

# A Sensitive Approach Towards Captive Asian Elephants

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**Abstract**— If a captive elephant could speak, it would have told us the tales of how it was captivated, how it was tortured at a very tender age, only to obey the command of the human species. Architecture, as we all know and believe, is one of the few professions, that has the power and ability to create and mould the society. But, is it only for the human race? Or can other species also be benefitted with it?

The intention of this research is to bring about awareness as to what extent, architecture can contribute to the cause, and develop the basis of design, suiting the requirement of the captive elephants. This study highlights the various features and lifestyle of the Asian elephants and how their characteristic features can be used to develop an efficient inclusive environment for the captive Asian elephants. The research aims to increase the awareness amongst the humans of how it has dominated the captive Asian elephants, and also focusses on the ways and means in which we can enhance their living environment, leading to co-existence, instead of forcing the elephant species towards extinction in the future.

**Index Terms**— Captive Asian elephants, Enclosure design, Enrichment programme, Ethno-elephantology.



## 1. INTRODUCTION

### 1.1 Demography

More than one lakh Asian elephants existed at the beginning of the 20<sup>th</sup> century, but the numbers have drastically declined over the years to nearly 50%. Asian elephants were added to the International Union for Conservation (IUCN) red list of endangered species in the late 20<sup>th</sup> Century. The Asian elephants are distributed majorly in the southern parts of Asia – India, Bangladesh, Cambodia, Bhutan, China, Myanmar, Nepal, Thailand etc. Less than fifty thousand Asian elephants exist in the wild, of which more than 50% exist in India. The present Asian elephant population is restricted to a few regions of India – the north eastern India, southern India and fragmented along the central India. The studies of 2005, suggest that approximately 23,900 – 32,900 wild Asian elephants are present in India, of which the maximum number can be found in the southern region with population of almost 10,300 – 17,400. The number of captive elephants is 2,500. (R Sukumar, 2006)

The first survey of captive elephants in India, which was submitted in an affidavit by the Ministry of Forest and Environment to the Supreme Court, reveals that the states of Assam and Kerala account for more than half of the nation wide total of 2,454 captive Asian elephants. Karnataka has the third highest with a population of 184. Of the 2,454 captive Asian elephants in the country of India, 560 are with the Forest Department, 1,809 are in private custody and only 85 in zoo.

### 1.2 Evolution of the process of taming elephants

The strong belief of elephant headed God, Ganesha, entrenched in the theology has played a vital role in the attitude of the civilians towards elephants in their civilisations. Elephants were considered as pious and accounts on their life and habits can be found in Rig Veda as early as 2000 B.C. The engravings on the seals of one of the earliest civilisations – the Indus valley civilization, indicate the earliest sign of captive elephants. During the Battle of Jhelum River, in 326 B.C, Emperor Alexander was surprised to see war elephants in the battle. Post this war, there were attempts to tame African elephants. It was eventually found that the African elephants were difficult and unfit to tame. During the 250-200 B.C elephants were later used in the Roman warfares during Punic wars, but the species were classified as unreliable and obsolete weapons. They were hence used for entertainment purposes in the amphitheatres. During the 15<sup>th</sup> century B.C, the Egyptian Pharaohs conquered West Asia, leading to encounter with the Asian elephants for ivory hunt. This event initiated a widespread market across the world for ivory. With the fall of Roman empire, the concept of use of elephants was lost to barbarian invasions. They eventually became part of mythology for almost 500 years of Dark Ages. It was in 802 A.D, that the arrival of elephant in the court of Charlemagne, a gift from sheikharun of Rashid, became the greatest zoological sensation, compared to the past many centuries. This event later led to the use of elephants in wars, by the Arabs. 16<sup>th</sup> century marked the reintroduction of elephants in Europe. To this time, Europeans believed that there was only one kind of elephant – the Asian, as no one had seen a live African elephant. 1920 A.D marked the year of boom in ivory industry and this led to excessive trading and poaching of the species. This trade caused a major decline in the population of the Asian elephants. As a result, in 1986, the Asian elephants were marked under Endangered species, by IUCN.

