected their buildings for generations.

Following are some examples of local building methods that ensured the durability and sustainability of vernacular buildings.

2.1. Additives in preparation of building materials: earth and/or lime plasters

In many parts of the world, people added local produce and naturally available materials while preparing earth and/or lime plasters for construction. It was done to improve the workability, strength, water resistance, etc. of the building material/building.

In *India*, eggs and resins from local fruits acted as binders. In some regions, builders added lentils too. For example, in the state of Goa, cooked rice water (*kanji water*) was used. In the recent restoration of the Convent and Church of Santa Monica, neem water, belfruit juice, and jaggery water were mixed into the plaster mix.

Fig. 1. Belfruit, neem water (green), belfruit juice (orange), and jaggery water (brown), Goa – India [Source: Fernandes (Architect, Goa)].

While preparing lime plasters in *Poland*, bones, eggs, cheese, meat, etc. have been used since ancient times. In the making of clay plasters, cow dung was often used. Among others, a liquid substance is produced by burning pieces of birch tree bark. (As communicated and demonstrate by Jarema Dubiel from "Earth, Hands and Houses" – Poland).

Fig. 2. [a, b, c, d, e & f]. Preparing a waterproofing additive for plasters from the bark of birch trees – Poland (2015).

2.2. Roof structure and materials

Roofs of traditional buildings were detailed to stand steady and protect and secure the structure.

In *Scotland*, some roofs comprised cruck frames – which upheld the roof, thatch – which covered the roof and provided natural insulation, and cow sharn i.e. dung without the fiber – which was applied on thatched roofs as a waterproof membrane.[1]

Fig. 3. Cruck framed roofs ensured the stability of roofs, Dumfriesshire – Scotland (Source: Walker, McGregor, Conservation of Vernacular Buildings).

[1] Walker, *Earth Structures and Construction in Scotland*, p.86

In Goa – *India* and Normandy – *France*, sloping roofs and large overhangs protected wall surfaces from rainwater and winds. Local materials such as coconut palms (Goa) and thatch or slate (Normandy) were used to cover the roofs.

Fig. 4. Large overhangs built with local materials: [a] Goa – India (2019) [b] Normandy – France (Source: Patte, *Architectures En Terre*).

In Normandy – *France*, plants like Iris were grown along the ridges of traditional roofs as their roots absorbed rainwater and protected the buildings from water damage. This feature can be seen on the "Association Pierre et Masse" and "Maison des Marais" buildings.

Fig. 5. Plants on roof ridge protected buildings from water damage, Maison des Marais in Normandy – France (2015).

3. Traditional lifestyles and systems

Traditional lifestyle practices and beliefs also seemed to have had a significant bearing on the care and longevity of traditional buildings. However, as most traditions and beliefs lay embedded and hidden in the routines of everyday life and often included daily activities and rituals that bore no intention of conservation, they remained unnoticed, unrecognized, and unnecessary of mention. This lack of transparency led to the lack of acknowledgment and worth attached to the role traditional lifestyles are likely to have played in conservation. This continues to be the case today.

Even more so, now that traditional lifestyles have disintegrated to give way to modern living, it is even more difficult to trace and fragment aspects of traditional life that integrated building conservation and maintenance culture.

3.1. Planting trees that would provide for the upkeep of homes

In Goa – *India*, house owners grew local varieties of trees at the time of building their houses. These were mainly coconut, bamboo, mango, and jackfruit trees. The owners envisioned that the trees would grow with them and provide for them in their old age. The coconut tree trunk, for example, is used to repair and replace traditional pan-tile roof frames, which after decades, often need attention. Bamboo serve as raw material for weaving mats and baskets used in farming. Bamboo baskets were also useful in cob earth building to carry mud. Mango and Jackfruit are popular for their wood as well as fruits.

3.2. Burning fire, fuel, and incense in houses keep dampness and insects away

Various traditions and rituals in *India* involve burning fuel and incense on a regular daily or occasional basis. The smoke and essence they give out help keep dampness and insect infestation on walls at bay. In some regions, daily cooking is done on traditional wood-burning stoves inside the house.

