

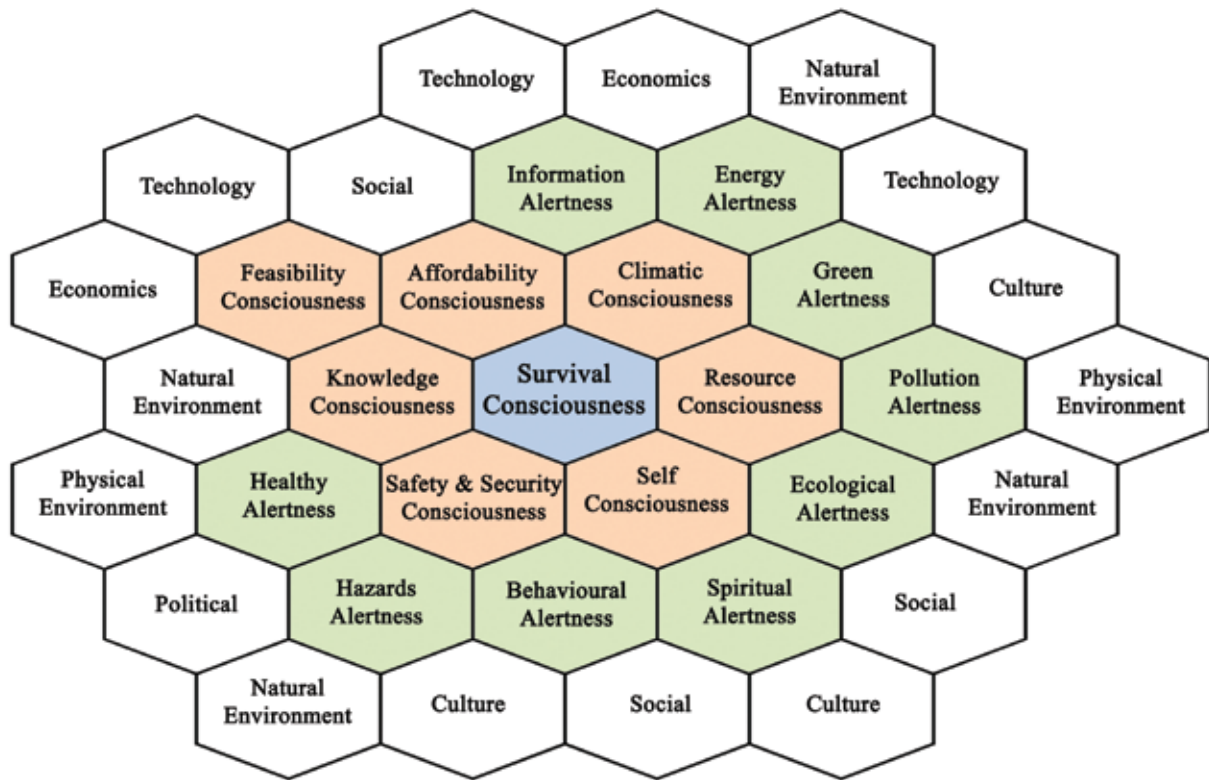
UNDERSTANDING SUSTAINABILITY

To understand sustainability, we have to look at the past, gently go through the present with a glimpse at the future, and then establish a link



Architecture evolved not only to meet the needs of the people and their activities but also to provide them safety and security. Architecture is said to be sustainable only when it fulfils its functions factoring in the dynamics of the environment, its users and their activities as well as technologies. It is sustainable when it provides psycho-physical-physiological comfort. How did architecture become sustainable?

Ancient architects were able to discover the secret of how the built environment could be passively manipulated to ensure psycho-physical-physiological comfort. This involved the intelligent use of planning, construction techniques and materials. Of course there were variations with respect to different regions in the architectural evolution. In the modern age, with the advancement in technology came methods to actively regulate comfort. This created a market demand due to changing lifestyles and increasing impact on the environment. Traditional architecture teaches us to be simple and healthy.



Note: The environmental stimuli namely: Social, Cultural, Political, Technological, Economics, Natural Environment and Physical Environment create Alertness. These various levels of Alertness create various levels of Consciousness leading to a Survival Consciousness. This actually can be called as Sustainability, where it actually began.
The meaning of Consciousness refers to 'an alert cognitive state in which you are aware of yourself and your situation'. The meaning of Alertness refers to 'The process of paying close and continuous attention'.