### 1.3 Threats to the Species

The process of urbanization of the human species has led to encroachment into forest covers. The increase in population and density of the human population has evidently resulted in rapid shrinkage of elephant habitats. Due to large development projects, such as dams, roads and mines; agricultural plantations and expansion of human settlements etc, have played a major role in the fragmentation of the elephant population. The developments that have happened by encroachment of forest have made it difficult for the wildlife to migrate within the forests. Thus, the wild elephant populations are now mostly small, isolated and they are unable to mingle, as their ancient migratory routes are cut off by human settlements. The rapid human population growth, resulting in encroachment of forest area has led to increase in human-elephant interaction and increased conflicts. There have been cases where elephants have raided the farmers' fields, leading to cases of killing humans and vice versa. Eventhough India and Myanmar have banned the capturing of elephants, it is still widely practiced in the trade or timber industries. They are killed, for their tusks, hair, skin and meat, or exported for tourism purposes.

### 1.4 Furture of Captive Asian Elephants

The Asian elephants were majorly captivated in order to be used in religious festivities, timber yards, entertainment purposes such as circuses, riding etc. If one was to visit the southern parts of India, it can be noted that elephants excite the flavour of the celebrations and are also considered pious. A large number of elephants are brought in during extensive festivities such as the Mysore festival, Thrissur Pooram etc, which have over time attracted natives and tourists from all over the world. They are also used in minor temple celebrations. Post capture, these elephants are trained to behave in certain ways for the celebrations. Elephants in timber yard were a common sight, until they were replaced by cranes, which was a faster and more efficient method to lift the timber. This technological upgradation has proved to be cost efficient for the timber yard owners. The one-time investment of a crane for this purpose, was found to be more economical, as compared to the purchase, maintenance and training cost of an elephant.

In 2018, the Central Government of India notified the draft Performing Animals (Registration) rules, proposing to prohibition of performance and exhibition of all animals in circuses. Supreme court of India had accepted the PETA India Intervention application for Elephant ride ban. Taking the above-mentioned scenario into consideration it is evident that the use of Asian elephants, in the field in which they were trained and captured for is gradually diminishing. Due to the positive initiatives taken by the government to ban such activities and also ban any further captivation, there has been a reduction in the number of elephants that are being captured. But there is a different side to these bans. The captive elephant owners, now have reduced income from the elephants. With the mindset that, anything that does not have an economic value, is considered useless, case of mistreatment occurs. Hence the major question that arises is - **'What will be the future of these captive elephants?'**

The elephants were captivated, tortured and trained, solely for economic gain of man. Although the intention of the acts and policies arise for a genuine and positive cause, the fact that elephants gradually loose their importance as a source of income, leads to mistreatment from their owners, abandonment etc. Hence the need for conservation and rehabilitation arises, in order to provide the existing population of captive elephants a better and worthy life.

### 1.5 Approach

To synthesise a design programme for the captive Asian elephants, that enhances their living condition and allows them to co-exist with the human species as they have, for most part of their lives. The study and in-depth understanding of the species, their physical, social and psycological needs must be given utmost importance while designing their living environment. This environment must inturn enhance their abilities and help them use their senses giving them a feel of natural environment.

## 2. SPECIES STUDY – ASIAN ELEPHANTS

The study of the species involves understanding the physical characteristics and social behaviour. This study is very crucial in order to undertand the requirements of the captive elephants in the habitats created by humans. This process is of utmost importance; similar to the user study undertaken by an architect, prior to designing for the client. One needs to understand the behavioural characteristics of the user, what suits them best in the living environment and how the quality of life maybe increased through simple processes adopted in design.

### 2.1 Lifecycle

The lifecycle of the Asian elephants majorly comprises of five stages – calf, juvenile, adolescent, adult and geriatric. The calf,

0-1-year age group, weighs about 100 kg on an average. It is cared for, by the mother and other cows of the herd. The process of weaning might be accelerated, at times due to the coming of siblings, although there is a gap of two and a half years. The calf consumes approximately 11L of milk everyday. During the juvenile stage, of 2-5 years, the Asian elephants are part of the herd. It is during this stage, that they are given nutrition, trained to survive in herds, as well as alone. The survival techniques, health & hygiene, use of trunk for feeding, drinking, bathing etc is developed during this stage.

