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Visual illusions as a means of aestheticisation of the object-spatial environment

Abstract. The article's relevance lies in the need to enrich the designer's creative experience, open up new possibilities for visual communication, and elevate visual culture to a new level. The article's aim is to outline the role of visual illusions in the aestheticisation of the object-spatial environment, using examples of techniques that enable designers to achieve visual effects when arranging creative spaces. The article discusses the role of visual effects in the design of object-spatial environments, which result in visual illusions. They represent perceptual distortions of reality, where there is a discrepancy between the physical parameters of an object or subject and how the human brain interprets incoming visual information. By evoking vivid sensations, visual effects can contribute to a deeper emotional connection between the environment and the audience, making it memorable and recognisable. People actively apply visual illusions in arranging their living environment to change or adjust existing forms and spaces. This allows for a fresh perception of the surrounding world, accomplishing a psycho-emotional "renewal", and satisfying the need for novelty in cognitive and emotional experience. The use of visual illusions can significantly enrich a designer's creative arsenal, open new horizons in visual culture, encourage unconventional thinking, and go beyond the boundaries of traditional approaches to visual communication. By experimenting with various forms of illusions, designers can develop new methods to influence perception and emotions, thus expanding the horizons of their creativity. The ability of designers to use unconventional images in design, and their capability to create deep, emotionally resonant, and memorable designs will attract the audience's attention, forming a vivid first impression of the object-spatial environment. The practical value of the work lies in its actualisation of the role of visual illusions in aestheticising the object-spatial environment, in satisfying human needs for novelty and artistic arrangement of space

Keywords: visual culture; visual communication; visual effects; creative space; cognitive and aesthetic needs

Introduction

Throughout history, people have always sought to arrange their spaces according to their needs, including aesthetic ones. By supplementing the environment with artificially created art objects, they were able to shape a reality comfortable for themselves through tricking the brain. Societies developed and circumstances changed, but the human need for visual novelty and new impressions remained. In the 21st century, people have unlimited access to information and are therefore more discerning about visual effects. This underscores the relevance

of this article, which lies in the need to identify the visual techniques used in contemporary design.

Researchers in the field of design as a branch of artistic design and construction of aesthetic properties of physical-spatial environment studied types of visual illusions and their impact on human emotional state and behavior. Thus, D. Todorović (2020) thoroughly studied visual illusions from the perspective of interpretation and the terminological definition of this phenomenon by scientists, psychologists and philosophers, who referred

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to visual effects as geometric illusions, optical, geometric-optical, geometric-photometric, and visual. Also, the author identified the criteria of illusion and indicated that the interpretation of a visual illusion is purely individual and subjective due to the specific nature of neural processing in the visual system. K. Tulver (2019) also emphasised that basic visual information processing in humans has many commonalities, but individual cognitive and neural mechanisms of perception determine the differences in the brain's representation of reality. The effect of optical illusions in design was explained by V. Borysov (2022) by the fact that an object is equally real to a person both in life and in imagination. The researcher emphasised that visual illusions can be used to visually change the shape, contours, and volume of an object, "giving it new plasticity while leaving the constructions unchanged" – and this is the task of op-art as a design direction based on the peculiarities of human perception of flat and spatial figures, the history of which, in particular, is described in the educational publication on the creation of optical illusions in paintings (Methodological..., 2024). Optical illusions in the context of art and architecture were examined by T.M. Ladan & M.A. Fortuna (2020) using the works of Ukrainian artist Oleg Shupliak as an example. In artworks, the researchers identified the following types of optical illusions: "impossible perspectives and figures; images that need to be flipped; anamorphic images that can only be seen from a certain angle; images with ambiguous content". According to the authors, in architecture optical illusions serve either a spectacular or an educational function. V.P. Kovalsky *et al.* (2020) note that the use of optical illusions in urban environments can give architecture both a static and dynamic character, completely transforming it through changes in the geometry of objects, visual fractures, cuts, cracks, etc. The use of visual illusions in interior design as an effective tool for space correction, as well as for enhancing its sociocultural and artistic appeal, was analysed by O.V. Berezko *et al.* (2020). The researchers identified the types of visual illusions: art mimicry, distortion, anamorphosis, art pareidolia, pseudo-hypnosis, ephemerisation, and anti-gravity; based on the intensity of their use in interiors, optical illusions were conditionally divided into strongly pronounced and weakly pronounced. M.Z. Huryna (2022) studied optical illusions within the realm of graphic design. In particular, she revealed the reasons for the appearance of visual illusions: the result of the specific functioning of the eyes and the erroneous transformation of signals by the brain. By outlining the types of optical illusions according to their origin – natural, artificial and mixed – the researcher pointed out a significant difference between natural and artificial illusions: if an illusion is created by a person, the difference from physical reality has a certain secret, and after it is revealed, it loses its mystery; "natural and mixed illusions, however, do not change the strength of their impact regardless of the observer's