Fig. 1: Understanding Sustainability, Source: Author

'Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland et al, 1987). Sustainability is an impact network. Today, people are aware of the issues of depletion of resources and energy. Hence, they are cautious about their usage. They are conscious of their survival, individually and socially. Therefore, only when the society becomes sustainable will the individual become sustainable, and vice versa. (Refer Fig 1)

Technology Vs Sustainability

Legendary British-born Indian archi-

tect, Laurie Baker, who was popular for his cost-effective and energy-efficient architecture for the poor, said 'The few examples of attempts to modernize housing merely demonstrated, only too clearly, our modern conceit and showed how very foolish we are when we attempt to ignore or abandon these hundreds of years of 'research' in local building materials... 'According to him, 'The resources are in scrutiny, the natural reserves are depleting, with the high-tech stuff nobody has been able to come up with solutions that are energy-conserving both in the production of materials and how they are assembled'.

Technology is no longer merely a necessity. It is increasingly becoming

a part of the life style of human beings and pushing them farther and farther away from the natural environment. What is surprising is that it is not the developing or under developed countries but the developed countries who are contributing majorly to pollution and environmental problems. Why is this so? Due to advancement in technology or due to the unique cultural heritage of these countries?

Representation of Traditional Architecture of Kerala

The *Nalukettu* is a popular representation of Kerala's traditional architecture. Its typology changes with respect to the caste, class, and profession of

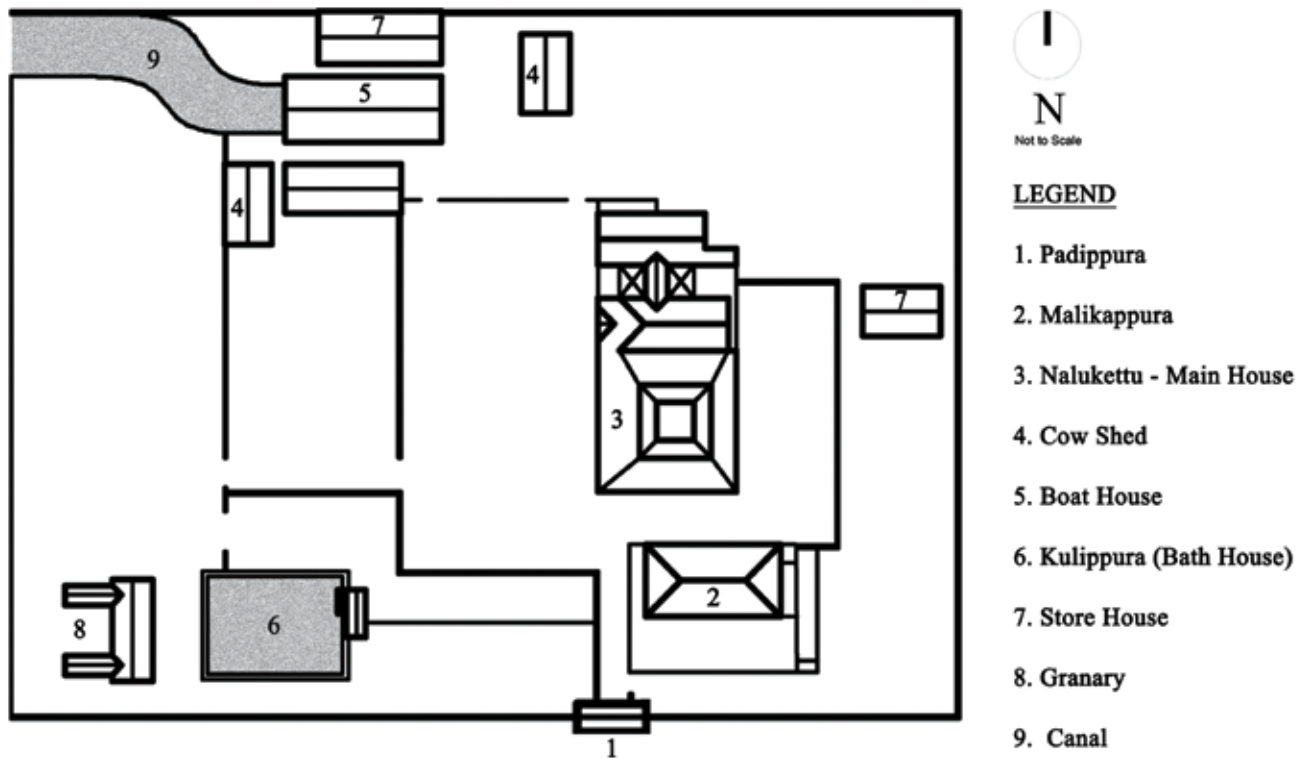


Fig. 2: Typical Site Plan of Agricultural oriented *Nalukettu*, Source: Author.

the user as well as the region (Jacob 1997). In an agricultural *Nalukettu*, the character of sustainability will be very much visible, since it has more historic value. Also, the activities vary from agricultural, public to domestic use making the house socially flexible, culturally rich, politically strong and climatically responsive.