Incense sticks are often left burning for religious reasons or for fragrance. In Goa, frankincense is burnt on religious occasions, at wedding rituals, after bathing infants, etc. The reasons may vary from beliefs like warding off evil, inviting good omen, or just keeping mosquitoes and other insects away and sanitizing the space.

The blackhouses of *Scotland* left fireplaces burning constantly. Combined with the thermal properties of clay used in the construction (peat,

mortar, etc.), it kept the house lit and warm. The building had hardly any window and door openings. It thus retained much of the rising smoke and helped keep insects away from walls. It aided in preserving the roof material as well.

In some houses of *France*, smoke from fireplaces contributed to guarding floor beams against insect attacks. This has been particularly observed at the manor house at Saint-André-de-Bohon in Normandy. (As communicated by François Streiff, Architect, Normandy).

Fig. 6. Traditional cooking inside the house gave out smoke that kept insects and dampness away from walls – India (Image source: http://www.projectsurya.org/, accessed in 2015).

3.3. Burying lime at the birth of a male child served as a building material for his future house

According to tradition in Poland, a family buries lime at the birth of a male child. This is done so that the lime ages to quality and provides a durable plastering material for their heir when he grows to be 25 – 30 years old and is ready to repair his ancestral house or build a new one. (As communicated by Jarema Dubiel, "Earth, Hands and Houses" – Poland)

3.4. Lime disinfected animal sheds

Farmers in *France* periodically painted animal sheds with lime to disinfect the space. (As communicated by François Streiff, Architect, Normandy). The lime paint, in turn, served as a protective layer and protected the walls from everyday wear and tear.

3.5. Annual lime washing of walls

In some parts of *Portugal*, it is a custom to whitewash houses annually, usually before the village feast. As Paulina Faria (Architect, Lisbon) and others explained, this action was more of a cultural norm rather than an activity with technical implications. Those who did not whitewash their walls were considered to be less clean. Some people also mixed a product called 'cloro' with water and applied it to the walls before whitewashing them. This was primarily meant to disinfect walls, kill any fungal growth, etc. It probably also helped with the adhesion of the new layer of whitewash.

Traditionally, lime was made from limestone ('*cal*' in Portuguese), and walls were whitewashed every 1-2 years. This created several paint layers and thickened the walls.

Today, people prefer paints ('*tinta*') bought from the market, and repaint the walls rarely.

Fig. 7. Wall in Moura, Alentejo – Portugal (2018).

Fig. 8. White washing with modern paints, Mourão in Alentejo – Portugal (2018).

3. Conclusions

This paper tried to unearth some local building cultures and traditional lifestyle practices from different parts of the world that – conscious or not in the mind of inhabitants – largely contributed to the upkeep and longevity of vernacular buildings.

If approached effectively and feasibly imbibed with modern and technical conservation practices, they could add a new dimension to modern conservation. They could also enlarge the scope of rendering built-heritage conservation more affordable and simple. For example, in the repair of masonry bee damage, burning frankincense can be used to ward away the bees.

Traditional and modern approaches clubbed together for the care and protection of vernacular buildings can thus enhance the conservation approach. In imbibing traditional methods in conserving traditional buildings, we are conserving not only the tangible built heritage but also the intangible aspects that are allied with the building. It thus allows for a holistic approach to architectural conservation.

Note

This paper contains excerpts my master's in Architectural Conservation dissertation titled, "Regional Distinctiveness of Earthen Structures: Construction Techniques and Conservation Approaches. A Comparison of Mudwall/Cob Buildings in Perthshire – Scotland and Normandy – France" (University of Edinburgh – UK, 2015) and my post-master's DSA-Earthen Architecture and Heritage dissertation, "Comparison of the vernacular earthen architecture in Goa (past Portuguese colony in India) and Alentejo (Portugal): Local building cultures and conservation approaches" (CRAterre, École Nationale Supérieure d'Architecture de Grenoble – France).

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