perspective". Geometric illusions in product design were studied by M. Pooripanyakun & A. Wodehouse (2020). Researchers have identified several features that can influence the perception of geometric shapes, and have concluded how they can be utilised to realise the designer's concept. Studying interior design of public spaces in the op-art style, K. Hryhoryeva (2020) emphasised that it is a form of kinetic art that consciously opposes the norms of human perception: the eye always seeks to organise chaotic complex images into a simple system, but in optical painting, on the contrary, simple elements of the same type disorient the eye to prevent the formation of a cohesive structure. S.A.Q. Mahmood (2021) believes that the art of optical illusion is a deception of visual perception, shaped by plastic decisions regarding colour, form, and space; and the field of interior design actively utilises the potential of visual illusions, particularly for decorating rooms with limited space to visually enhance their depth and width. N.E. Novoselchuk (2019) points out the nature of optical deception, which lies in the disparity between the actual form and the visual perception of lines, figures, gaps between them, elements (figures) filled with graphic material and left blank (irradiation of light). The author highlights such means as colour, light, graphics, texture, scale, mirrors, decorative materials, works of visual art, monumental painting, parametricism, and others, which enable the creation of visual illusions in the interior. They indicate that a visual illusion, which disrupts stereotypical expectations, can change the perception of space. Therefore, scientists agree that creating impressive design requires a deep understanding of which visual techniques need to be employed to influence and engage with the audience on an emotional level.

The purpose of the article is to identify the role of visual illusions in aesthetising the object-spatial environment. The research aims to identify the methods by which designers achieve visual effects when arranging creative spaces.

The scientific novelty of the article lies in its examination of visual effects as a means of shaping an environment that satisfies human needs for novelty and artistic aesthetics.

Materials and Methods

The article employs methods of analysis and synthesis during the review of scientific and popular science articles on the research topic. Thus, the following scientists terminologically outlined the phenomenon of visual illusions and defined their types: D. Todorović (2020), T.M. Ladan & M.A. Fortuna (2020), O.V. Berezko *et al.* (2020). The psychological aspects of the perception of visual effects were analysed by K. Tulver (2019), N.E. Novoselchuk (2019), M. Pooripanyakun & A. Wodehouse (2020), S.A.Q. Mahmood (2021), M.Z. Huryna (2022), V. Borysov (2022). Also, researchers considered visual illusions in the context of fine arts

and architecture: T.M. Ladan & M.A. Fortuna (2020), V.P. Kovalsky *et al.* (2020); interior design: O.V. Berezko *et al.* (2020); graphic design: M.Z. Huryna (2022) and product design: M. Pooripanyakun & A. Wodehouse (2020). As a result of studying the authors' opinions, visual effects are outlined, which, in their opinion, cause the altered perception of reality. The methods of systematisation and generalisation of the processed textual and illustrative material on design and psychology allowed us to identify general trends in the use of visual effects in environmental design, compare them with the theoretical and practical experience of a photo designer, and present examples of visual effects using photographic means. The systematisation method allowed us to structure a large amount of information, highlighting the main concepts and approaches to the use of visual effects. The method of generalisation helped to combine various aspects of the idea of visual effects, collected from various sources, into a coherent understanding. Photography has become an important tool for demonstrating examples of visual effects that emphasise a change in the perception of space and reality. Photographs allow us to clearly show how visual effects affect the viewer, changing their cognitive and emotional reactions. The forecasting method made it possible to substantiate potential future prospects based on the study of techniques for creating visual illusions in space, in accordance with the changing needs of the audience for new cognitive and emotional experiences. Forecasting involves analysing current trends and anticipating the development of technologies that may influence the creation of new forms of visual illusions. This allows designers and artists to predict which visual effects will be most effective and in demand in the future and adapt their approaches in line with these predictions.

Thus, an integrated approach, including methods of systematisation, generalisation and forecasting, has allowed us to create a comprehensive understanding of the role of visual effects in environmental design and to predict their further development in accordance with the changing needs of the audience.

