

An aerial photograph of a residential neighborhood. The houses are arranged in a grid-like pattern with streets. Each house has a brown roof and is surrounded by greenery, including palm trees. Several cars are parked on the streets. In the center of the image, there is a swimming pool. The text is overlaid on the image in a dark brown box.

Sensory stimuli in neighborly relations.

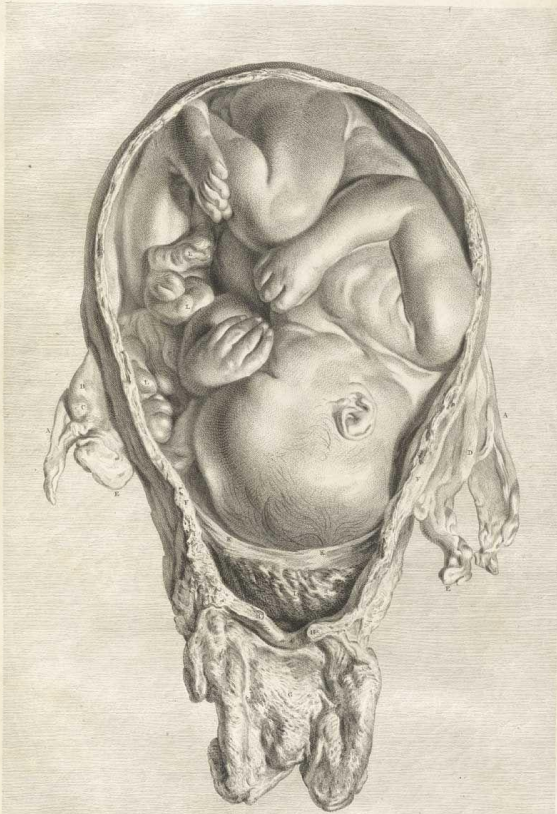
How to design spaces and objects with respect to the community.

dr Joanna Jurga

Therapeutic effect of space through an object with the features of sensory stimuli.

From the beginning of human existence , people have lived in groups and have always had atavistic (primary) need for closeness which creates a sense of security. Already in our mother's womb we are snuggled, we feel the warmth and we receive muffled signals from the outside, which allows us to evolve properly. If we are not surrounded by intimacy, closeness and calmness, from the first days of our lives, our sense of security drops drastically. Children who are not touched or hugged become aggressive and withdrawn, they don't have self confidence, they can't integrate in a group and build relationships. The sense of touch inherited from our primary ancestors fosters social skills. If as a modern human we do not learn how to use those primitive instincts and reflexes encoded in our DNA, we will become unhappy individuals unable to build social relationships and protect our mental health.

Keywords: #security #senses #space #calm #shelter #synestheticdesign #neuroarchitecture #proxemics



The sense of security is shaped by the development of sensory experiences in the prenatal period.

Sensory conditions:

TIGHTLY / WARM / QUIET / DARK

In such conditions - referring to fetal life, the child always feels safe / calms down.

Jeannette Kalyta / midwife

Tab. XII. de cordis, quæ præcedens, matris, exhibit spectrum placentæ a parte pedis uterini cum vagina, quæ utero inferius paritæque inferiori Placentæ sub pedis capite insinuatæ. Placentæ, videlicet, orificiæ uteri inferius accersens, æque sub finem graviditatis dilatata, fœtus sub divisione separata est.

"Traditional" senses:

1. touch
2. hearing
3. sense of smell
4. taste
5. eyesight



"Is it not strange that the sense of touch, so infinitely less appreciated by people than sight, becomes in critical moments our main, if not the only, key to reality."

Author: Vladimir Nabokov | Source: Lolita, ed. PIW, Warsaw 1991, p. 34

Touch (sensory system) is recognised as one of the senses, but the impressions referred to collectively the sense of touch are a combination of signals transmitted by cells reacting to heat or cold, pressure and damage (pain).

In various experiments, it has been shown that touch and the sense of movement are the basic elements defining the perception of reality by animals (including humans).

In almost all mammals, touch is an important way to strengthen relationships. The primate phenomenon of social grooming (caring for fur) or giving food from mouth to mouth is the evolutionary basis for gestures of tenderness, which later for humans took the form of a kiss or caress.



About hearing: “(...) structures and articulates the experience and understanding of space. (...) Creates a sense of connectivity and solidarity” Juhani Pallasmaa

Hearing - a sense enabling the perception of sound waves.
Hearing system for humans is called ears.