The adolescent period ranges from the age of 5 to 15 years. It can be classified into two major groups - Adolescent stage I (5-10 years) and Adolescent Stage II (10-15 years). The Asian elephants reach sexual maturity between the age of 8-13 years. There are no signs of mating involved in this stage. There is reassociation of the social bonds in the adolescent stage I, between the male and female adolescent elephants and the herd. The male calves spend reduced time with the mother elephant. Between the age of 10-15, the male members split from the herd, to form loosely bonded herd with bull elephants and are mostly by themselves.

The adulthood begins from the age of 15 and lasts till the age of 60 years. This period can be classified into three, on the basis of the reproductive progress. Between the age of 15-18, the male elephants experience the onset of musth, and the female elephants experience the onset of estrous cycles with 3 weeks intervals regularly. During the musth period, the elephants are very aggressive and the testosterone levels are four to ten times higher when compared to the period they are not in musth. The reproductive stage ranges from 20-50 years. The bull elephants cover vast distances in search of mate. The males, mate with the female for 3 days, and then leaves, playing no role either in parenting of the calf or during its birth. The gestation period is 19-22 months in the case of Asian elephants. There is a gap of 2.5 to 4 years between births. This period is utilized to create a special bond with the calf, before another one is born. They generally give birth once in four years. On an average, a female elephant gives birth to four calves in a lifespan. The other cows in the herd also assist. In cases where there is death of the mother elephant, one can observe the calves being adopted by the other cows in the herd. The social bond between the herd is extremely strong. After the age of 50, the females experience menopause, marking an end to their reproductive stage. The elephants are edging towards the last stage of their lifecycle after the age of 50, and hence get tired faster. As the elephants cross the age of 60, they move towards the later stages of their life and tend to have reduced pace, preferring calm and peaceful environment.

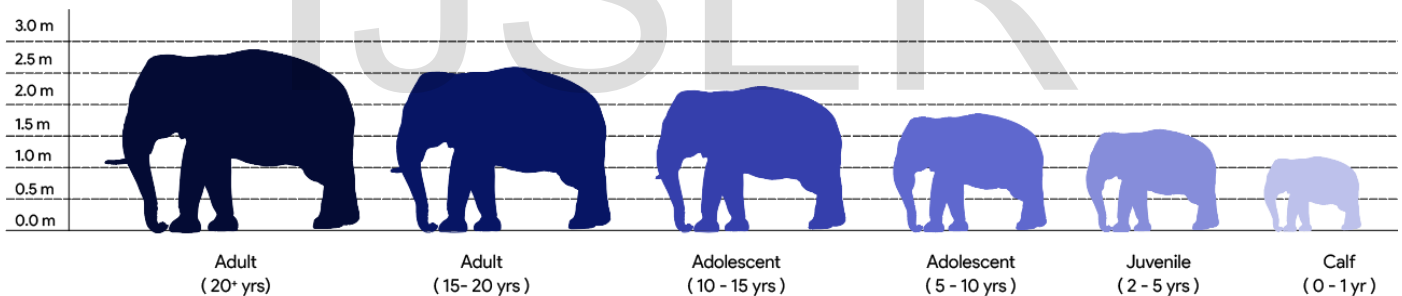


Figure 1: Lifecycle stages (based on- Sukumar 1985,1989- Sukumars criteria for age and height of Asian elephants)

## 2.2 Physical characteristics

The average height of a male Asian elephant is considered as 2.75 m, with a maximum height measured till date being 3.50 m. The average length of an adult male Asian elephant is 3-6 m. The average height of an adult female Asian elephant is 2.40 m, with the maximum being 3.20 m. The average length of an adult female is 2.5 - 5 m in length. The average weight of the species is between the range of 2000 - 5000 kg. The average length, inclusive of the trunk and the tail, is often found to be between the range of 5.5 - 7.5 m, with the tail being 1.2 - 1.5 m in stretched length. The largest length was once reported in Assam, in 1924 with a total length of 8.06 m. The dimensions, as shown in figure 2 and figure 3, are self-generated, by taking an average of twenty elephants from the Aanakotta, which is an elephant sanctuary located in Guruvayoor, Thrissur, Kerala. These dimensions play an important role, in order to incorporate the design features of the captive elephant environment.