Results and Discussion

A visual illusion is defined as the incorrect interpretation of visual information by people, such as perceiving the imaginary as real, or distortions of shape, depth, size, colour, etc. Visual illusions are caused by distorted perception, for example, bright objects on a dark background appearing larger than objectively equal black objects on a light background; vertical lines appearing longer than horizontal ones; the same object appearing larger against a background of smaller objects and smaller amidst larger background objects; straight lines appearing as different depending on their endpoints; parallel lines appearing as curved due to their different directions of shading, etc. The task of a designer is to create a physical-spatial environment in such a way that

it most fully satisfies the material and spiritual needs of people – and visual effects are one of the effective means for achieving this.

Visual illusions come in various types: from geometric ones, which distort the perception of shape and size, to colour illusions, which alter the perception of hue. The visual illusion is a phenomenon both physical and psychological. X. Tao & Y.Y. Han (2018) suggest considering them from a philosophy perspective. It arises from cognitive distortions – errors of perception that occur because the brain is prone to automating and simplifying processes to quickly and stereotypically react to potential threats (Ransley, 2019).

Visual illusions are a powerful tool that influences perception of the world, satisfying both cognitive and aesthetic needs. They not only evoke curiosity and fascination but also contribute to understanding and adaptation to the surrounding environment. Cognitive needs refer to a person's ability to understand, analyse, and interpret information. Visual illusions play an important role in the development of cognitive processes such as attention, memory, perception, and thinking. Visual illusions trigger the need to examine the surrounding world more carefully and understand how it is structured. They stimulate the ability to distinguish details and analyse the information received from visual organs. Visual illusions attract attention and compel to focus on specific elements of the environment. This helps to train the ability to concentrate and increases the level of attention to detail. Recognising illusions and deciphering them helps strengthen memory, as we memorise visual images and their interpretations. This is beneficial for the development of long-term memory and cognitive skills. Studying visual illusions stimulates creativity and flexibility of thinking, as they often require a non-standard approach to understanding what is seen. This contributes to the development of problem-solving abilities and the generation of new ideas. Aesthetic needs relate to the desire for beauty, harmony and aesthetic pleasure. Visual illusions significantly contribute to satisfying these needs, as they provide with the opportunity to enjoy visually appealing and intriguing images. Visual illusions are often visually attractive, satisfying the desire for beauty. The harmony of shapes, colours, and lines in such illusions evokes aesthetic pleasure and positive emotions, fostering aesthetic preferences.

Creating impactful design requires a deep understanding of how to emotionally engage with the audience. Visual effects captivate by surprising, stimulating imagination and activating associations. Visual illusions exist solely in the human imagination, so it is important not only what one sees but also how that information is received and processed. Each person has unique characteristics of visual perception, influenced by factors such as age, gender, emotional and intellectual experiences (Nosova, 2023). For example, individuals may

react differently to spatial environments with high or low levels of detail, depending on their conception of an ideal personal space.

As a complex process, visual perception involves recognising shapes, colours, depth and object movement through the eyes. It begins with light detection by the eyes and ends with the brain interpreting visual stimuli. Understanding the characteristics of human visual perception allows for targeted influence and enriching it with new meanings. Visual perception allows people to understand and interact with their environment by recognising, organising, and interpreting shapes, colours, spatial relationships, motion, and other visual attributes. The visual illusion usage expands an individual's psychoemotional experience, satisfying their need for novelty and artistic aestheticisation of the environment. Vivid visual impressions activate brain activity and human creativity. New visual elements can evoke positive emotions, inspire creativity and self-expression, and broaden understanding of the world. Traditional techniques of artistic spatial organisation, and its monotony, can cause visual fatigue and a depressive state. Conversely, oversaturation with visual effects can overly stimulate the human nervous system, making it difficult to control. Skillful use of visual illusion involves filling space with content that the audience must reveal, thereby becoming co-creators of its meaning. Visual illusions enrich the environment aesthetically, making it

more interesting, functional, and interactive. This contributes to the emotional and cognitive engagement of viewers. By giving the environment new meaning, visual effects transform the ordinary into the extraordinary, eliciting vivid emotional and cognitive reactions from viewers. Visual illusions alter the perception of space, creating new opportunities for its interpretation. They can tell stories, create visual narratives, and change the context of the environment, providing it with new meanings and evoking new associations.

