

An urban scenario in India is deprecating human sensation and perception of neuro architecture: time to develop urban greens to heal.

Un escenario urbano en la India está desaprobando la sensación humana y la percepción de la neuroarquitectura: es hora de desarrollar verdes urbanos para sanar.

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ABSTRACT

The National Commission on Population in India foresees that in the next 15 years, more than 35% of Indians will live in urban areas. In 2021, by this time, air, water pollution, and water supply, city drainage has reached beyond the implied limit. Revised development draft 2034 is showing additional spaces for schools, hospitals, crematoriums, ceremony halls, roads, and related connectivity. This is encroaching on the remaining land of green areas and open plots. Urbanism has no choice for developing countries. Development in technology is often associated with adverse costs like social defragmentation, environmental ruins, pollution, and waste management disorder. Thoughtful application is constructive if done rightly from its micro-level and implemented by investigation, it can encourage health, wellness, and efficiency. During the pandemic, research studies are explaining mental sickness which is faced by citizens while living alone, isolated within four vertical planes. Neuro-architecture can be defined as built spaces designed with neuroscience principles, which establishes spaces that boost memory, develop thinking abilities, escape anxiety, and encourage the brain. Developing spaces for better mental health plays a key role in rising happiness while spending life in urban cities. Sensation and perception are two isolated progressions that are meticulously linked. The sensation is a response to the outer sphere attained by human sensory physical receptors, and perception is the method by which the brain picks, arranges, and understands these sensations. In other words, the senses are the functional basis of awareness. Urban life could be better by improving the ability of sensory receptors by providing more, bigger, enormous green spaces around.

Keywords: sensation and perception, neuro architecture, environment, social disorder, urban cities, Air quality Index.

RESUMEN

La Comisión Nacional de Población de India prevé que en los próximos 15 años, más del 35% de los indios vivirá en áreas urbanas. En 2021, para este momento, la contaminación del aire, el agua y el suministro de agua, el drenaje de la ciudad ha superado el límite implícito. El borrador de desarrollo revisado 2034 muestra espacios

adicionales para escuelas, hospitales, crematorios, salones de ceremonias, carreteras y conectividad relacionada. Esto está invadiendo la tierra restante de áreas verdes y parcelas abiertas. El urbanismo no tiene elección para los países en desarrollo. El desarrollo de la tecnología a menudo se asocia con costos adversos como la desfragmentación social, las ruinas ambientales, la contaminación y el desorden en la gestión de desechos. La aplicación cuidadosa es constructiva si se hace correctamente desde su nivel micro y se implementa mediante la investigación, puede fomentar la salud, el bienestar y la eficiencia. Durante la pandemia, los estudios de investigación están explicando la enfermedad mental que enfrentan los ciudadanos que viven solos, aislados en cuatro planos verticales. La neuroarquitectura se puede definir como espacios construidos diseñados con principios de neurociencia, que establece espacios que potencian la memoria, desarrollan habilidades de pensamiento, escapan de la ansiedad y estimulan el cerebro. El desarrollo de espacios para una mejor salud mental juega un papel clave en el aumento de la felicidad mientras se vive en las ciudades urbanas. Sensación y percepción son dos progresiones aisladas meticulosamente ligadas. La sensación es una respuesta a la esfera exterior alcanzada por los receptores físicos sensoriales humanos, y la percepción es el método por el cual el cerebro selecciona, organiza y comprende estas sensaciones. En otras palabras, los sentidos son la base funcional de la conciencia. La vida urbana podría ser mejor si se mejorara la capacidad de los receptores sensoriales al proporcionar más, más grandes y enormes espacios verdes alrededor.

Palabras clave: sensación y percepción, neuroarquitectura, medio ambiente, desorden social, ciudades urbanas, Índice de calidad del aire

INTRODUCTION

Air Quality Index (AQI) is lowering in most cities. Aqicn (Table. 1.1) is an organization that is projecting a world air quality index project at different places in all countries. Its mission is to promote air pollution awareness for citizens and provide unified air quality information available to all. Below table 1 shows Air Quality Index with its desirable health implications. Adoptable and moderate healthy air quality is 51 to 100 AQI which is available in rural and semi-rural areas. While most urban areas are showing an air quality Index that is dangerous to the human habitat.

Table 1.1: AQI and related impact ¹

Index	Air Pollution	Health hazards
151-200	Harmful	Anyone can face serious health effects.
201-300	Very Harmful	Health hazards of serious conditions.