Listening, similarly to eyesight, is a long-range receptor and plays a very important role in human communication, spatial orientation and learning about reality. Hearing, unlike vision, receives stimuli involuntarily, it works constantly, even in a dream. It is described as the most important social sense. Its damage or loss disturbs social interaction between people.

Sound is an auditory experience, caused by an acoustic wave spreading through an elastic medium (solid, liquid, gas). Wave frequencies that are audible to human beings are included in the band between values from approx. 16 Hz to approx. 20 kHz.



“A specific smell makes us unconsciously enter a space already completely forgotten by retinal memory; nostrils awaken a forgotten image and we start dreaming”

Juhani Pallasmaa

Smell - one of two- (beside taste) **chemical senses**. The function of the sense of smell is the detection of odors and recognition of stimuli which are molecules of specific chemical compounds or their mixtures (odorants).

Inhalation stimuli are transmitted to the brain directly - much faster than tactile or visual stimuli.

Smell is the oldest sense. According to physiologists, it is millions of years old and evolved before our ancestors became mammals. Almost all vertebrates have a sense of survival - it allows us to find food, to detect an enemy, to find a partner, to orientate oneself in space. Smell tells us more about the world than it might seem: it serves as a warning against threats, involves pleasure and even affects one's sexual life.



“Tell me what you eat and I will tell you who you are”

A. Brillat-Savarin

Taste - is associated with the tongue and mouth. Registers chemical molecules. There are at least four types of receptors on the tongue (taste buds), each of which transmits information to a different part of the brain. Therefore, sometimes each taste is considered a separate sense.

Four known receptors detect sweet, salty, sour and bitter tastes. The fifth receptor, "umami", was discovered in 1908 and its existence was confirmed in 2000. The umami receptor recognizes glutamic acid found in meat and is also a spice (as monosodium glutamate). There are also hypotheses that humans can also recognize "metallic" taste and the taste of fat.



“The eye is an organ of distance and separation, while touch is an organ of closeness, intimacy and tenderness”

Juhani Pallasmaa

Sight - is the ability of the nervous system to receive light stimuli and process them in the brain to form visual impressions. The anatomical form of this sense is the organ of sight which consists of the eyeball, the protective apparatus and the motor apparatus of the eye and the neural connections of the retina with the brain structures. The largest number of photoreceptors (250 million) falls on the sense of sight, and about 80% of information from the outside that goes to the human brain comes from this sense.

In order to see our eyes must receive stimuli caused by a certain range of electromagnetic radiation in humans. This part of the spectrum is called visible light. Vision is recognised as the most important human sense, providing most of information from the environment.

"New" senses:

6. **nociception** (the sense distinguished from the sense of touch) - is responsible for the sensation of pain in the skin, joints and organs.
7. **sense of temperature** (the sense distinguished from the sense of touch) - is responsible for feeling the temperature inside and outside the body.
8. **sense of balance** - the sense responsible for the position of the body in space. Its organ is the semicircular tubules in the ear.
9. **proprioception** (also known as kinetic sense or deep feeling) - the sense of positioning parts of the body in relation to each other and muscle tension. Thanks to him, a person knows where his individual parts of the body are even without seeing them.
10. **perception of time** - the sense responsible for measuring time by the human brain.

The senses of other animals:

- a. **echolocation** - a system for determining the location of obstacles or searched objects in the environment using the acoustic echo phenomenon through the emission and reception of ultrasound. It is used for navigation, detection and capture of prey, and for communication.
- b. **recognizing the direction and strength of the water current** - this is the sense of amphibians and fish, and they owe their skills to an organ called the lateral line, which allows them to feel disturbances in the surrounding water.
- c. **electroreception** - generation and recognition of electric fields. The specialists here are sharks and all animals living in the sea depths where sunlight does not reach.
- d. **magnetoreception** - recognition of the magnetic field of the earth - this sense facilitates orientation in space and navigation, it is characteristic of migratory species of animals.

Oculocentrism is a poorer experience of the world. But not only:

“The domination of sight and the suppression of the other senses pushes us towards exclusion, isolation and superficiality ”

- emphasizes Pallasmaa.

What is synesthetic design, neuroarchitecture and proxemics?

“The theory of the five senses is not only a useful tool for evaluating various experiences. It allows you to apply the best experience in your projects [...]. Good design looks great - but why not smell, sound or taste great too?”