- **Location and Principles:** The traditional architecture was based on the principles of Vaastushastra, right from the selection of the site to the building construction techniques. The character of the building was related to a demon, Vaastupurush, representing the building as a living organism. The habitat for a building is technically the location. A seed may not grow everywhere but only in those locations, where the probability of resource consumption

is high in the future. A similar principle was used to choose a site. (See Fig. 2)

- **Site Planning:** The site was secured with a Padippura or entrance gate, followed by Malikappura used by the Karanavar (male head) of the house and guests. The *Nalukettu* was used by the rest of the family and servants. Adjacent to the Kitchen a well was always present to provide water for drinking and cooking purposes. Further away was located the *Kulippura* or bathing house, which reduced the chances of well contamination. Food was obtained from the fields. There were granaries, store houses and cow sheds. Roadways and water ways were used for the distribution and consumption of these goods. Resources were ample and

more than enough for all. There was socio-cultural harmony.

Building Planning: The building was planned around a courtyard and rooms were positioned according to Vaastu Mandala (Refer Figure 3). This kind of layout ensured climatic comfort in warm and humid regions (Dili et al. (2009)). The larger courtyard was used for various rituals, as a playing area for the young and for family gatherings. The space around was used by men for interaction and also for dining and sleeping in. The smallest courtyard was used by women for interaction, and also for washing dishes. This was surrounded by the kitchen, storage and sleeping areas.

The building was divided into public, semipublic/ semiprivate and private spaces (Refer Fig. 4), ensuring the required level of safety, security and privacy for the spaces. The public