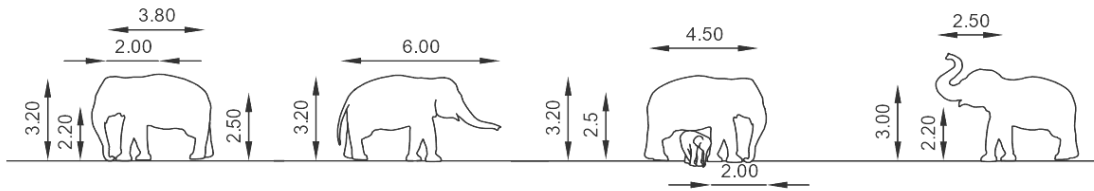


Figure 2: The average standing dimensions of an Asian elephant

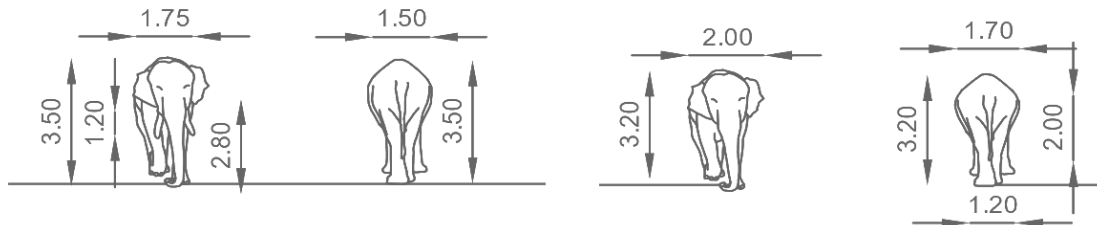


Figure 3: The average standing front and posterior dimensions of an Asian elephant

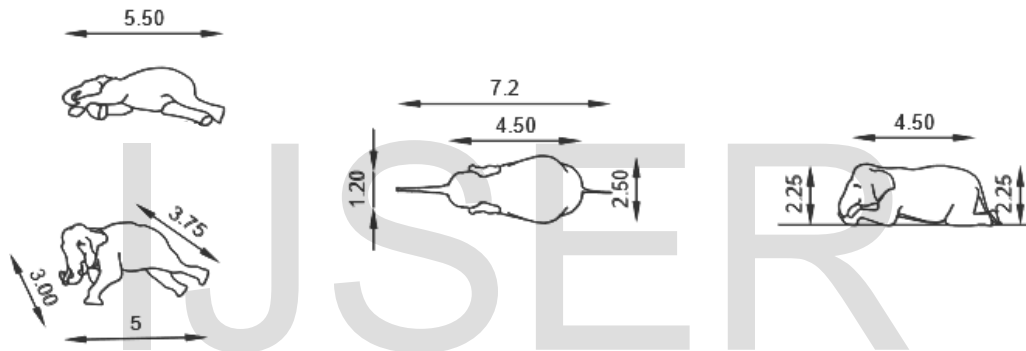


Figure 4: The average dimensions in other postures

### 2.3 Social Structure

Elephants are generally herd animals, where the herd comprises of the related females and their calves, ranging from a dozen to about a hundred members. The male members are tolerated until they reach puberty, and are driven away later. The groups are heirarchical and the elephants are naturally trained to take orders from other elephants. Peer acceptance is very important for this species. Depending on the availability of fodder, the herd maybe split. Later they eventually meet near water holes. The matriarch makes the decision on where the herd should eat and wallow. She is usually 30-40 years of age. The herds without a matriarch, does not function well.

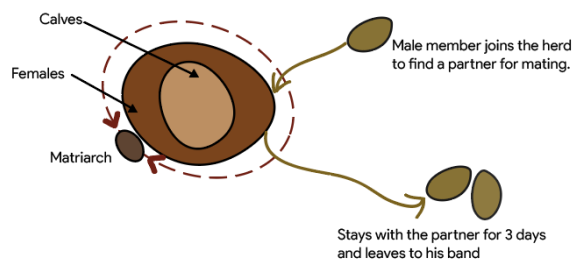


Figure 5: Social Structure of Asian Elephants

## 2.4 Habitat of an Asian elephant

Elephants are adaptable to varied environmental conditions. This was one of the major reasons why the species was used in war, as they could sustain in harsh climatic conditions and could adapt well to the geography. The Asian elephants prefer a mix of forest and intermittent grassy area, which enables them to sustain in a varied environment. They roam around, play in the forest areas and come together as herd in the grassy patches for social interactions. The forest area also provides them with trees that can be debarked, uprooted, or used to scratch their bodies. This turns out useful especially during the musth period for the male elephants.