Visual effects in the environment play a crucial role in satisfying people's need for novelty. Unusual shapes, colours, or moving elements attract attention and spark curiosity, prompting exploration and interaction with the environment. Interactive visual effects, such as projection mappings and interactive screens, can create a variable space that generates dynamic new visual experiences. Static works of art, photographs featuring a specific idea, can stimulate the imagination, evoke emotions of excitement, wonder and a sense of discovery, satisfying the need for a new emotional experience (Fig. 1).

Visual effects create a captivating, unusual atmosphere in the object-spatial environment, and their use in creating thematic spaces can significantly enhance the attractiveness of the interior. Examples could be thematic parks, hotels or restaurants that utilise visual effects to create a specific atmosphere, such as being in a natural environment (Fig. 2).

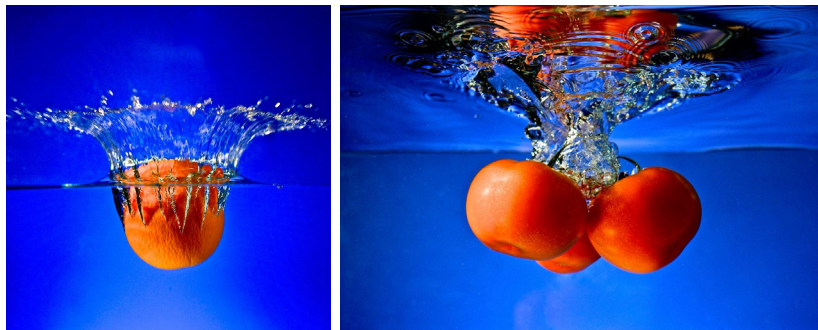


Figure 1. The visual effect of dynamism frozen in a moment

Source: photo by the author

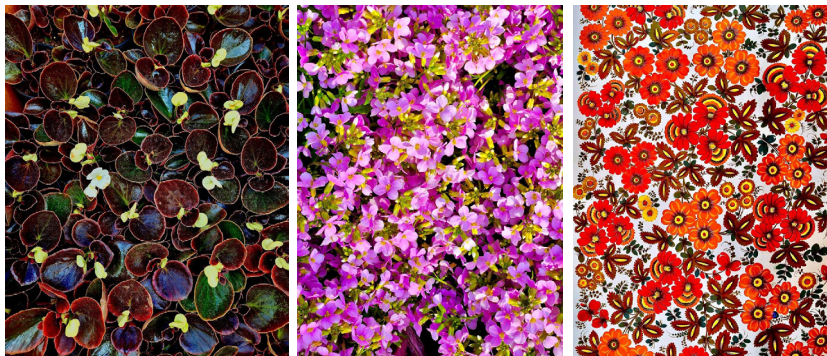


Figure 2. The visual effect of immersion in a natural environment

Source: photo by the author

The psychological aspects of perceiving visual illusions in environmental design play an important role in how people interact with space. The audience has certain expectations regarding their environment based on previous experience and visual illusions disrupt these expectations, eliciting emotional and cognitive reactions. Utilising such effects can make the space more dynamic and engaging, stimulating the emotional involvement of users. Visual illusions make the design aesthetically rich, creating an impression

of innovation and creativity, which affects the overall impression of the space. Using illusions, for example in photos, to alter the perception of space by creating an impression of no walls and the presence of perspective as a visual distancing of objects from the observer, can make the room feel more open, spacious and comfortable. Interacting with such a space will evoke positive emotions. This is especially important in urban settings, where limited living space is a common issue (Fig. 3).



Figure 3. Increasing the depth of space through perspective

Source: photo by the author

When forming visual effects, designers must consider a person's psychological characteristics that influence their visual perception of the object-spatial environment. Artists can manipulate visual effects by applying the golden ratio as a proportion of objects, which aesthetises the space. In the interior, for example, a sofa should occupy at least two-thirds of the wall against which it is placed, while a coffee table should be no more than two-thirds the size of the sofa. It

aesthetises the spatial environment, creating a sense of calm and harmony, with larger objects placed lower and smaller ones higher. Visual lines placed horizontally create a sense of support, completeness and calm, influenced by the characteristics of the visual apparatus: the eye perceives a horizontal line with minimal tension. The eye exerts more effort to perceive vertical lines, thus they evoke a sense of dynamism, movement, and flight (Fig. 4).