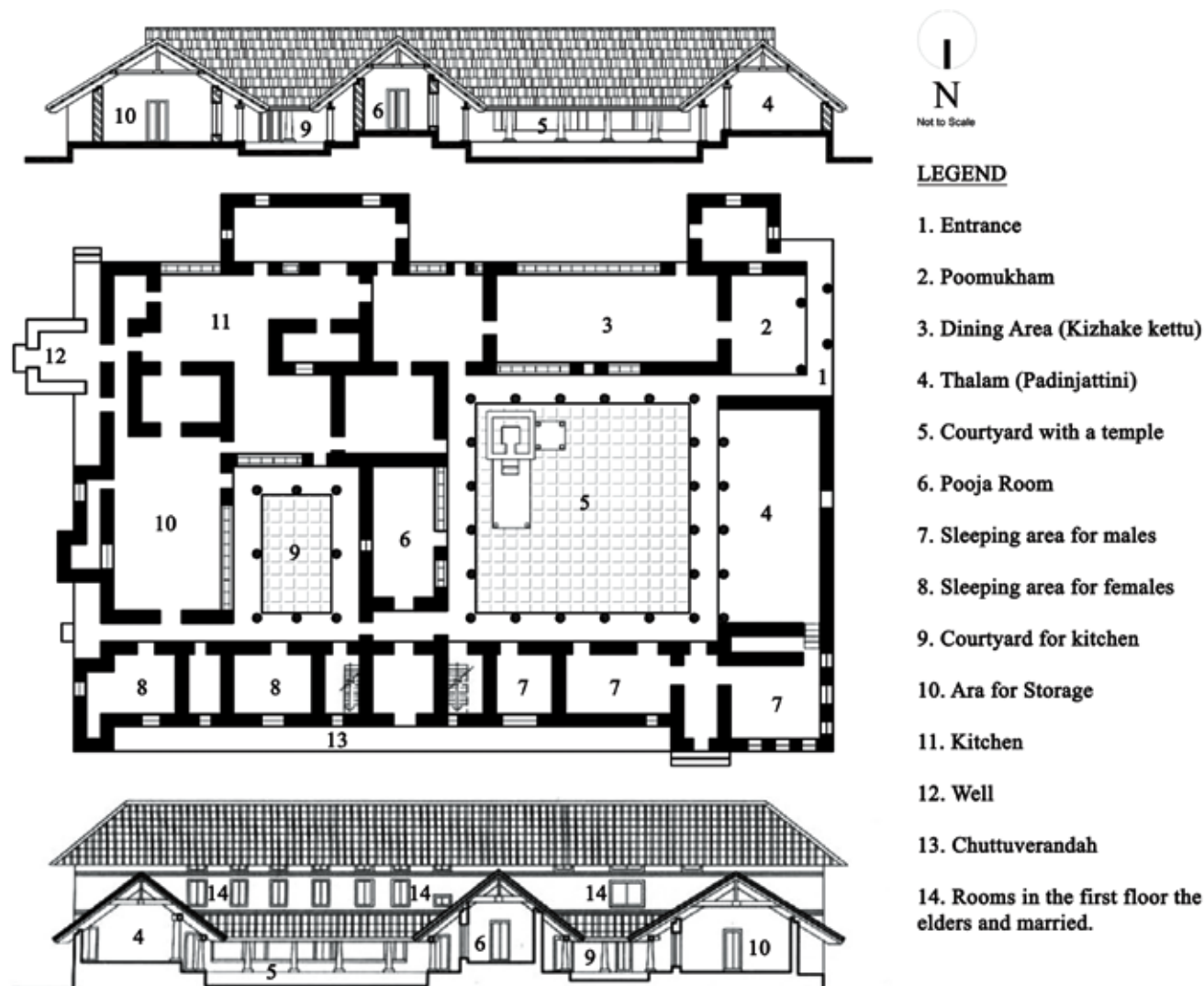


Fig. 3: Typical Plan of Agricultural oriented *Nalukettu*, Source: Author.

spaces were used by visitors and vendors. The head of the family or Karanavar usually sat there. The spaces were not flexible but the activities performed certainly were. During the rainy season, the activities were shifted indoors utilizing the courtyard for multiple functions.

Climatic Responsiveness: The traditional buildings were always climatically sustainable [Dili et al. (2009) and Shanthipriya et al. (2012)]. They made use of local materials, such as laterite masonry and wood carpentry. The Technology and methods adopted

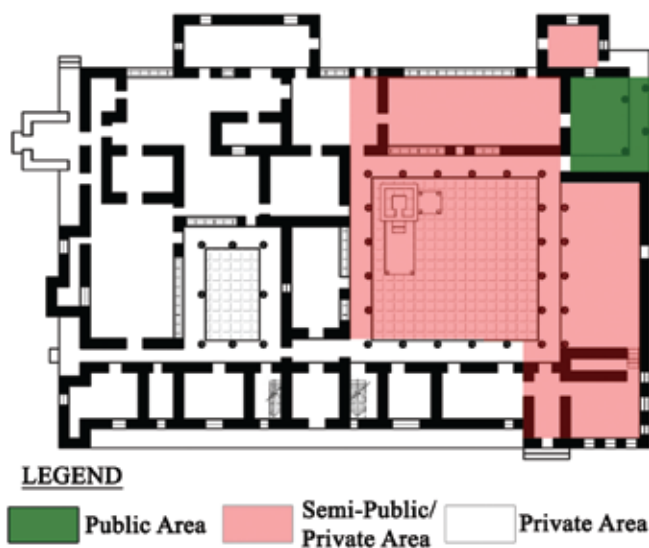


Fig. 4: Typical Plan of *Nalukettu* - showing Private, Semi Private and Public Area, Source: Author

Evaluation of Traditional and Modern Context

FACTORS	TRADITIONAL CONTEXT (Past)	MODERN CONTEXT (Present)
Location	The Location was selected on the basis of access to natural resources, keeping in mind the future.	The Location is selected on the basis of access to utilities and facilities.
Life Style	Very simple lifestyle, with simple and limited demands	Highly complex and gadget-dependant lifestyle.
Socio-Cultural	Joint family system: People lived together depending on each other, and enjoyed the resources available in their area.	Nuclear family system: People concerned only about themselves and their personal safety and security.
Ecological	The natural resources were disturbed least, since it was a part of their livelihood.	Least bothered about the natural systems. People care only for terrace gardens.
Material	Locally available materials were used, making the building climatically responsive. The material used contained low-embodied energy.	Materials containing high embodied energy being used for construction.
Technology	Passive methods were used.	Active methods are dominant, to flaunt status and bring artificial comfort.
Flexible	The buildings were designed to expand, through rigid planning methods. Since the building had to accommodate the future population.	The buildings are not designed to expand, since the family is nuclear.
Productivity	Earlier, houses were productive, creating the resources required from the surroundings.	Today, the houses are only emitters.
Standardization	Non-standardized materials were used, based on the regional raw material availability.	Standardized material (Anil (2013) is used, irrespective of where it is produced, leading to lowering of strength and affordability.
Affordability	The houses were affordable, since everything was within reach, and the materials & techniques used were local.	The houses are not affordable at all, due to distance production and high consumption.
Civic	Designs were guided with certain regional treatises like Vaastushastra: Manusyalaya Candrika, and Thatchusastram.	There is an infinite number of bodies governing the construction methodologies.
Market	Only the local markets were exposed.	The global market is forcing the population through ads to consume materials with high embodied energy, even though they are not climatically responsive. The high demand is also leading to high price.
Crime	Crime factors were low, since the joint family system prevailed. There was high level of safety and security.	Fear of crime is high because most of the time people are living with unknown neighbours and surroundings.