They prefer to pass through areas with variety of species of plants to eat and water to drink, as an adult elephant feeds on 200-240 kg of fresh plant material over a span of 18 hours, per day. Hence the need of vegetation for the entire herd is massive. 85 percent of the animal's diet includes grass. An elephant consumes around 220-250 litres of water everyday. The diet followed by the elephant reflects on the body weight. Six percent of the body weight is considered as the optimum amount of the fodder that an elephant must consume. The elephant defecates a wet weight of 150 kg, and a dry weight of 100 kg dung, in total, 16-18 times a day. This helps in seed germination and increases the soil fertility. The most comfortable habitat for elephant has the temperature between 15-30°C and the humidity level between 75-85%. The areas receiving 2000 to 3500 mm annually, are considered apt for their living.

## 3. ETHNO-ELEPHANTOLOGY

Ethno-elephantology is an emerging framework for understanding the multiple aspects of human-elephant nexus through time. The relationship between the two species – the humans and the Asian elephants had started way back in time and has evolved over the centuries.

### Humanization of elephants

Among the Ikoma of Tanzania, the elephant is sacred to the whole tribe and protected by them. The elephants were believed to be deceased chiefs. The killing or death of elephants required a mourning period of 7 days. They had completely humanized the elephants.

### Treating elephants as persons

There have been practices in communities where, after the killing of elephants for their tusks, meat, hair etc, the slayer is cleansed of blood. The elephants were considered as persons of the bush. The motive of the kill was either for protection from the wild, or for trade.

### Elephants as co-subjects

The Nayaka dynasty, of the southern India, considered elephants as sentient co-subjects who think, feel, make decisions and understand actions and commands. This was one of the major reasons for elephants being used in warfare. They could understand the commands and process and reciprocate accordingly.

### Elephants for monetary growth

Human – elephant interactions are solely based on human's perception of elephant as an economic source, food and a raw material source. Cruelty against the wild and the ones in captivity, prove the insensitive nature of the humans. It may not be true for the entire human race, but activities of the human species are creating hinderance in the lives of the elephants.

## 3.1 Similarities between the human and elephant species

The humans and elephants share a special relationship since time immemorial that has led to the various stages of interaction between the two major species. The cause of initiation of such a relationship can be characterized in many ways – of which the similarities between the two species is the key driving factor. The two species are similar in conceptual, behavioural and physiological ways. On a conceptual level, both the species share high intelligence and understanding. They have the ability to recognize individuals and also oneself. The self recognition attribute is shared only by very few species, namely - the humans, elephants, killer whales, bottlenose dolphins etc. The concept of death and mourning, is another major similarity shared by the humans and the elephants. They mourn the loss of their loved ones. There have been cases reported where the loss of their calf or close relative elephants have led to depression or even leading to death of the mourning elephants. The empathetic understanding of other beings, understanding their emotional state of mind are other major characteristics shared by the two. The need to help the others in distress and rendering assistance to the ailing individuals are few characteristic features that have connected the two species over time. The elephants are also highly efficient to interpret the human depicted gestures – major reason for elephants being used for company, war, labour etc.

The social lives of the two species, also show similarities such as - living in closely bonded society, extended period of taking care of their offsprings, social bonds that are empathetic. The relationships develop through physical touch, the transmission of knowledge through social learning, retrieving and baby-sitting calves etc. Considering the physiological aspects, the two species share similarity in the form and function of their brain structure, the long lifespan and gestation period, the requirement of extended period of dependent care, stage wise development and the long term extensive spatial, temporal and social memory.