¹ <https://aqicn.org/city>

Urbanism in metro cities shows growth in the infrastructure, concrete is poured on the buildings to live but implications have not been checked concerning the rate of growth of the city population. Mumbai's average air quality index is 151-200 for the population of approx. 2 crores for a land parcel of 600 sq. km. Delhi, Pune, Nasik, Kolkata's average AQI is also 151-200 for growing population and urbanism. Table 1.1 shows this range as unhealthy for serious health effects of a wide range of lung diseases, including asthma stroke, respiratory infections, throat disease, coughing, cancers, shortness of breath, and respiratory disorder. Air quality is significant to improve health factors if related to the other five elements with relates to urban life. Water, void, wind, earth, and fire are five elements that do relate to human sensation with or without built spaces. The designer has the ability to connect them with spaces dramatically to offer a magical perception of spaces to the user. Human settings if surrounded by natural elements offering healthy air, a good view, which get embraced with sensory organs to live a healthy and blissful life.

PRIMARY DATA - BACKGROUND

Data collection is supported by historical research areas on spaces and the human mind. Different context is studied and analyzed to understand the effect of surroundings and the occupant's reaction to them. These are observed with examples where a human being is an eternal part of nature. The human psychological response is studied with data and case studies. This is applied to the micro-unit of space to find out special configurations in volumetric spaces to improve healthy urban life by exploring the phenomenon of sensation and perception.

'*Sthapatya Shastra*' is a traditional Hindu science based on five elements and spaces. It defines different areas to prioritize its function where the domination of one of the elements exists to perform functions. It is experienced performing functions as per '*Sthapatya Shastra*' is stimulating senses which progressively perceives mental health. Study table or study room location at northeast direction stimulating more concentration and progress in studies. This is the area where it is expected to get fresh air and sunlight. This also applies to the sleeping direction north south. It is observed that facing head towards the south direction is advisable to allow deep sleep. '*Stapatya*' science connects dwellers to their habitat with a better experience with spaces. 'Fengshui' is an ancient practice providing tips to live in harmony with energy available to flow from their beneficial influences.

It is an obvious choice of a user to choose a window with green outside instead to have a window with a concrete wall or a dead façade of a neighborhood building? Green color changes mood and enhances emotions. Green is from a cold color scheme defined as revitalizing and peaceful, soothing sensation. If built spaces are provided with detailed designing of natural spaces to connect with nature to add fresh air to flow energy indoors. This is to stimulate positive energy through human senses by offering green spaces around. More air purification with green earth reduces air pollution. It will provide a healthy air quality index as well. Further breathing healthy life indoors for citizens while living in urban cities. Urban areas are getting evacuated at the weekends when most of the citizens are ready to connect themselves with nature. This is one of the observations for escaping air pollution

to go out and spend days in the laps of mother earth where trees and pure air inspire them with natural life energy. Urban life is loading with the population with changing trends in living style. Citizens are not provided with pure air and proportionate nature where they can spend hours with relaxation and then they boost to life energy for all working days ahead. Is it possible to get that same experience through their sensory connectivity to build spaces around?

SECONDARY DATA – CASE STUDIES

Thought has been given to children since ancient ages. Vedic school is planned accompanied by nature where students can focus, and possess more values than standard students. Also, visualization got expanded to enhance their focusing power. Children perceive more outdoor where natural forces are available in abundance. A few examples in table 3.1 at different times and locations show that perceivers are demanding more natural spaces for the development of meaningful human senses. The range of practices in education enhanced with nature is utilizing more sensory perceptions of the world. These practices are still preserved while designing spaces for education. Children find it more relevant and show progress in attending and engaging classes. It is observed that people stay close to nature or spaces, merging with outdoor spaces, then people are getting energized at these places. People in villages are migrating to urban areas for earning. They are not migrating to get relaxed, happy, social, friendly, or humane. Some places can be conceptualized for the population in some urban areas to sensitize their perception toward a healthy life. This has been already conceptualized as urban farming, vertical forests, and urban landscape to enhance green scape in urban areas. All of these focus more on farming and controlling co2 omission to reduce the impact on the environment. This data is directed towards the development of human sensation with the help of green scape to stimulate positivity in their perception.