Figure 4. Horizontal and vertical lines convey a sense of stillness or dynamism to an image

Source: photo by the author

Understanding the principles of Gestalt allows for the creation of attractive and memorable impressions in the viewer (Vlasyuk, 2021). Visual illusions incorporate various visual cues and techniques to create effects that engage the viewer's attention (Kurtyanyk & Halyshych, 2021). For example, according to the principle of proximity, objects placed close together appear to form a harmonised group, while those placed further apart are perceived as separate, autonomous elements of space. Following the principle of similarity, human beings group similar elements based on certain criteria, allowing them to process visual information more quickly. The viewer requires logic and coherence in the formation of space,

so to avoid ambiguity and incomprehensibility, based on the principles of continuity and closure (completeness), they mentally fill in the gaps, forming solid objects from fragmented elements. Visual templates, formed based on acquired psychoemotional experience, assist the viewer in this. Following the principles of symmetry and simplicity, the viewer attempts to divide complex objects into simple symmetrical ones, perceiving them as harmonious. Objects mirrored around the central axis give the space a sense of order and stability; conversely, asymmetry can add energy to a static space. This also applies to visual effects, such as those used to decorate rooms in photographs (Fig. 5).



Figure 5. Symmetry and asymmetry in shaping the effect of balance and imbalance of space

Source: photo by the author

Visual information is divided by humans into the foreground – the figure, and the background (according to the principle of figure and ground), which, for a person to identify them, must differ in visual characteristics. The figure-ground can produce such effects: be stable, i.e., in the foreground; reversible – the foreground and background are interchangeable, and ambiguous when the figure simultaneously appears as both the main element and the background – and the viewer chooses the perception variant.

By creating certain associations in the audience through visual illusions, designers draw attention to specific locations and stimulate particular emotions and actions. Colours play a significant role in this, influencing the subconscious mind, enhancing images, and forming associative links with specific experiences and emotions. The use of certain colours, whether cold or warm, bright or dark, and their shades, can create visual illusions. In the object-space environment, bright colours evoke feelings of creativity, youthfulness, energy, and freedom,

while dark colours impart a sense of heaviness, sadness, and depth. Specific combinations of colours also affect a

person's psychoemotional state, eliciting particular associations and illusions (Fig. 6).

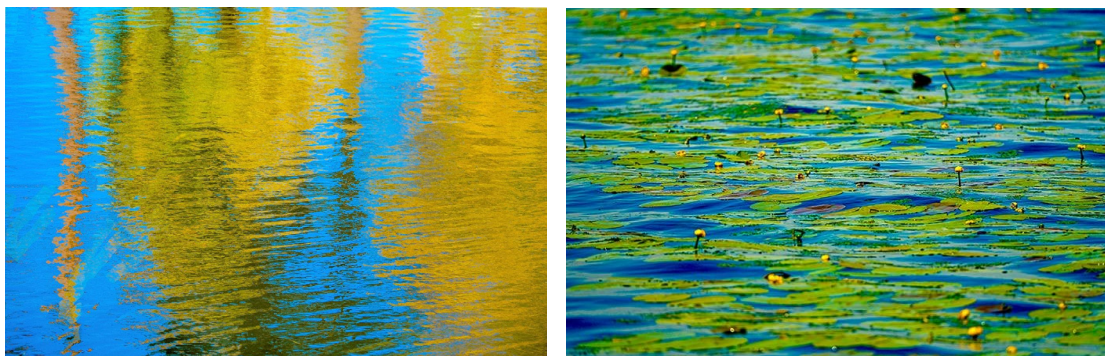


Figure 6. Colours in the psychoemotional perception of the visual image

Source: photo by the author

Colours play an important role in creating visual effects. Using contrasting colours can help highlight objects or create accents. On the other hand, analogous colours create a sense of smooth transition and unity in the composition. Considering the colour temperature and saturation can enhance visual effects. Designers should consider that people identify and perceive colour effects differently depending on their physiological and psychological characteristics. O. Otych (2017) believes that this is also influenced by national traditions. Certain shades or combinations of colours may be considered attractive and aesthetically pleasing by one person, while another person may feel the opposite. The perception of colours as positive, negative, or neutral is subjective and influenced by the person's psycho-emotional and physical state, cultural and aesthetic preferences, and age-related

characteristics. For example, the colour white is associated positively with purity, cleanliness, holiness and salvation, while negatively with indifference and emptiness. Black signifies asceticism, sophistication, power and wealth, but also sadness, loneliness and hidden aggression. Red may evoke a surge of energy, stimulate courage and passion, but also be associated with danger, pain, and aggression. Yellow, in some cases, creates feelings of warmth, joy, wealth, love and creativity; in others, it can evoke anxiety, fear, and be a colour of jealousy. Blue, on the positive side, may be associated with safety, trust, loyalty, sophistication and infinity; while on the negative side, it may denote coldness, indifference, and closedness. Green embodies freshness, health, youth, nature, and naturalness, but at the same time, it can evoke boredom, slowness and weakness (Medukha, 2023) (Fig. 7).

