

Architecture: Reflection of Changes in Society – A Study of Influence on Hospital Structure

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Abstract—Architecture is implementation of ideas in most creative ways resulting in buildings and physical structures to efficiently cater to the needs and requirements of the functionality as expected from the built form. Architecture as symbol varies from place to place, nation to nation. This fact is well reflected from the variations and the differences and preferences in housing forms of different places. It can be well seen that institutions and their architecture change in relation to changing social, cultural and political conditions of any society. The archeologists study the buildings of an ancient city to get the idea of civilization vis-a-vis its social, cultural and political conditions. Using hospital building as an example of any one building type, this paper presents the timeline of evolution of hospital to show how the cultural, social and political condition of a society influences its architecture and its forms. The paper studies the factors that have influenced the hospital structures from eighteenth century to modern times. The study shows how in modern times, apart from ornamentation/ aesthetics, the architectural forms believe in giving due consideration to non-functional elements too, like the human factor, sustainability and the local culture for designing a building compared to their ancient counterparts. Designing hospitals in today's context is full of challenges as healthcare in today's context is more focused on promoting holistic wellness of the patient rather than simply treat his/her ailment. This reflects the change in attitude of the society towards its citizens. Through this study, an attempt is made to show how architecture is considered reflection of the culture and society and to some extent the political influence of the people engaging it.

Keywords: Architecture, built forms, hospital buildings, Society.

Introduction

The American architect Louis Sullivan once said that “form follows function” and this statement is now considered as a principle in architecture.

Architecture requires material and technology so that ideas could be manipulated in the most creative manner, resulting in buildings and physical structures that are the cultural symbols of the places they are built. As is said, ask any archaeologist and he will tell you how the ruins of an ancient city are a reflection of the society and its political and cultural structure [1].

The use of materials, forms, symbols used by the architects are something that are familiar to the community in which it is used and built and reflects the culture of that community and its people.

Architecture as symbol varies from place to place. This is also obvious and reflected in the differences and preferences in housing forms from nation to nation. For example, the Japanese homes, though very beautiful, the main living space in these homes is very small compared to the large main living spaces of the American or Australian homes [2].

But in traditional Japan, for example, the kitchen is specifically designed optimizing space usage and arrangement of equipment, giving equal importance to provide the women a space guided by human concern and as well as the functional requirements [3].

An exploration of the association between political requirement as well as society and its culture and architecture, even when disconnected, are definitely linked.

Architecture is considered an outcome of the needs of the society and culture it is catering to. According to the American Institute of Architect's fellow, Joseph Esherick, the main factors influencing the architecture of a place are the land characteristics, requirements of people, economics, climate and culture.

Amos Rapoport, in his study on the architecture of houses, proposed five aspects of culture, which mainly influence any architectural form. They are the ways of fulfilling the basic needs, the structure of the family, the importance of women within that society, attitudes toward privacy, and interaction within the society.

In the following sections, the development of architecture of hospital building is presented and it has been shown that how the cultural, social and political condition of a society influences its architecture and its forms. The facts thus put forward show how the political, social and cultural aspects of any society influences the changes in the architecture of the institutions prevailing there.

Evolution of Hospital Architecture

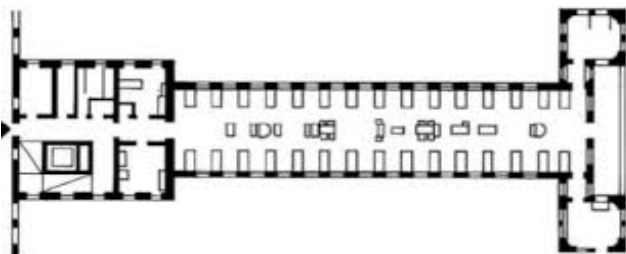
Last two centuries has seen major changes in hospital architecture, noticeable are:

- i. Late eighteenth century - large single blocks superficially resembling mansions
- ii. Hundred years later - pavilion look with separate blocks connected with corridors
- iii. Twentieth century - back again to single block resembling office or an industrial building

The explanation usually given in favor, points towards this development or change as a result of advances in medical and scientific knowledge. Though some of the development did effect the development in hospital building but that fails to establish a clear relationship amongst the two.

