

## SECTION 4

# LATEST ACHIEVEMENTS IN ENGINEERING, ECOLOGY AND ARCHITECTURE

### **BUILDINGS AS THE BEST NEIGHBORS OF MEN**

MASHA ALOHINA, student DANYLO VITER, student VALENTINA  
PRYANITSKA, Senior Teacher, English Language Adviser  
*O. M. Beketov National University of Urban Economy in Kharkiv*

Throughout history, architecture has stood as a representation of society reflecting the values, successes and eventual downfall of civilizations over time. From the monumental structures to the residences and buildings that make up the fabric of a city, we can learn a lot about who the people were that inhabited them long before our time. By studying the built environment of the past, combined with modern-day research on psychology and the environment, we're coming to understand the effects of architecture on people in entirely new ways, which arose the issues: Just how does architecture impact society? Does it affect people? What are the "relationships" between buildings and men?

The entire architectural structure, from its design (form, structure, color) all have a great impact or influence on the mood and psychological experiences of individuals.

Glassy architecture, wooden architecture, rattan architecture have a great toll on the residents' mood and experiences. The painting of special colors like warm colors has been seen to increase the aggression of residents while cool/serene colors like blue calm down tempers. The same can be said about neighbors. Good neighbors are invaluable. They share important information about the community, are responsible pet owners, and most importantly, not too nosy. A bad neighbor can turn your dream home into a nightmare.

Architecture has the following ways of influencing people: color scheme, natural and artificial lighting, construction materials; architectural forms.

There are vivid examples of what effect certain colors produce on a person:

- orange-red has an exciting effect, increases the heart rate and increases pressure;
- the blue color of dark shades calms, promotes physical and mental relaxation;
- gray color is neutral, nevertheless contributes to melancholy;
- yellow raises the mood and activates the brain;
- green relieves nervous and visual fatigue.

The psychology of colour plays a vital role in arousing the emotions of the users. Designers believe that architecture is an act of communication, and the colour is the medium that will articulate the message.

Restaurants and food chains typically install a red colour scheme as a subtle marketing strategy. Red attracts attention, stimulates appetite and induces hunger.

Conference halls are often specified with warm, earthy hues like brown and orange as they promote social connection. White denotes innocence, cleanliness and purity. Combined with a heightened ceiling, it exudes a welcoming aura as opposed to the claustrophobic effect of dark or small spaces.

Natural light can make a world of difference when it comes to your emotions. Whether it's a school, office building, house or restaurant, initial design concepts should incorporate a generous amount of windows to allow for natural light. Working in a space with windows has been tied to better exercise, increased sleep and generally improved sense of wellbeing. It can also improve your mental health and help students perform better on tests.

How does this work? Natural light helps your body regulate melatonin, a hormone that improves the regularity of your body's circadian rhythms. This allows you to sleep better and longer. Sunlight also boosts serotonin production, helping you handle depression by increasing your "happy hormones."

How humans perceive patterns can be directly attributed to the Gestalt principles. Our brains are wired to see symmetry and balance of a unified whole, hence the visual perception of the synchronising elements together. Gestalt principles are built on aspects like similarity, continuation, closure, proximity and figure/ground.

Materials affect the aesthetic and tactile sides of the building. Thanks to them, the building can visually stand out, make a positive impression. For example, a dull brick wall conveys boredom and monotony. Form also evokes certain emotions in a person. Simple forms, for example, a square and an oval, are easier and better perceived than complex ones. Lines in architecture have the following effects: straight lines are associated with clarity and pacification; curved with grace and ease; curved and broken with aggression and harshness. Rectangular shape remains beloved for man; it symbolizes rationality and reliability.

The texture is one of the properties of the objective world, which helps to navigate in space.

Touching a texture once, we remember the feeling of its surface for a long time. Associations caused by this texture can remain in memory for life. The texture has physical characteristics and aesthetic expressiveness. You can distinguish aggressive textures: shiny, spiky, cold, like metal, concrete; calm and quiet soft, rough fabrics, wool; warm – wood, natural fabric, various weaves (woolen, birch bark, matting, linen), leather, fur, clay, ceramics, bone, forged

and hammered metal, stone, glass – all that has long adorned the human dwelling.

