Images of associative psychology as a generator of architectural education ideas

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Abstract. Over the millennia, the human mind underwent numerous alterations, each time accumulating more and more information in itself. In human consciousness, associations are one of the key elements in the development of abstract intelligence and thinking. The process of memorization involves the creation of associations that can be found in any process of human activity, especially in architecture, art and design. Associations assist in rational evaluation of architecture and design as a source of new ideas and images. They become a fabric of innovative methods in discovering human-nature connectiveness, which is being expressed on our urban environment, communities and people. The significance of associations in architectural education derives from students’ participation in the formation of urban fabric and thus it is central to analyze associative mechanisms and typologies to evaluate trends and prosperity of cities. The paper will include stages of associative thinking, types and their reflection on students’ works.

Keywords: associative thinking, creative activity, blob architecture (blobism), bio-tech architecture (eco-tech architecture), zoomorphism, anthropomorphism, phytomorphism, biomorphism, arbor architecture, kinetic architecture, geonic architecture.

1 Introduction
Any changes around us begin with an individual human mindset. Over the millennia, the human mind has undergone numerous alterations and each time accumulated a rapid flow of information. Following that, we would not become who we are today without our consciousness composed of various associations. When we are born, we begin a continuous process of recording a film, a history of our own life, where we go through a constant learning and observation to create a clear picture of life. The experience of a person going through moments, images, feelings and words throughout life helps to correlate one to another based on associative setting of brain. As if brick by brick, we develop consistent life chain, where the real associative essence links the connection between formed elements and between the past and the present that evoke the association of an object reminiscent of each other [1]. The establishment of such correlation that helps us to recognize, reproduce and remember is impossible without the work of associations.

We connect our lives based on built memories that fundamentally rely on the development of associative series. The recognition of associations as individual physiological basis for catalyzation of mental functions based on works of history of philosophy and psychology of Aristotle and Plato and other English, German and French philosophers and psychologists. They argued that associations in humans’ consciousness are one of the key components in the development of human thinking.

Consequently, in every single human action we make certain connections, however, the control of this process might be impossible due to humans’ brain unconscious functional principle. The main reason to such organization is conditioned reflexes which were firstly introduced by Pavlov I. P. in the process of working with animals. According to him, associations only emerge in the interaction of mental processes that occur one after another, in consequence the remembrance of one object causes associations involved in the past in the mind. This principle can be compared to a learning process of
languages or poems, where for our own convenience we resort to create associative series. The process of memorization involves the creation of associations; thus, associative connections can be found in any process of human life.

Associative thinking often appears where a person is related to creative activities [2], specifically in architecture, art, design, where work consists of visual perceptions, but is under the influence of psychological processes. In architecture, associations cause the development of innovative ideas and new discoveries that fatherly improve our creative thinking in practice. Initiations of associations take place throughout the entire creative process [3], from searching for a potential source of inspiration and sketching ideas in mind, to the design process and presentation of completed work to a client.

Associations as a creative instrument in life of every person can be divided into three stages of cognition:
- stage of real perception;
- stage of abstract cognition;
- stage of connection from abstract to concrete.

These stages include numerous causative associative agents such as environment, individual perceptions of the world as a whole, sensations, motives, psychological receptors of our brain and the presence of established ideas and images about the world.

During the study of associative psychology three types of associations were identified:
- adjacency associations;
- affinity associations;
- contrast associations.

Each of the above types has a holistic pattern and a clear difference from each other. **Adjacency associations** work by reproduction of previously established relationships such as material or poem memorization. While **affinity associations** obey similar images from the past and cause a connection with an object of the present, for instance, when architects design a building with same requirements or style they recall their past experience and try to identify similar qualities or building standards. This type of associations relies on similarity of connections that are awakened by two same objects, affinity associations play a key role in the educational process and creative activities. As a result, we depend on already existing experience or study to discover certain points of remembrance that help to improve our own skills. **Contrast associations**, on the contrary, consist of contrasting process of elements that differ from each other. These connections are based on temporary associative connections and are widely used in design and regular situations as an acquisition of life experience by a person. For example, in real life the cleanliness will be associated with dirt or health with disease.

From the point of creative process, architects and artists divide associative thinking into potential categories for further work with students and clients. The first category they distinguish is the emotional state of a person, emotion as an unconsciously nascent process of our brain is a way to influence the perception of any situation. As a result, **emotional associations** are divided into two types: positive and negative. At this point, emotion serves as a quick stimulus of evaluation, because any image that has developed in the human brain awakens in the similar or visual representation. For instance, an artist during his work develops a detailed selection of associative series in order to impress the viewer in the future. Each work of an artist has a specific genetic code, content and signs that contain emotional fundament for further viewer revelation. Van Gogh in his works used colors as the most influencing element to lay certain ideas depending on the change of color palette. The artist believed that correctly selected color scheme can arouse depression and sadness or joy and happiness.

The next category of associative thinking is direct and indirect associations that implicate the creation of associations themselves. Every impulse in our head, whether it is a fantasy, or an emotion has a substantive foundation and is based on an evaluative-associative aspect. **Direct associations** include images whose contents have a direct and similar correspondence with the image itself, however, **indirect associations** arise when images and content differ and do not match.

The process of artistic image creation composed of interpretation of visible forms of environment, its interaction with the object by creating neural connection-associations relying on our emotions and
feelings. Practical classes in drawing and painting prove the fact that students create paramount parallels and evaluations through their feelings to express their vision of certain composition based on emotions and mental state.

**Visual illusory-spatial associations** are the next category of associative thinking. As we all know, people cognize the world through feelings and sounds, however the most significant element of cognition is our ability of vision. Everything that surrounds us has color, smell, shape and function. However, the vision of colors links more memories of specific object and its representation. Color, depending on the shades used, warm or cold, is able to alter the psychological and emotional state of a person, where each shade acquires its own associative image and emotional coloring.