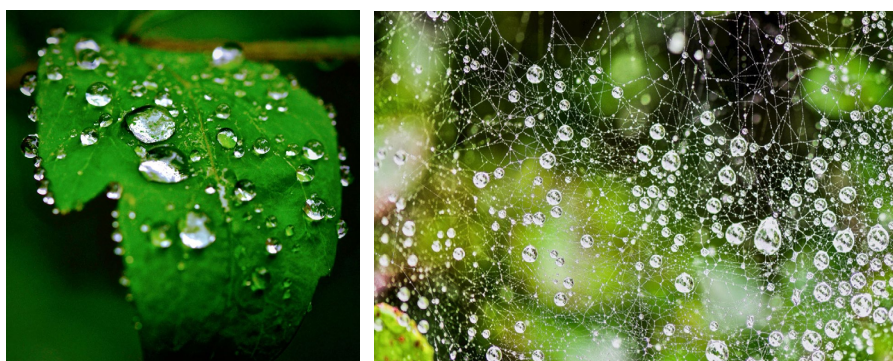


Figure 7. Visual effects with shades of green colour

Source: photo by the author

Visual illusions play a significant role in the perception of the surrounding environment. The use of such illusions in design allows for the creation of spaces that meet the aesthetic and psychological needs of people. Designers use artistic and expressive means to create visual illusions in order to adjust the perception of space and elevate it to a new level. One of the most common

ways to use visual illusions in design is to create the feeling of a larger space. For example, light colours on the walls and ceiling can visually expand a room, making it more spacious and airy. The use of mirrors also helps create the illusion of a larger space, as they reflect light and objects, adding depth to the interior. Designers use vertical lines and elements to create a sense of greater

height in a room. Geometric patterns can visually alter the proportions of furniture or architectural elements. The use of rounded shapes and lines can create a feeling of softness and coziness, while sharp angles and lines add dynamism and energy to a space. In arranging the object-space environment, artists can use images that visually fill the space of a room, reduce it, or, conversely, make it as open as possible. Walls, floors, ceilings and furniture can create effects of merging and gradual transitions, while lighting fixtures can complete the atypical space, adding aesthetics to it.

Negative space as a means of creating visual illusions in graphic design can be part of environmental design. For instance, negative space as the background around a figure can provide an image with visual effects such as: making the main object more noticeable and easier to perceive without visual overload

and chaos; making the composition more harmonious and elegant; creating additional shapes and images, giving the image a sense of mystery and intrigue. Depending on what a person considers the main subject and what they see as the background, the content of what they see changes. In interior design, negative space is the area around objects that serves as “breathing space” (Dunn, 2017). It allows the eyes to rest in conditions of sensory overload, creating a sense of visual comfort and harmony. Negative space has the ability to direct the viewer’s attention to visual accents, enhancing or weakening their effect (Bozhko, 2023). Negative space can dominate when the space around the object, rather than the object itself, creates an artistic effect (Fig. 8). Designers use negative space in interiors to evoke certain feelings, making the space more emotionally rich.



Figure 8. Negative space as a means of creating an artistic effect

Source: photo by the author

Visual illusions that captivate the audience’s imagination in creative and innovative projects are the result of the mechanisms by which they perceive the surrounding environment. Creating spatial illusions in design is an effective way to influence consumer emotions, based on the psychology of perception (Sergieienkova *et al.*, 2012). In general, spatial illusion in design is a technique that allows designers to create a sense of depth, volume, and three-dimensionality in two-dimensional or confined spaces. The illusion occurs when the brain identifies a two-dimensional image as three- or four-dimensional, and static objects appear to be moving. This is exemplified by the art movement known as op art. Representatives of op art, such as Victor Vasarely and Bridget Riley, use geometric shapes and contrasting colours to achieve these effects. The use of visual illusions in design allows artists to go beyond traditional forms and techniques, creating spaces that stimulate thinking, evoke emotions, and engage viewers in active interaction. The illusion of depth and three-dimensionality on a two-dimensional surface allows for the creation of volumetric effects in visual space. Using these effects requires designers to meticulously plan compositions, taking into account elements

such as light, shadow, perspective, and colour balance. Perspective is a fundamental element for creating volumetric effects. Linear perspective is used to create a sense of depth through lines that mimic distance. Aerial perspective allows for the simulation of distant objects by reducing contrast, saturation, and detail. Overlapping or layering objects, where some are placed in front of others, virtually immerses the viewer in a multi-dimensional space. Objects that are closer and overlap those farther away help the viewer understand their distances. People identify and evaluate visual effects according to how they perceive elements of the composition: lines, shapes, and proportions.