Figure 6: Elephants are social animals, who are highly expressive

### 3.2 Ideals of Ethno-elephantology

The ideal situation of human – elephant relations must be achieved for peaceful co-existence, without being negligent to either of them. As humans, we must regulate the growth in migratory corridors of the elephant species, reduce encroachment of forest land etc. Thoughtless expansion and encroachment by humans into the forests, doesnot leav much choice but to barge into the enroached land. Bringing back the inter connections that bind humans to free roaming, captive & symbolic elephants through power, pleasure and preservation is important. There is need for love, care and respect which would bind the two species together. The crucial ways to develop the relationship includes - communication, care and being cared for.

The perception of captive elephants and humans has varied over time from coexistence to suppression. It is the behaviour of the present that can pave way to the future perceptions. The fate of physical and mental health of the captive elephants depends on how we, the humans treat them. They have served their entire life, to the commands and needs of the human species, since capture. There is need to create awareness among the general public that, it is our responsibility to provide a better life to the to-be-unwanted (in the near future) captive elephants. The rehabilitation and conservation initiatives across the world has immensely contributed for the same.

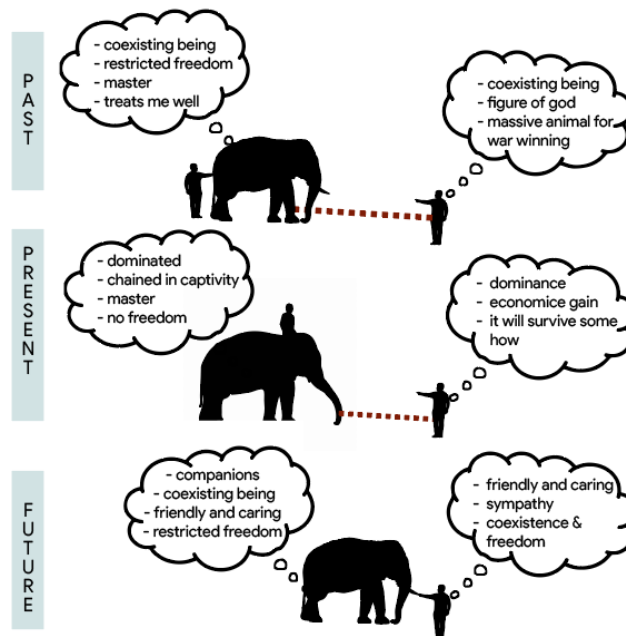


Figure 7: Perception of Human – Elephant species

At the same time, the conservation techniques and rehabilitation process should emphasise on the needs and requirements of the elephants, as a species, rather than associating the elephants to a heavy pole or tree. The captive elephants were free animals and they deserve to be treated as such, though they cannot be released into the wild, as they would experience difficulty in the process of herd formation, and may also experience the feeling of being un-welcomed. Since these elephants have been leading a life in close association with the humans, it is our duty to be present as a support system to these beautiful majestic beings. To be able to relate to the elephants on a species level, various programmes can be introduced that may enhance the physical and mental well-being of the elephants.

#### 4. THE NEW APPROACH

A new approach towards the captive elephants needs to be such that they are treated not just as a commodity, but as an individual. In such a scenario, the humans and the elephants have to be treated as different individuals, with specific individual needs, requirements and degree of freedom, yet co-exist together. This approach will make humans rethink of the present ways in which the captive elephants are treated. New bridges need to be built, based on care, concern, love and respect. The major communication medium would be tactile and verbal.

The spaces where the captive elephants reside must be based on the needs and perceptions of the elephants, rather than the ease and perception of the humans. The environment hence provided must contain various enrichments that would enhance the lives of the captive elephants and enable them to sustain in the environment for a long period of time.

##### 4.1 The overall environment

The captive elephants must be introduced to a naturalistic environment, where they can comfortably express their natural animal behaviour. The space must not be cramped as the feeling of being caged in a space must be avoided for the mental well-being of the captive elephant. The layout of the environment hence chosen must address safety concerns, maximise utilization of space and include topographical variety. The entire environment must be a safe zone from the perception of the elephant as well as human. The positioning of food and water sources is another major factor that plays an important role in the development of the elephants' physical abilities. Depending on the site conditions, the food and water could be naturally provided or else through contractors, as majorly done in zoos. Water features (such as streams, waterfall or pools) introduce a natural feeling to the enclosure, that should be easily accessible by the elephants. The enclosure must provide variety of comfortable choices to the animal. The captive elephant enclosure must be designed to provide the basic necessary requirements. The provision of structures for shading, can be naturally achieved with inclusion of large number of trees. The presence of rocks and huge trees will promote the natural behaviour of the elephants – the need to scratch their back. The enclosures must also be accessible by truck and ambulances, in case of emergencies. The basic and most important requirement in the provided environment are: food, water, shelter and activities for enrichment.