Fig: 3.1 - Japanese Kindergarten Built around a Tree with a Legendary Story, Vedic school from Indian culture, and Waldorf School in Germany are examples of the architectural perception of the basics of natural responsiveness.²

² @photo credit - 1. <https://www.designboom.com/>, 2. <http://www.naturalbuildingblog.com/>, 3. [https://img.jagranjosh.com/images/2021/September/292021/gurukul%20system%20\(1\).jpg](https://img.jagranjosh.com/images/2021/September/292021/gurukul%20system%20(1).jpg)

Another architectural element is the 'courtyard' in the vernacular architecture of many countries. It is a better design solution to offer air circulation, ventilation, and temperature control, and reflects, helps to preserve family culture where all members get privacy to look into the internal space. All are observing each other to observe therefore all are connecting to the culture of the family. This courtyard will always carry green spaces where all family members are connecting with their own emotions, feeling more sheltered, peaceful, and associated with hopefulness.



Fig: 3.1 – Spanish courtyard, Japanese home, Brazilian home.³

Green spaces are integral part of the courtyard. It is being memorable and gives more space to develop a human relationship with built spaces. During pandemic times as well these spaces helped people to relax and to become emotionally strong. It connects mother earth intensely. It offers an environmental and ecologically sustainable solution to the occupants. These green areas provide fresh air, beautiful views, and connectivity to the other family members which are overlooking each other. It offers a sense of security to the person with connectivity to nature. It is vanishing in today's urban design. There is no corner in the house to locate green space at the micro-level of planning of a single unit of residence. Once the person is back to his dwelling where relaxation is expected with the presence of nature. This consideration of green spaces shall be an integral part of design development rules. Population in the urban areas will get healthier, livable life within the dwelling to develop better mental health.

OBSERVATIONS

The above case studies observed architectural design effects on human behavior. It is not only human nature but its quality of habitats as well, which touches human sensations. Nature is playing an integral part to evaluate the psychological up-gradation of occupants which is marginally high. It is observed and sketched to a smaller sample space for the understanding of the relationship of spaces to human behavior.

The architectural sensation is a language that gets coded while moving around the habitat. Layout for a space is consistence for ages for monotonous activities subconscious layer of the mind records it. Response to the

³ 51 Captivating Courtyard Designs That Make Us Go Wow (home-designing.com)

action is faster than an individual thought process. You get up at night to drink water but without light or mindfulness, you're completing the task and back to sleep. Sequence to get ready for the preparation of food or work is a process of inconsiderate action sequence. This affects the overall experience of the occupant. During the routine time, it has a noticeable contribution towards aura or energy which is created by space planning where it is restricted to the area size and furniture layout.