Visual effects can alter the perception of space, making it more open, deep, or, conversely, cozy, creating new meanings and emotional impressions from being in such an environment. These techniques are used in architecture, interior design, graphic design, art and virtual reality. The use of colour, light, shadow, perspective and other visual means can make a consumer perceive a design object as more spacious or deep than it actually is. Mirrors, projections, and images of mirrored surfaces can create the effect of depth and infinity in space (Fig. 9).



Figure 9. Optical illusion by using reflection

Source: photo by the author

The use of visual illusions in interior design allows for the transformation of space, giving it uniqueness, dynamism, and visual depth. Illusions such as distortion, anamorphosis, ephemerisation, and others can alter the perception of a room's size, shape and colour, evoking unique sensations and emotions in a person. By experimenting with these effects, designers can turn any living space into a work of art. Distortion, or the deliberate alteration of form, is used to create a sense of spatial dynamism. This is achieved through curved lines, uneven surfaces, and asymmetry in furniture and decorative elements. The use of distortion animates static spaces, giving them expressiveness. Static images can create the illusion of movement in front of the viewer. An example can be curved or wavy shelves and mirrors that make the interior non-trivial and change spatial depth perception. Anamorphosis, a technique of optical illusion that creates an image properly perceived only from a specific angle or through a special mirror, can create the illusion of a more spacious room, increased ceiling height, or added depth to walls. Paintings that incorporate perspective and anamorphosis can create the feeling of open space beyond a wall, such as a virtual window to another world or a door to an imaginary room. Ephemerisation allows for the creation of a visual effect of lightness, airiness, and temporariness. This can be achieved by using transparent materials like glass or thin textiles that allow light to penetrate through them and create a play of light and shadow. Elements such as hanging structures, transparent walls, or furniture with transparent components can add visual lightness and an ephemeral character to a space, making it more open and spacious. The trompe-l'oeil technique allows for the creation of the visual illusion of three-dimensionality on a two-dimensional surface, for example, to create the illusion of open windows, doors, or other architectural

elements. According to I. Hrebenyuk (2022), sculptures can also create visual illusions. For instance, the works of Antony Gormley may look like abstract shapes from one angle and like figures from another.

Light and shadow are crucial for creating visual effects. They help define the shape of objects and evoke a sense of three-dimensionality. The perception of space depends on the direction of external (natural or artificial) lighting. Light sources, by illuminating some parts of the object-space environment and shading others, determine the perception of its real characteristics. Light and shadow focus a person's attention in a room. For instance, in a dark space, light elements are more noticeable. Shades of light and shadow can affect the atmosphere of a room. Soft light encourages calmness and relaxation, while bright light adds energy and activity. Lighting does not only help to see and understand spatial volumes but also to form light-based interiors, creating spatial and volumetric illusions. "The design possibilities offered by light are much more diverse and flexible than those that can be achieved through architectural and furniture forms. Changing the lighting system can significantly alter the impression of an interior without any other changes to it" (Chyrchuk, 2018).

Photography plays a significant role in creating visual illusions in the object-space environment due to its ability to manipulate light, shadows, composition and perspective. It is a powerful tool for creating illusions that can significantly influence the viewer's perception, adding new dimensions to visual art. Through photographs, it is possible to create the desired mood, convey a specific message, and enhance the perception of the environmental space. Images of people, everyday life, or nature can capture the viewer's attention, evoke strong emotions, and create a deep emotional connection with the space (Fig. 10).



Figure 10. Photography in the aestheticisation of the environment

Source: photo by the author

Changing the perspective or using appropriate equipment allows to create the effect of spatial distortion, altering the proportions of objects. Visual effects in photography can range from calm and relaxing to dynamic and energetic, depending on the purpose of the space, which aims to direct the viewer's thoughts and feelings in the desired direction. While using photographs, cultural and social aspects should be considered to avoid negative associations.