##### 4.2 Enrichment

Elephants enjoy activities and games. Hence, various enrichment programmes can be introduced, to keep the captive elephants occupied throughout the day, as well as improve their health and living conditions. The enrichment thus provided can be classified as social, dietary and novel.

###### Social Enrichment

The presence of other animals, mostly of the same species is the most effective form of social enrichment. It helps to reduce the isolated feeling. In such an environment, the animals tend to project their natural behaviour and create bonds with the other captive elephants. The breeding and development of the calves also serve as another reason to bond. In case of a chance establishment of herds, then it could develop into a self-sustaining system, and would require less maintenance. The other enrichment provided, must be spaced such that it is available to all. Another social bond that must positively be developed is the keeper-elephant bond.

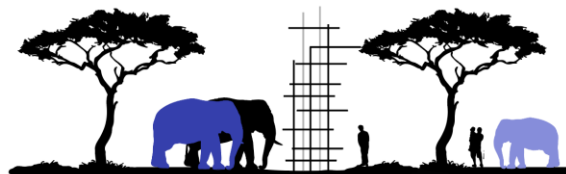


Figure 8: Development of a positive social environment

### Dietary Enrichment

The dietary enrichment involves the creative provision of fodder as per the health requirement of the elephants post consultation with the veterinary doctor. The animal must be provided with a variety of choices in terms of food, and with each passing day, the caretakers need to understand the likes and dislikes of the elephant and provide the food best suitable. A balanced diet, comprising of sugarcane, fruits, vegetables, ragi, cooked rice, jaggery and mineral mixture, in addition to green fodder needs to be provided to. This diet must be given as per the advice of a veterinarian, who in turn will be also be monitoring the health conditions of the elephants periodically. The daily essential food, will keep them occupied for hours. Creative ways to display the fodder, which engages them for hours and is considered playful by them, can be implemented. For example, small items in barrels, holes and balls and large items in a high tied hammock etc.



Figure 9: Placement of fodder in tree trunk

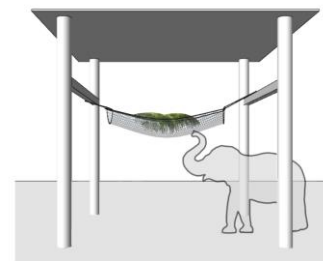


Figure 10: Placement of fodder in hammocks

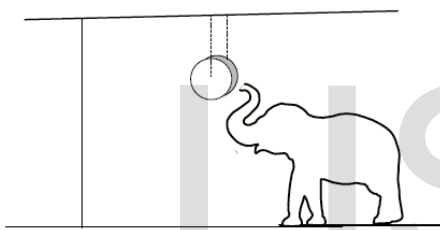


Figure 11: Placement of fodder in hung barrels

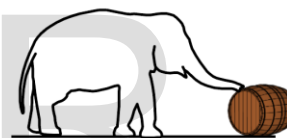


Figure 12: Placement of fodder in rolling barrels

### Novel Enrichment

This type of enrichment is more of an activity-based enrichment, where physical activities and entertainment can be combined for the development of the physical and mental state of captive elephants. Elephants being herd animals, would enjoy group activities and it would initiate and improve the interactions between the various elephants present in the environment. The novel enrichment programme must include visual, tactile, auditory or olfactory programmes. The vision of the Asian elephants is similar to that of human beings and introduction to colourful environment will capture their interest and keep them occupied and contented. The visual quality of the environment will have a direct influence on the mental well being of the elephant. Hence, use of vibrant colours is important, keeping a subtle balance in the environment. The elephants, being social animals, require a sense of touch, visual or auditory contact with the ones of the same species or their human companions. The social interaction has calming effects on the species, especially when they are new to the enclosures. Hence the enclosures that are designed must be such that the above-mentioned aspect is adhered. The elephants have a strong sense of smell and are drawn to various types of scented oils etc. This attribute can also be introduced in the enclosures to keep them interested.