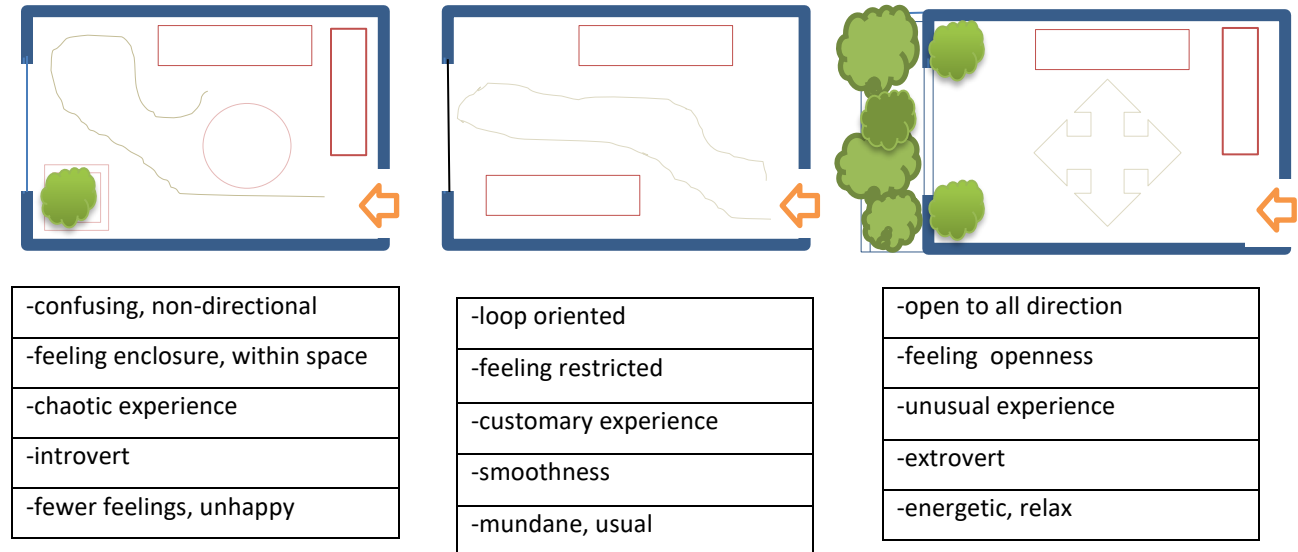


Fig: 3.2 – Room layout for graphic representation of sensation and perception

Figure 3.2 is showing room layout for living areas showing the different architectural layouts for a living room space of size 3.5 meters X 5.0 Meters. It is depicting the habitat's response to the given layout. It is affecting emotions as noted in the table. Occupants using for years will be showing gradual reflections on their emotions. Emotional connection with the space is experienced gradually and affects the response to the space around. This is observed with reference (Table 3.1) to the school design as discussed earlier. It is a time we experienced the psychological effects of indoor spaces while living inside the room during the pandemic. Most of the sufferers of this pandemic 2020 are citizens living in urban areas. This effect can be reversed by adding some spatial relationships to green areas to enhance human perception more healthily. The air quality index can be checked at the micro-level of a zone for urban areas which further controlled for growing pollution in cities.

Seasonal changes in the environment are getting recognized by sensory organs when you listen to the raindrops, see the glare from the open window, and feel the warmth of the winter seating on a cozy couch. It is closely related to perception which is recorded by the subconscious mind by related memories. Raindrop in the closed room remembers themselves with the smell of soil and yummy snacks served by their mother in childhood surrounded by nature around the village. The glare of the sun coming from the glass pane of the urban habitat reminds one of a summer vacation enjoyed beneath the tree with filtered sunlight and fresh air and the singing of

birds like the cuckoo, and the caucal. A person sitting on a relaxing couch in the winter reminds you of childhood memories that are spent with bony nature with loneliness. This is the generation who spent their childhood in the villages with the memories that were perceived with nature. Now it is stimulating due to perception while leaving in the villages with nature around. If we don't design indoor spaces with these kinds of sensory spaces which stimulate the perception of enlightening memories for the generation spending lives in the urban areas, then we have to rethink urban planning at a micro level when human life is deteriorating with natural phenomenal sensation.

RESULTS

Figure 5.1 is showing illustration for one of the hypothetical proposals where green space is allotted to two-floor which is having same as the ground plot area open at the second, fourth, and sixth levels for the plantation to reduce air pollution and increase sensation by adding places outside the window.

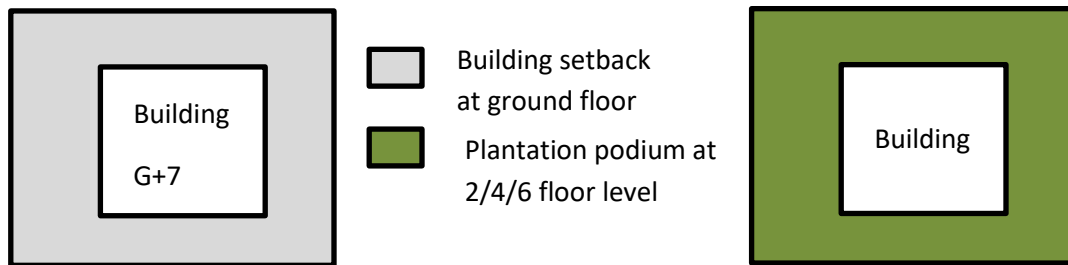


Fig. 5.1 Concept plan for G+7 building in urban areas for better perception

As conclusion, in the urban context, designing of green areas can be decided on the number of habitats of a building. Depending upon the building's number of users, it is time to develop proportionate green areas reserved for social places, and private places. Each floor is maintained with green areas by the inhabitants of that floor offering perception of nature. It will be motivated by giving some benefits for tax or health facilities. For congested areas in the city and completed buildings, plots for the vertical forest building should be reserved in the planning. These gardens are visually fulfilling sensations for the neighborhood habitat for the particular location. These will help to minimize air pollution and control air quality for the located zone. The study is needed the requirement of these vertical units to repair air quality to its natural grade as a step toward healthy living in urban areas. Certain trees help to reduce pollution and create better air quality, researched work should be carried out for the list of plantations needed to reduce pollution in areas with higher AQI. This is a healthier solution to clean air instead of installing air-purifying towers to improve air quality.

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