Conclusions

Optical illusions are perceptual distortions of reality that occur when there is a discrepancy between the physical parameters of an object and how the human brain interprets the incoming visual information. By creating vivid sensations, such effects can contribute to a deeper emotional connection between the object-spatial environment and the audience, making it memorable and recognisable. People actively use optical illusions in arranging their surroundings to change or modify existing shapes and spaces. This allows for a new perception of the surrounding world and facilitates a psycho-emotional "renewal". Optical illusions satisfy people's cognitive and aesthetic needs, making the perception of space more multifaceted and rich. They develop attention, memory, creative thinking, and the ability to interpret, while simultaneously stimulating aesthetic satisfaction and a sense of harmony. Colour, light, shadow and perspective allow for achieving both functional and aesthetic results. Considering gestalt principles in space design makes it intuitive, informative, meaningful and aesthetically appealing.

The use of optical illusions can significantly enrich a designer's creative arsenal, open new horizons in visual culture, and encourage thinking outside the box, going beyond conventional approaches to visual communication. By experimenting with different forms of illusions, designers can develop new methods to influence

perception and emotions, thereby expanding the horizons of their creativity. Designers' ability to use unconventional imagery in design, and their capability to create deep, emotionally resonant, and memorable designs, will attract the audience's attention and form a vivid first impression of the object-spatial environment. Research in this field will enrich the designer's creative experience, open up new possibilities for innovation in visual communication, and elevate visual culture to a new level.

In the 21st century, as technology continuously evolves, society places heightened demands on visual communication design. Audiences are becoming increasingly discerning and optical illusions can satisfy their aesthetic needs for novelty, freshness, and vivid sensations. The implementation of cutting-edge technologies, such as augmented reality (AR) or virtual reality (VR), in environmental visual effects allows for the creation of entirely new forms of interaction between space and the viewer. The use of visual effects in the environment will not only aesthetically enrich the space but also satisfy people's deep-seated needs for novel emotional experiences and experiences. Therefore, optical illusions are a powerful tool in designers' hands, allowing them to create comfortable and aesthetically appealing spaces. Understanding and skillful use of appropriate techniques help shape a reality that meets people's needs and desires, providing them with psychological comfort and satisfaction from being in such an environment. The prospects for further research in studying the audience's priorities in perceiving visual effects to develop recommendations for their application in the design of object-spatial environments.

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None.

Conflict of Interest

None.

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Візуальні ілюзії як засіб естетизації предметно-просторового середовища

■ **Анотація.** Актуальність статті зумовлена необхідністю збагачення творчого досвіду дизайнера, відкриттям нових можливостей візуальної комунікації та піднесенням візуальної культури на новий рівень. Мета статті – окреслити роль зорових ілюзій в естетизації предметно-просторового середовища на прикладах прийомів, які дозволяють дизайнерам досягати візуальних ефектів при облаштуванні креативних просторів. У статті розглядається роль візуальних ефектів у дизайні предметно-просторового середовища, результатом яких є зорові ілюзії. Вони є перцептивним викривленням реальності, де існує невідповідність між фізичними параметрами об'єкта або суб'єкта і тим, як мозок людини інтерпретує вхідну візуальну інформацію. Викликаючи яскраві відчуття, візуальні ефекти можуть сприяти більш глибокому емоційному зв'язку між середовищем і аудиторією, роблячи його таким, що запам'ятовується і впізнаваним. Люди активно застосовують візуальні ілюзії в облаштуванні свого життєвого середовища, щоб змінити або скоригувати наявні форми і простори. Це дозволяє по-новому сприймати навколишній світ, здійснювати психоемоційне «оновлення», задовольняти потребу в новизні пізнавального та емоційного досвіду. Використання візуальних ілюзій може значно збагатити творчий арсенал дизайнера, відкрити нові горизонти у візуальній культурі, спонукати до нестандартного мислення, вийти за межі традиційних підходів до візуальної комунікації. Експериментуючи з різними формами ілюзій, дизайнери можуть розробляти нові методи впливу на сприйняття та емоції, розширюючи таким чином горизонти своєї творчості. Вміння дизайнерів використовувати нетрадиційні образи в дизайні, здатність створювати глибокі, емоційно резонансні та проекти, запам'ятовуватимуться, привертатимуть увагу аудиторії, формуючи яскраве перше враження про предметно-просторове середовище. Практична цінність роботи полягає в актуалізації ролі візуальних ілюзій в естетизації предметно-просторового середовища, у задоволенні потреб людини в новизні та художньому облаштуванні простору

■ **Ключові слова:** візуальна культура; візуальна комунікація; візуальні ефекти; креативний простір; пізнавальні та естетичні потреби