

## THE EFFECTS OF PANDEMIC ON ARCHITECTURE – A STUDY ON THE TRANSFORMING DESIGN APPROACH IN ARCHITECTURE

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### ABSTRACT

*As we are proceeding into the second decade of the 21<sup>st</sup> century, many parts of the world are facing and experiencing economic, social, technological, cultural, health and environmental catastrophe on a macro level. It is therefore important to understand that architecture is a strong visual and tactile tool that influences the different parameters of a region. Architecture is not only about art but is a fundamental part and an element of the process of many systems at a macro level. It has always changed its process of approach and perspectives with respect to the changing circumstances. These changes are unpredictable and can only be determined as the time passes. Since the world is swaying under the global crisis caused because of COVID – 19 pandemic, architecture is a tool which will play a key role during and post pandemic. Architectural professionals will now start ensuring to participate in the changes that are and will take place and not just be dependent on other external factors. Also, it is a time to analyse and optimise the processes in general and adapt the rapidly changing circumstances. Everything will now be depending upon the outcomes of this pandemic, that whether the inclination has to be towards the precautionary design which will result in altogether an extensive design approaches which will ensure the different norms like social distancing, disinfecting working spaces and so on or whether it allows to continue with the current design approaches which will be possible only when the pandemic will be completely eliminated. But as it has always been a trend and tendency that the design approaches or design evolutions have taken place into completely unique design definitions post such conditions of pandemics and has led to the thought processes of how things are designed, and then be it the change in design of drainpipes or working spaces. In short, the focus of everybody is going to prepare for the future.*

**Keywords:** catastrophe, pandemic,

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## **2.1 Introduction**

### **2.1.1 Background Study**

Since history, world has been experiencing many pandemics and has successfully adapted itself as per the changing scenarios. Throughout the centuries, there have been most fatal and notable pandemics like The Plague, Spanish Flu, etc. which has led to change in the lifestyle and redesigning of many urban areas, work space, residential areas and complexes, constructional and architectural services and many more over the world. The spread of these infectious diseases across the world is because of humans as a constant companion. These outbreaks have not only ravaged humanity but at times have signalled the end of entire civilizations.

There are many groups in the society who have been majorly affected because of these pandemics. Not only have these pandemics killed the people, but also, have forced the people to change the perspectives of living life and lifestyle. And as architecture is directly connected to the people who in a bigger frame constitute the society and ultimately it is the architecture that fabricates these two ends. All these pandemics directly affect the people and for people to adapt to these changes, architecture helps to direct a way out for people for the same.

Also, there are many pandemics which do not really require the rethinking of one's way of looking at them and have also got eradicated as and when the time has passed. Most of the pandemics have got eradicated by the help of medical science but the pandemic of COVID – 19 will surely make not only the designers to rethink the way of designing of spaces but will force all the foundations existing in the world to incorporate and not ignore the changes required in forming of rules and regulations of different systems.

This will lead to consideration of such alarming situations and norms and plans that will cater to such situations. Consideration of isolated spaces in the towns and cities, spaces that will cater the needs of group of migrant labourers and that of poor, centres that will accommodate stranded populations and cater their needs, storage spaces, contingency plans, areas in factories and industries that will accommodate large number of employees, availability of infrastructure that favours technological advancements and many such plans should be incorporated during the design process itself. So as to when these pandemics take place, human needs can still be catered. Though there is a big issue of land availability and high costs of lands in many countries, but since these are the situations which are going to arise and emerge periodically have to be thought and rather will not be ignored.

Architecture as a tool will help contributing ways to fulfil not all but partially the problems that are and will be faced during and after this pandemic.

### **2.1.2 Aim**

To explore the possible changes that will be taking place after the pandemic which will be based on the data from the historical records.

### **2.1.3 Methodology**

- Historical Research – This research will help to understand the pandemics and effects of the same.
- Desktop Study - Study the data and articles related to the pandemic, history and its impact.
- Responses from the society and behaviour during the pandemic.
- Explore some architectural ideas that can become a contribution for the next pandemic.

### **2.1.4 History**

The history of pandemics on one hand is known to many. As the human civilizations flourished, on the other hand infectious diseases too increased. The study of these pandemics also gives a wide perspective of the different measures taken previously and which can help take measures for the future taking in consideration of different factors that have changed in due course of time. The pandemics have brought a positive change in some parts of the world whether some have forced people to migrate or leave their abode, keeping all the things cherished since childhood.

## **3.1 Case Studies**

### **3.1.1 Case study on Bubonic Plague**

The outbreak of Bubonic plague also known as the Black Death completely changed the Medieval Europe. The severity of Black Death never allowed people to experience the life which was previously known to them. It changed all the paradigms of life mainly the socio-economic, art, architecture, religious beliefs and practices and rights. Though, the early phase of this pandemic was difficult to stop this, the measures taken were also powerless. But, later in the history, contingency plans were prepared. During the outbreaks that later took place, at that time, there were orders to attach blue crosses to the doors of the houses that were having any infected person with the plague in past week. Also, some crew members were quarantined at vessels at the port. So, the quarantine centres were neither houses nor institutions but were the vessels of the port. The major change in the architectural field was

the availability of the skilled masons who were capable of executing fine intricate sculptures, which was then the period of decoration and got wiped out because of this plague. Those who were left were in demand and had so much commitment that they were unable to perform and use their talent to the fullest. The masons of new generation were forced to work with stone which was unfamiliar, which resulted in less complicated and less ambitious techniques, which further resulted in the degradation of standards.

In short, it inspired people to think radically and accordingly make future urban developments. Cities, thus, cleared the wretched and congested living spaces and expanded their boundaries. Contingency plans were made and early quarantine facilities were developed. It made larger public spaces to avoid clutter. It also deployed much expertise from surveyors to architects at various places which needed decision making with respect to face such pandemics in future.