were passive. The courtyard acted as a major element. Sloped roofs were appropriate for heavy rains. The use of wood regulated humidity. The use of terracotta roof tiles allowed infiltration of air. Attic spaces helped regulate the temperature inside and at the same time, provided storage space too.

Social and Cultural Pattern:

According to Thampuran (2001) the houses followed a single hall structure (Stage-See Fig. 5). Later, (Stage 2), in order to let in light, and then to accommodate water cistern, courtyard planning was opted (Stage 3). Further, people started living as joint families giving rise to the system of halls around the courtyard (Stage 4). The house became an adaptive one. The agricultural practice made the house a productive one, leading to the creation of storage spaces. Further, according to the gender and activities practised by them, spaces were segregated. Also, the social relations led to the spaces being divided into different levels for privacy. The culture was in keeping with the climate, life style, dressing and food. Its simplicity allowed it to be sustainable for long.

Aesthetics or Beauty: 'Beauty'

refers to the psychological comfort of the users living in the house. It is representative of the cleanliness and health of the built environment created. Traditional buildings were carved beautifully in teak wood, and used traditional proportion systems, leading to the creation of a very healthy environment and equally healthy users.

Civic Interventions:

Civic interventions through building bye-laws and regulations were limited. This gave more freedom to the designer or

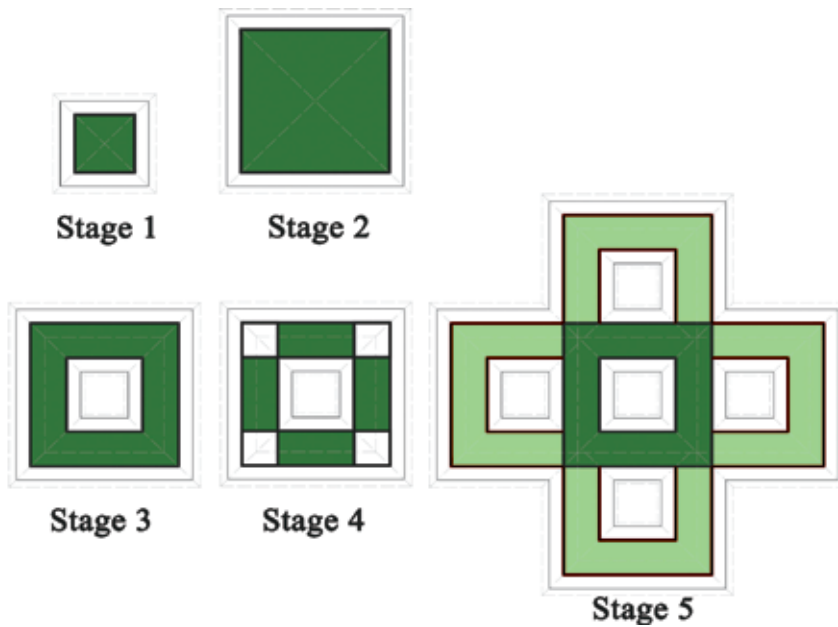


Fig. 5: Probable evolution of Nalukettu, Source: Author

architect, providing a choice to create better designs. The regional treaties were the only constraints they faced.

Conclusion

The solutions, in the past were actually rather simple. Today, the solutions are highly technological and infinitely complex. The roots of the problems are often ignored, due to the challenges they may pose. Anil (2013) states that, it is almost as if living in the past would soon be considered futuristic'. It is not about going back to the old systems. However, there is a requirement to adopt the intelligent use of present technologies. A bird makes its nest within few days, with the resources available and within reach, without creating much impact on the environment.

Astonishingly, humans could never do that, even though they are said to be the most intelligent species. They are making their own tombs to live in the future. We all have a responsibility to give back the stolen future to

the people who are going to own it next, including all kinds of inhabiting species. Nothing can stand in the way of time, even architecture. But it is true that some of the principles of traditional architecture were able to withstand the test of time. It is definitely possible to use those principles to create a sustainable modern architecture.

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