Emphasizes Jinsop Lee in a TED Talks speech, where he shared his theory of design for the five senses, hoping people will start noticing multi-faceted experiences.



photo. Peter Lewicki pobrane z unsplash.com
photo. Ethan Hu pobrane z unsplash.com







A survey about the sense of security in space

250 respondents aged 18-85 / 60% aged 25-40

77% of women and 23% of men / 85.5% inhabitants of large cities

1. What is a sense of security for you? approx. **40% calm**
2. Where do you feel safe? approx. **50% at home / in nature**
3. What smells do you associate with a sense of security?
approx. **70% food smells / 80% forest smells**
4. What flavor do you like best? **34% sweet / 44% sweet**
5. What colors do you associate with a sense of security?
41% green and 39% white
6. Do you feel more comfortable in open spaces or closed?
78% open
7. Do you prefer to relax in bright or dark space? **55.5% bright**
8. At what room temperature do you feel optimal?
42% 20-22 degrees C
9. What kind of music do you relax with? **50.5% silence**
10. What activity relaxes you? **67% contact with nature**
11. What finishing material gives you the highest sense of comfort? **81% wood**



REALITY vs NEEDS





TOUCH

1. temperature and humidity of space
2. type of finishing materials used in order to achieve maximum comfort of use,



HEARING

1. room acoustics
2. adequate sound insulation inside / outside
3. proportions of soft to hard surfaces,



SMELL

1. ventilation
2. method of air humidification and purification,
3. aromatherapy,



SIGHT


1. the right type, color, quantity, direction and quality of light adapted to the function,
2. selection of colors, forms and textures of finishing materials