Hospitals in medieval Europe were mainly inspired by the Christian duty to perform ‘acts of mercy’, which included nursing the sick. Medical treatment became secondary, for they were staffed exclusively by members of religious orders and only occasionally employed physicians. Hospitals at this time were designed to have the patients’ bed close enough to hear religious sermons, music, etc. Closeness to altars, chapels, and other rooms of prayer were also important at this time. Example is Charite Hospital (1788), considered best in Paris, had 50 monks or novices, but only one physician, a surgeon and seven apprentices to take care of about 208 patients. Hospitals during this time were intentionally made unattractive to imbibe moral values and cultivate awareness about monetary aspects among the inmates. Thus, being cured was a multidimensional meaning in hospitals of those times.

The hospitals wards were not maintaining good sanitary conditions, the wards were poorly lit and ventilation was bad, with multiple patients per bed and no isolation of infectious and non-infectious patients. Due to the horrific patient condition, King Louis XV had to order demolition of the Hôtel Dieu hospital building in 1773 [4]. The Nightingale Ward approach of hospital plan, proposed by Florence Nightingale during the Crimean War (as shown in the figure below), providing fresh air ventilation and daylight was thought of a solution this problem.



Nightingale ward type, St Thomas hospital, London, source: James and Tatton-Brown 1986

Figure 1: Nightingale ward plan (source: reference 5)

Pattern of eighteen-century English hospital were followed in later centuries too. Majority was built in old towns and in new industrial centers; the growth of hospitals was slow. Normally hospitals were built in outskirts of town as getting large plots of land for hospital building was cheaper.

Nevertheless, in nineteenth century medicine emerged as an organized and powerful profession. The authority of doctors in utilization of hospital building increased (though bureaucrats had the general management still under them) and they started using hospital as social prestige.

These hospitals depended on annual subscriptions rather than huge initial funding, therefore were not big palatial ones. Initially most of them started in private houses and later on moved to own building, as funds were available.

These buildings resembled Palladian mansions, but with extensive use of the corridors. The interior space organization was different. Unlike the mansions, in the elevation too it had stories of equal height. The equal height of a floor was required, as all the floors were most of the time used for the same purpose and even plan of different floors were kept same. It was not so in mansions as different floor was attached with social importance of different degree. In mansions, rooms were laid one after the other, the primary circulation was through them, and sometimes corridors were provided as secondary system. In hospitals, it is the reverse.

In the London Hospital, the corridor divided the building into two halves and joined the north oriented rooms meant for the staff and the rooms on the other side of the corridor, which was meant for the patients. The wards were arranged in a row and access to them was from the single entry from each end of the corridors. Wards ended in a ward lobby and three wards of about 15 beds emerged from each ward lobby. This made it possible to take care of three wards at any time.

By the last quarter of the nineteenth century, the pavilion plan (St. Charles Hospital, London) was considered as the perfect solution as it provided better natural air circulation, thus stopping the outbreak of hospital infections. It was the result of combined endeavor of the architects, the doctors and the nurses. It meant the success of professional over the nonprofessional authority. The Lancaster Moor Hospital, Lancashire (1816) designed by Thomas Standen is another example of standard pavillion architecture.



Figure 2: The Lancaster Moor Hospital, Lancashire (1816), (source: reference 6)

Nevertheless, for smaller hospitals versions of the pavilion plan have continued to be used to the present because of their ease of construction and their potential for extension and modification.

Modern Hospital Architecture

“Forms follows function”, the mantra of modern architecture advocates the function of the building as guiding principle behind deciding the shape and structure of any building. But as believed commonly, the modern hospital architecture, like any other architectural forms, believes in giving due consideration to non-functional elements too, like the human factor, sustainability, local culture and to certain extent ornamentation/ aesthetics for designing a building [7].