**Auditory associations** appear as a necessary element that helps to perceive and absorb the flow of information. This ability helps people to correlate the information they see and hear to create a logical image. When listening to a musical composition, a person experiences the process of imagination and impression, for instance artists can reproduce the entire composition just once listening a melody. Our vision and hearing are closely related to each other and, consequently cause concomitant auditory and visual associations.

**Color associations** derive from our perception of colors and it is a complex process since such associations are under the influence not only of psychological and emotional state of a person [4, 5], but a physiological component as well. Emotional states that person experience can be either positive, negative or neutral. Color associations can also create physical state associations such as feelings of lightness, cold, silence or heaviness [6].

2 **Materials and methods**

Associations help rationally evaluate architecture and design as a source of latest ideas and images. They assist architects and designers in identification of the most striking qualities and parameters of an object by using the process of visualization and impression [7]. Despite that, not every person has an ability to associatively represent environment and objects; however, it is a crucial foundation in the development of creative potential of an architect or an artist. To develop best qualities and skills of a future architect, professors use a practice of fantasy exercises to represent students’ vision through associative series, where each student has a choice to choose his own associative object. The education of associative ideas among architectural students is the key to familiarize them with modern architecture of our time.

It is really important to emphasize associative methods that are used in drawing and painting classes during studying process. The first method is a **free composition** technique, which helps students to discover imaginative concepts. It is based on the arbitrary presentation of images, feelings and thoughts that come to mind, regardless of the quality and rationality of presentation. By using this method students are able to develop non-standard and creative images and compositions that in overall enrich their fantasy skills (Fig. 1 – 8).

The **method of focal objects**, as one of the possible strategies in practicing architectural vision, composed of a focus and work on a certain object, where random qualities acquired from neural or external environment.

Architecture continues to evolve today by affecting every process of human life and surrounding world. Associations in architecture are psychological in nature, they carry specific character or pattern of objects and phenomena of our planet, where these objects express a certain meaning and serve specific function. In result, associations become a real source of inspiration and ideas and in the future become practical in real life [8].

Nowadays, architects use associations to create innovative ideas, where an associative basis becomes a foundation for design and further construction. During creative process, the external environment acts as an impulse that forms associations [9]. Associations of nature evolved in the work of builders and architects many years ago. Architects began to fantasize by linking architecture with natural structures like trees, leaves, honeycombs etc. [10]. Now this architectural trend is becoming even more popular and continues to introduce new sources of natural imitation.
Architecture should be perceived as a holistic organism combining all necessary elements of life. For instance, Mies van der Rohe believed that his glass skyscrapers are composed of skin and bones and perceived as a living natural organism. Acquaintance with external world occurs automatically or consciously with the use of associative connections that build a holistic picture of a city.

The influence of the latest knowledge and technology affect the development of architecture and design till present period. For example, blob architecture or blobism interprets objects with natural forms and associates with organic, amoeba-shaped or convex configurations.

Fig. 1. Associative color frame. Performed by student Kateeva K. (supervisor Smolova M.).

Fig. 2. Associative underwater city. Performed by student Popov A. (supervisor Smolova M.).

Fig. 3. Mushroom city fantasy. Performed by student Sabitova A. (supervisor Smolova M.).

Fig. 4. Acorn city fantasy. Performed by student Hajretdinova A. (supervisor Smolova M.).
Fig. 5. Association city-fantasy. Performed by student Kateeva K. (supervisor Smolova M.).

Fig. 6. Mushroom city. Performed by student Karimova G. (supervisor Smolova M.).

Fig. 7. Underwater city association. Performed by student Kateeva K. (supervisor Smolova M.).

Fig. 8. Biocity association. Performed by student Kondreva A. (supervisor Smolova M.).

The concept of **bio-tech or eco-tech** provides the interpretation of wildlife or living organisms in architecture. Forms of nature in architecture have various types of imitation: repetition of forms of animals, people, parts of a body, plants (zoomorphism, anthropomorphism, phytomorphism) as well as materials that are similar to natural structures such as honeycombs, bubbles, fibers or spiderweb.

**Biomorphic architecture** (biomorphism, bionic) is formed on the basis of models of natural forms of living organisms [11, 12, 13, 14].
Arbor architecture grows architectural objects from trees and considers nature as a living integral architectural structure [15]. Associative series can also include kinetic architecture, where buildings are compared with a human movement or movement of plants and their blooming. The style of geonic architecture is associated with images of mountain, minerals or rocks structure.

3 Results
As a result of associative psychology study, three types of associations were identified: associations by complexity, associations by similarity, associations by contrast. Emotional associations are divided into positive and negative, direct and indirect, visual illusory-spatial, auditory and color associations. Following associative methods were examined – the free composition method and the focal object method. Revealed methods of associatively are indispensable in the human consciousness formation process as well as the following expansion of creative range and dynamics for potential development. The significance of the results is in the identification of potentially new styles in architecture through associative thinking enhancement.

4 Discussions
Our world has no secrets; people were able to realize the fact that revelation of secrets is possible with the development of cognition accompanied by associative thinking. In architectural profession, associative psychology acts as a basis for the development of creative potential and is achieved through continuous training and practice. In our world, modern architects such as Santiago Calatrava [16], Zaha Hadid [17], Norman Foster, Frank Gehry and others used associative images as a source of inspiration and innovative ideas [18, 19, 20]. Associations play an important role in teaching and developing future architects and artists. Associations are indispensable in the process of human consciousness formation, expansion of creative range and constant dynamic improvement. The cognition of the world around us is closer than you can imagine. Associations are our key to creative success!

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