COLOR IN SPACE

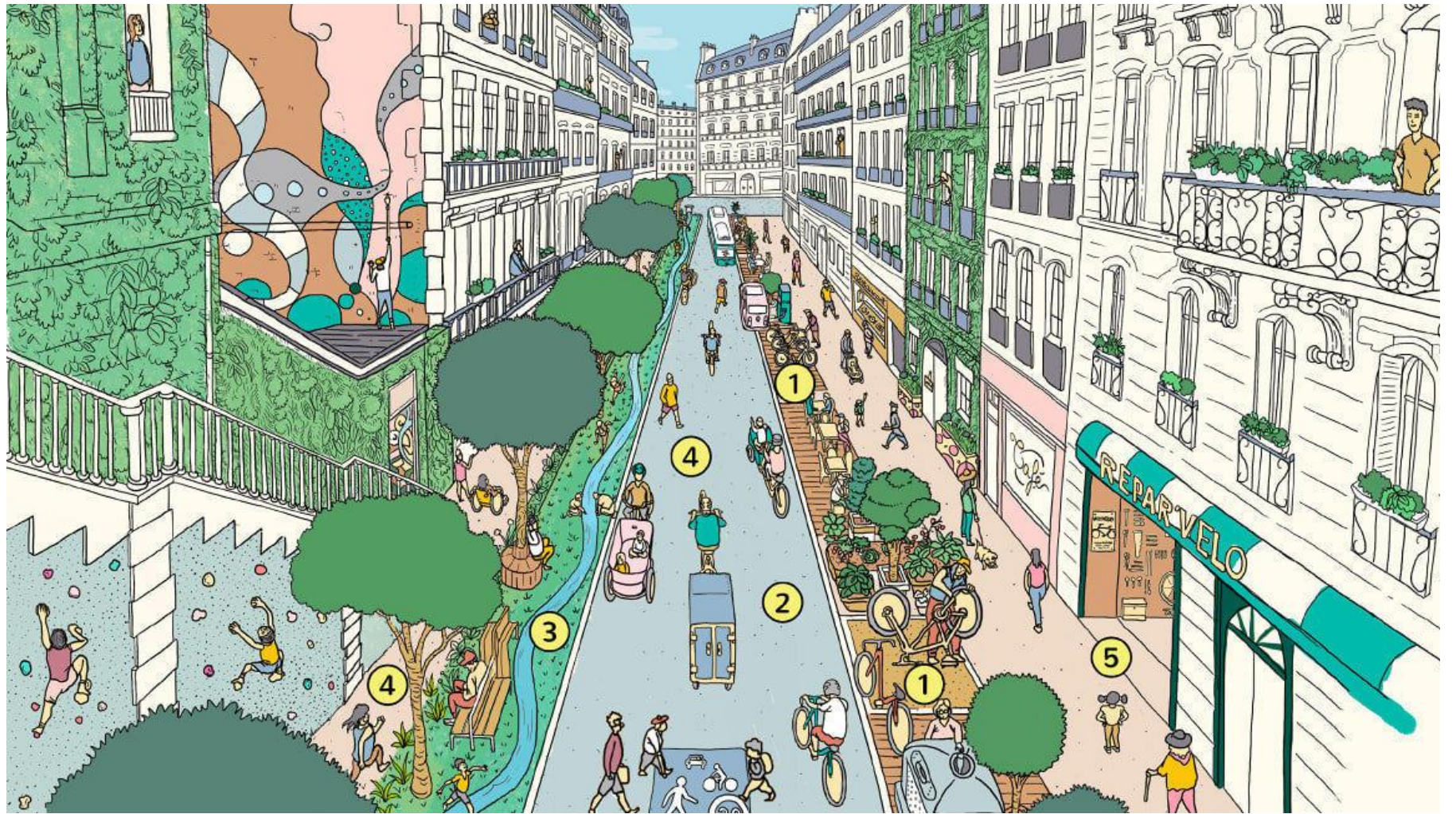
COLOUR & MATERIAL



A grayscale photograph of a minimalist interior space. In the center, there is a large, arched doorway or alcove. To the left of the doorway, a large, white, geometric sculpture resembling a stylized pyramid or a series of stacked planes sits on the floor. The lighting is soft and directional, creating long shadows and highlighting the architectural details. The overall mood is serene and contemplative.

“
Design impacts our senses,
our psyche and our
disposition. Architectural
design must respond to our
basic sensibilities.

- Moshe Safdie -





CONTEMPLATION OF NATURE AND CULTURE





Paley Park in New York is the elegant solution to the problem of negating unwanted traffic noise in the context of urban design. In 1967, the empty lot was transformed into a small public park (a so-called pocket park). The space was developed by Zion and Breen. In this case, the acoustic space, think only of the sounds, or better said noise, of the city, is effectively masked by the presence of a waterfall at the far end of the lot. What is more, the free-standing chairs allow the visitor to move closer to the waterfall should they feel the need to drown out a little more of the urban noise. The greenery growing thickly along the side walls also likely helps to absorb the noise of the city.

SPACE FOR WORK





Thorncrown Chapel in Eureka Springs, Arkansas (USA)

designed by Fay Jones

Thorncrown is a flagship example of a neuro-architectural space, designed to improve the mental and physical functioning of a human being. 100 tons of local stone and 6,000 square meters of glass were used to build it. Since 1981, the forest sanctuary has been visited by over 6 million people.

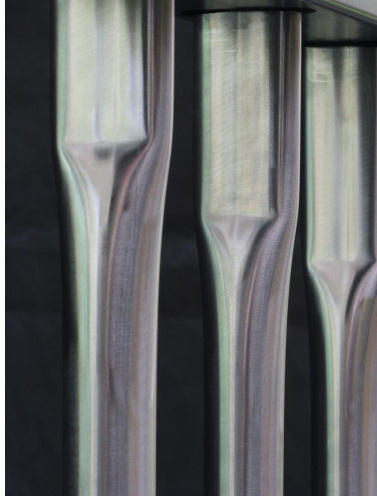
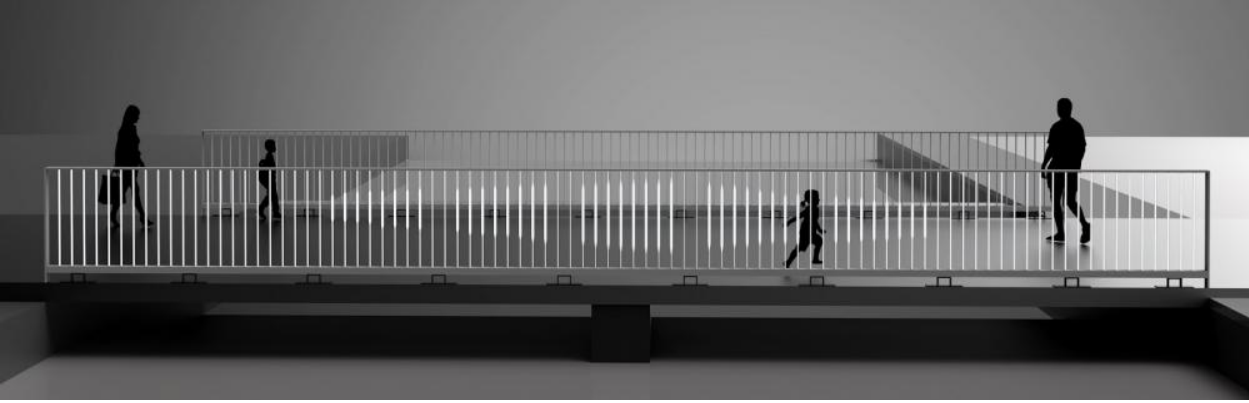
“Each touching experience of architecture is multi-sensory; The quality of space, material, scale are measured equally by the eye, nose, skin, tongue, skeleton and muscles. Architecture strengthens existential experience, the individual feeling of being in the world, and this in turn constitutes a significantly enhanced experience of subjectivity.” Juhani Pallasmaa