In modern context, not only the functionality or aesthetics of the hospital building, but the wellness of the client too is given utmost importance. The design of a hospital is influenced by how the architecture is affecting the patients and the staff of the hospital. Hospitals are designed not only to treat the patient from any ailment but also to educate him about his ailment. Architect Jerry Ong’s vision was to design a hospital and built it to promote overall wellness of the patients and not just “fix and cure human beings”. He included nature into his design of Khoo Teck Puat Hospital, Singapore, as the first step towards holistic approach of patient care. His target was to design a hospital so that, “one’s blood pressure lowers when he/she enters the hospital grounds” [8].



Figure 3: Khoo Teck Puat Hospital, Singapore (source: reference 8)

Modern architecture has changed the very concept of hospital design. Like all other buildings, hospital buildings too are influenced by the concept of explore, think out of the box and implement with creativity to achieve the functionality of the building more efficiently. With the aim of serving the poor, architect Michael Murphy and his team got inspired to build a hospital in the rural area of Butaro in Rwanda. He and his team was introduced to the concept of “ubudehe”, meaning “community works for the community” for building the hospital, leading to generation of employment for the locals too [9]. The hospital was a locally fabricated lo-cost and environment friendly building. Aesthetic factor too was not neglected, as he used the locally available volcanic stones

found in abundance to enhance the beauty of the outer walls, as can be seen from the figure below. His philosophy was to use nature for faster healing and adopt site-specific designs.



Figure 4: The hospital in Butaro, Rwanda (source: reference 9)

With number of persons getting aware of healthcare requirement and with technological advancements in healthcare sector the number of patients seeking medical advice has increased drastically. But the outpatient to inpatient ratio too has increased, which calls for increased number of outpatient healthcare units compared to a hospital. Though every hospital is equipped to take care of this outpatient diagnostic and treatment requirement, but these dedicated outpatient clinics is a good solution to this increased outpatient workload demand, both from the prospective of patient as well as the doctors/ healthcare providers. They require very less investment in terms of space required, facilities to be provided, staff required and working timings too. As space is a constraint in cities and town, these clinic can be a big relief as they provide at least primary medical care right at the doorstep of the client. With tremendous technological advancement in health care sector independent super specialized clinics in a particular discipline like the eye hospital, dental clinic, ENT hospitals are also a common trend requiring small land area for establishment. Now a days as the many of surgical procedures does not require overnight hospitalization these super specialized hospitals too can be established in crowded area. The space requirement for these super speciality clinics is accommodated through vertical expansion, with each floor dedicated to a particular service. If space becomes a constraint, the task of space planning for the architect becomes a challenging job, as the architect has to provide well defined space for each activity related not only to patient diagnosis and treatment but his overall well being and also management and administrative function of the clinic/hospital [4]. In this competitive world, hospital design variables is primarily focused on reducing the stress and agony of the patient using the built form and aim for a scientific approach to aim for safety of the patient and staff; provide environment to keep high the morale as well as productivity of the doctors and supporting staff; and also care for environmental sustainability.

Conclusion

The literature survey reflects that the original concept of the healing centers for the sick were dedicated to “Gods and their healing power”. The aim was to cure the sick for the ailment. Though there are evidences of physicians settings broken bones, stitching wounds etc. but prayers and dream interpretations was given utmost importance in their healing procedure [10]. On the contrary, approach of today’s hospital is based on holistic healing. Modern healing believes in supporting the patient not only to help them heal physically but mentally, emotionally and spiritually too. The fact that hospital architecture too affects the morale and thus performance of the health care staff and thus its role in care of patients is being recognized and given due consideration. Though there are evidences of this humanistic approach in traditional hospital system too but it was not the main design criterion. In modern context, one believes that the foundation of a healthy nation is its healthy population and the importance of architecture in this context cannot be ignored. Nosocomophobia, the phobia relating to hospitals should take a back seat, and the hospital building should be so welcoming that one should feel like visiting the hospital again. Thus it can be seen that it is the vision of the civilization which is reflected in its built forms, hospital being one them. Architecture is thus reflection of the culture and society, and to some extent the political influence of the people engaging it.

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