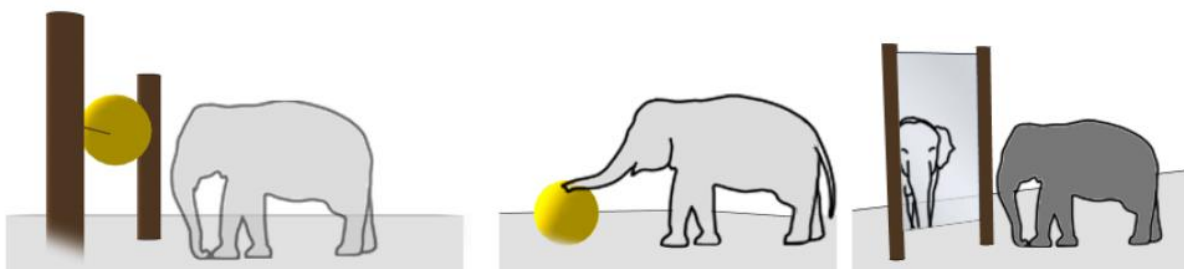


Figure 13: Novel Enrichment - (Left and Centre) Use of Balls; (Right) Use of Mirrors



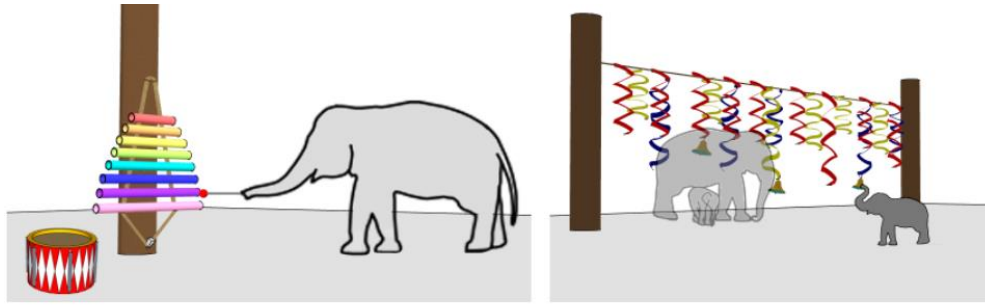


Figure 14: Novel Enrichment- Visual, Auditory and Social

Figure 13 and 14, depict a few ways in which the desired outcome maybe achieved. The push & pull ball is an entertaining way to increase the physical activities of the elephant. A large ball can be successful in engaging an elephant or a group of them together. As previously mentioned, the elephants are amongst the few species, that have the ability to recognize oneself. This attribute can be emphasized through provision of mirrors in the enclosures which will inturn keep them busy. Care needs to be taken to keep the male elephants in musth, away from the mirrors. Also, if the environment allows restricted entry of visitors, this would be a great entertainment. Ergonomically viable xylophones and drums can be used in the enclosures along with the individual interests of the animal, such as painting. Use of ribbons with bells tied along can act as good visual as well as auditory tool.

The adoption of enrichment process is highly advisable, as it is provided for the captive elephants who have had their own struggles since childhood. Each elephant has a different response towards the same actions, hence understanding them as individuals first, is of utmost importance.

## 5. CONCLUSION

Our society and its perceptions are evolving each day. For his own selfish reasons, humans have taken nature and living environment for granted and in the process, have caused unintentional damage. This research paper highlights a new approach towards captive Asian elephants – focusing on the need to provide them freedom of choice, right to live in quality environment and be treated with compassion. These animals have lived major part of their life, serving the needs of humans and with their diminishing value, we humans are bound to create a positive living environment for them. As an architect, I have applied the basic principle of architecture here – studying and understanding the user requirement prior to the designing process. I have considered the Asian captive elephants as the major user group, and as part of the research, have done an indepth study into the Asian elephant lifecycle, physical characteristics, mating behaviour and habitat, to provide better insight into the designing processes. With the inclusion of conservation and rehabilitation centres, elephant parks are no farther from reality. Implementation of various techniques, in which humans can play a positive role is the change that the world needs today.

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