The characteristics of a space can be divided into six basic emotions: fear, dislike, sadness, peace, surprise, joy etc. Thus, a description is made of the spaces that cause certain sensations in most people:

1. Fear of unprotected open panoramic or narrow enclosed space of a tunnel shape with straight edges or in the shape of a cube. Poorly lit or has no lighting at all. Primary colors – saturated red, black or a rich brown. The texture is brilliant, prickly, cold (metal, concrete, broken bricks, a broken stone).

2. Dislike – open panoramic empty space, deaf cramped space, multidimensional, and fragmented space. The shape of a cube or tunnel, twilight. Primary colors – deep red, rich yellow, marsh green, rich brown, grey. The texture of the prickly, cold, relief, sticky, slippery (a broken stone, plaster, concrete, slippery tiles, clay, rubber).

3. Sadness – small, deaf, confined space, low ceilings. The shape of a cube, cylinder, tunnel, tetrahedron. Weak illumination. Primary colors – blue, brown, gray, black, white. Texture: shiny, cold, hard, monotonous (metal, a stone, concrete, a tree).

4. Peace – wide visibility, and a depression in the terrain. The dome and arch shape, abundant soft light, quiet, not flashy colors: moving to the leafy, blue, turquoise, purple, light brown, white. Soft, rough textures: wool, embossed wood, wicker, fabric, clay, ceramics, bone, forged metal, brick.

5. Surprise – high room with panoramic views and a clear rhythm of shapes, dome shapes. Uneven darkening, rhythmically falling shadows. Mostly blue, purple, pink, white shades, shiny, and unnatural texture: metal, plastic, glass, mirror.

6. Joy – panorama, pitch, rhythm, dynamic, dome shape, tall columns, arches. Bright sunlight, sharp shadows or a lot of small lights in the twilight. Colors: red, orange, yellow, turquoise, pink. The presence of shiny, fluffy, shimmering and matte textures (metals, including noble, fur, wool, mirrors, colored glass, colored ceramics).

It is also said that “architecture is the third skin” of the human body, since the first skin is the real skin, which acts as the outer envelop and the filter of the body, then the clothes that act as the second skin, which is also considered as an insulation and filter. So people’s third skin would be the next layer out is usually the building they are in which performs as the environment. This kind of environment, the architectural environment, should fulfill the human needs and comply with the user requirements like the best neighbors do.. That’s why we can call our dwellings our best neighbors.

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## **AUTOMOBILE ROADS OF UKRAINE**

OLEKSANDR ANTONOV, student

GANNA O. SAMCHUK, Senior Teacher, PhD (Technical Sciences), Scientific Adviser

NINA S. MININA, Teacher, PhD (Philology), English Language Adviser  
*O. M. Beketov National University of Urban Economy in Kharkiv*

This article is a short overview of the history and the present state of automobile roads of Ukraine. Automobile roads of Ukraine represent the network of roads, which connects all settlements of the country and is aimed at the movement of vehicles. There are several kinds of roads in Ukraine:

- automobile roads of public use;
- streets and roads of cities of public use;
- departmental automobile roads;
- automobile roads of private territory.

State agency of automobile roads of Ukraine is responsible for the state of the roads. Local self-government bodies are responsible for the streets and roads of cities.

Automobile roads of public use provide domestic and international transportation of cargo and passengers. Automobile roads of public use are divided into two main types: state and local roads. State roads are divided into international, national, regional and territorial roads. Local roads, in their turn, are subdivided into regional and district roads [1].

As of January 30, 2020 total length of roads of international importance was 9 311,2 km, national – 7 175,2 km, regional – 8 492,6 km and territorial – 21 661 km. The length of local roads was 122 360 km [2].

There are 4 transport corridors which go through Ukraine. They belong to international transport corridors. Among them there are:

- Pan-European transport corridor №3 (Germany, Poland, Ukraine)
- Pan-European transport corridor №5 (Italy, Hungary, Slovakia, Ukraine)
- Pan-European transport corridor №7 (Austria, Hungary, Serbia, Bulgaria, Romania, Ukraine)