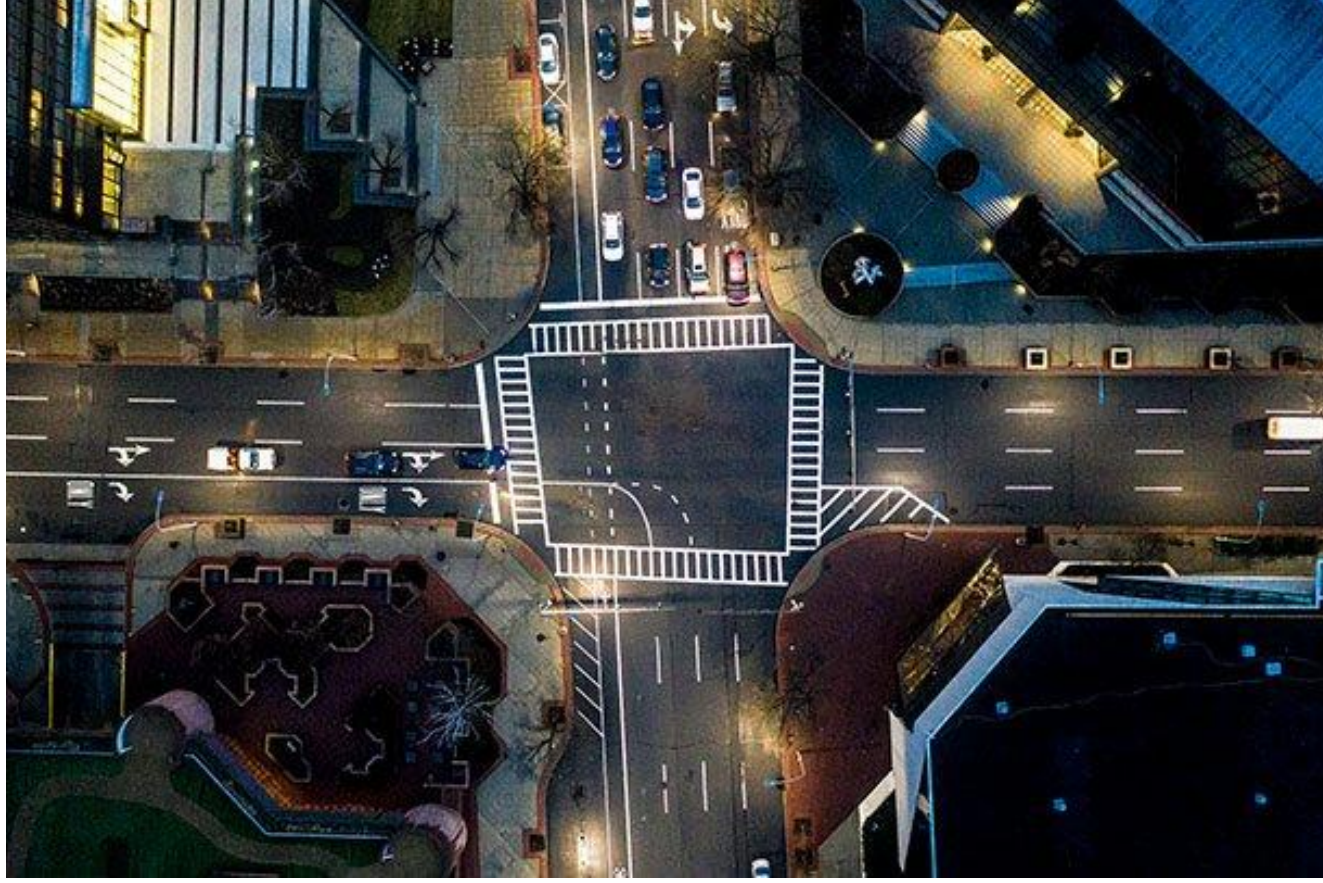
electromobility needs sound



CITY PLAYGROUND



MINIMAL SPACE





BASIC SPACE





THANKS

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