### ***3.1.2 Case study on yellow fever***

The origin of this pandemic has likely to be from the parts of Africa, most likely from Central or East Africa and further to West Africa. It was mainly caused by mosquito species. This was also spread to America by the means of trade.

In this pandemic also, quarantine facilities were made near the sea. But though there were dedicated quarantine hospitals, the city was still traumatized by the outbreak of yellow fever pandemic. From then, the officials thought that necessary changes were supposed to be made which was the need of the hour then. As the earlier quarantine facilities were too close to the city which made it too easy for the people to come in contact with the infected persons. These persons were mainly the passengers from the ship who were undergoing the quarantine. So, the health officials decided to move the quarantine facilities farther from the city area. Thus, existing properties were taken and were made as quarantine centres. After the pandemic, there were buildings like libraries, became an orphanage for the children who lost their parents during this deadly pandemic. Also, many open fields were transformed into mass graves, where the victims of the yellow fever were buried, so much so that it was declared full to capacity. Also, these places, after some years were redeveloped and transformed into recreational areas, airfields, public squares and so on. Also, there were changes made in the municipal water supply system. Also, in the later years, steam power was replaced with hydropower, when a spillway dam was put in place across the river. Also, to compliment such places, surrounding areas were developed and this too, attracted tourists. All this was done taking into consideration the main cause of the spread of this disease, that were the mosquitoes that bred in the dirty, unclean water; because of which, the scientists considered the worth of clean water, and catalyse innovations that anticipated the decrease in the pandemic condition. So, these were some architectural as well as technological

advancement that came into effect after the yellow fever pandemic. Also we can even see the architecture that was adapted with time and how certain buildings and spaces with different purpose were later changed for the betterment of the society.

### ***3.1.3 Case study on Plague in Surat***

Surat, one of the largest city in India, which is also the fastest growing and the cleanest city was once engulfed by the deadliest plague because of its poor living conditions. The unplanned urban growth, uneven distribution of resources, uncontrolled and haphazard settlements, further led to filthy and unhygienic living conditions that resulted in the deadliest plague that was faced by the city. The situation of plague also worsened due to the heavy rains which clogged the sewers and also, dead animals remained out in open which added to the already unhygienic and poor living conditions. People started leaving the city that included people who were still in the incubation period of the infection. Also, the physicians and pharmacists left the city and carried large amount of antibiotics with them for the friends and family members. There were several checkpoints that were established across India, especially at railway stations and airports to closely monitor the incoming inhabitants from Surat who were well examined and quarantined. All schools, public gathering spaces and other areas that anticipated large public gatherings were closed as it was spreading rapidly.

The spread of the disease was controlled but the plague caused serious concerns for the health facility, its infrastructure and the capacity of local government to manage the city and its people. This plague was a catalyst for improving all of this. The government officials quickly started collection of trash and cleaning of streets. It also enforced the hygiene standards in food establishments and upgraded all the slums with paved streets and facilitated good toilets at these places. The sewer systems were also cleaned and upgraded and entire Surat city thus saw a positive change in its style and living conditions. Thus architecture with urban planning played a very major and crucial role in improving the city's conditions and this has now led Surat to be considered as one of the clean and fastest growing city in India.

### ***3.1.3 The current pandemic of Covid-19***

The pandemic of Covid-19 has not only affected one or two states or nations but has its adverse effects globally. The cause of this disease is still not confirmed, but researchers and scientists are constantly working to find the cure and the same are under trials.

The pandemic has changed the lives and lifestyle of people. Though at this point of time we cannot predict what future will look like or exactly what changes will be made or incorporated, but we can surely say that there are new designs and innovations that have been adopted by the people. In the current situation, people are working from home and because of



this, in the near future, definitely the stakeholders or the policymakers and companies will think upon re - evaluating the need in spending and investing in large office spaces where there a lot of people gathering at the same time. Another aspect which will be thought about is the design of public spaces like gardens, malls, community centres, plazas, parks, hotels, restaurants, stadiums, etc that anticipate gatherings of people at one time. These spaces can be designed keeping in mind the new common that is, social distancing and personal hygiene habits. Also, these spaces can continue to offer refuge in future emergencies. The design layouts will incorporate places for sanitizers or disinfectant sprays at the entrances, temperature check units at the entrances and also the seating arrangements that will have safe distance from one another. Limited sitting areas, sectioning between the sittings can also become a part of design. Apart from these in such situations that demand huge and temporary health facilities, modular construction will see a huge demand that will have fast, flexible and less wasting of materials that can be used during and post construction. Also, automation and least contact products can be designed like lift operations from cell phones, automated hand washing areas, disinfectants and sanitizers having foot pedals to avoid direct contact and such innovations can be seen and which will become a part of our lives for at least coming years.

#### 4. Conclusion

All the above case studies show that pandemics are humanitarian emergencies that have made the society suffer in many ways. But, we have focused on the changes that it has brought in the world of architecture, and then may it be urban development or town planning. Also, as architecture covers a very broad spectrum related to the human kind like the social behaviour, personal habits and many more, these pandemics have changed the life and lifestyle of the human kind which has further led to the architectural changes. From such pandemics we can see the changes in the type of sanitation facilities, water distribution, contingency plans that include quarantine centres, convertible spaces like stadiums, public squares, open grounds, school buildings, vacant flats, hotels, plazas, trains, buses, ports, docks and many such places turned into quarantine centres to cater to the infected persons quarantine facilities because of the increasing spread of virus amongst the people. Thus, this changed the actual meaning of the spaces as per the user requirement.

From all these examples, we can say that architecture has always changed according to the situation and has adapted to the best as and when required.

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