

Analysis of current trends in introverted design: Changing the extraverted paradigm

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ABSTRACT

This research deals with the main characteristics of introverted design from the point of view of the modern perception of personality and its place in society. The main concepts of the personal classification of private and public space are highlighted, and the leading types of design focus on equal access to personal comfort. The essence, signs, and advantages of co-working as the latest model of interaction between people with different psychological types, worldviews, and cultural perceptions are revealed. The purpose of the study is to identify the main criteria for the formation of introverted design in modern space and to determine its impact on the emergence of new formats of interaction between the individual and the architectural space. This study used the method of systematic analysis of scientific papers and publications on the topic of research, the method of comparative analysis, as well as the generalization and systematization of the information obtained. The analysis of the source base on psychological aspects of design shows multi-vector and interdisciplinary approaches. There is a clear connection between design and psychology, caused by the increasing gravitation of artists towards individualization of projects, uniqueness, and maximum conformity with the needs of clients. The authors note a certain lack of clarity on the introverted design topic in scientific research specifically in the field of architecture and design: the growing actualization of the personal approach in all spheres of life requires a comprehensive and deep interdisciplinary analysis for further implementation in the design and architectural projects. The change of the extroverted paradigm focused on active communication between people, multitasking, openness, and non-zoning of space in a freer opened up new possibilities for the design and modeling of the interior. Thus, taking advantage of the achievements of psychology, sociology, and other related sciences, interior design can take into account the influence of a number of circumstances on the effectiveness of his work: the right choice of color scheme, taking into account for both the psycho-type of man and the purpose of the room and its location, increases productivity and increases the sense of harmony.

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1. Introduction

Modern cultural space, combining different traditions, aesthetic concepts, and variability of views, declares a significant measure of tolerance for the right to choose their own style, direction, and

space. It is quite clearly seen in the sphere of interior design, because in this space clear boundaries and rules are gradually leveled, giving in to the trend of individual approach. This has caused an increased interest of representatives of architecture and design in psychological and philosophical concepts, bringing to one of the important places the problem of personality type and individual characteristics, around which the modern design project is built. Due to this, the introverted design trend and approaches oriented to the closed, deepened introverted personality type are formed.

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The aim of the study is to highlight the main criteria for the formation of introverted design in contemporary space and to clarify its influence on the emergence of new formats of interaction between a person and architectural space.

Multilevel interpretations and integration of the design phenomenon into most spheres of life have led to the emergence of a number of scientific studies. Major studies of personality types are reflected in the works of Jung (2016), who was the first in psychology to describe the division into two psychological personality types-introvert and extrovert. Noteworthy is the work of Cain (2013), which revealed in great detail the features of the introverted type in particular, as having its advantages and disadvantages, and focuses on the methods of finding a comfortable existence in a world that is focused on the extroverted type. Analysis of human behavior in the architectural space is presented in the work (Yang et al., 2019).

The psychology of living space has been considered in their research (Wettstein et al., 2018). Structural perception of the space of the urban environment, the identification of the situation, and the orientation of the person in it are outlined in the works (Hnatyshyn and Kryvuts, 2020). Relevant is the theory of "Genius Loci" (Vecco, 2020), where he identified and interpreted the two categories: space and character (Lynch, 1960). In the study of contemporary architectural forms, which includes co-working, the most relevant works are (Cain, 2013; Katz, 2021; Yang et al., 2019).

The combination of interdisciplinary theories and approaches showing interest in the topic of the influence of personality psychological type on the formation of new directions of interior design as one of the components of the cultural space determines the relevance of the problems of this study.

The important importance of forming a new approach to the analysis of design as a sphere, combining not only artistic methods but also psychological and philosophical concepts, is played by the tendency of modern culture to synthesize various, sometimes contradictory elements, caused by the growth and promotion of tolerance of the world community to non-standard, sometimes uncomfortable displays of human individuality. The study should demonstrate the advantage of the individual approach to the creation of standardized, generalized.

2. Materials and methods

Cain (2013) described in some detail the basic differences between the two personality types: introverted and extroverted, which, in her view, are equivalent to the concepts of gender and race, in terms of importance to personality. Just like race, personality type should not be considered a defect to be corrected. However, in a society where the "extroverted ideal" and the sociable ideal self are actualized, the introvert may feel uncomfortable. The personal qualities of the extrovert are indicative.

Such as self-confidence, determination, sociability, and the ability to feel comfortable in society make this personality type an attractive norm. According to Veraldi (2017), there is indeed a limited set of temperaments characterized by a set of innate qualities (expression of emotions, for example), and approved by a certain community. Such socially approved behavior is translated and actualized by the culture according to the contrasting type of temperament. Such stigmatization conditions the formation of a negative image visualized in external signs: For example, an introvert will often be portrayed as unattractive, gloomy, inarticulate, and withdrawn. Given the fact that European society is oriented specifically toward the extroverted model, this is most noticeable in cultural traditions, art, including design (Cook, 2021).

At the same time, the architectural space is the cultural platform that will help introverted direction to be heard. It is known that the quality and embodiment of architectural forms has a direct impact on the formation of the emotional state of a person: through symbolic and plastic forms, it reflects common value and meaning orientations, clearly declaring basic cultural and traditional differences. This likens architecture and design to a text that activates a number of cultural meanings and concepts that are open to interpretation (Holubchak et al., 2019).

Design acts as a tool that forms a certain space around a person, taking into account his or her aesthetic needs, and creating conditions for comfortable living, working, and recreation (Abd Elrahman and Asaad, 2021). From here arise such trends as emotional design, design for pleasure, ecological design, and its ergonomic interpretation. After all, it is these, rather than classic design or architectural tools, which evoke interest and emotional response from consumers, address their needs, and modulate positive psychological impact (Arnheim, 1969). Of particular relevance is the question of living space, its fullness, and the relationship with the personality and individual characteristics of the person acquires in conditions of general quarantine because this forced narrowing of the psychological field and architectural space can significantly affect not only the psychological comfort but also the physiological, which makes us think about the relationship of social, objective, psychological and subjective spaces. Demanding their own zone of comfort and safety, each person is forced to build not only internal boundaries delineated by psychological factors of being but also physical limits of existence (like own room, chair, dishes, own body) (Lindenthal, 2020).

It is expedient to remember the research of Sommer et al. (2020), who proposed the concept of a "spatial bubble" which is an invisible sphere around a person, the intrusion into which he perceives painfully. Such a spatial sphere is greater in northern peoples, introverts, and less in representatives of southern regions, extroverts (Wettstein et al., 2018). Hall (1963), one of the first researchers in the

direction of proxemics, studied the problems of the organization and use of space by people and the territorial behavior of people, proposed the following classification of communication distances: Intimate up to 45 cm, personal from 45 cm to 120 cm, social from 120 cm to 4 m and public m. This suggests the usefulness of taking into account the basic need for one's own boundaries in contemporary design. Interpreting the environment as a means of identifying a person with the place of his stay, capable of creating around him a certain semantic field, we should pay attention to the understanding of the concept of identification. According to E. Erikson, the identity (Latin *Identicus*-identical, the same) of an individual consists of two simultaneously existing factors: the sense of identity to himself, his existence in time and space, and the awareness of the fact that this identity and continuity are recognized by others. Conditioned by self-identity and social role, a person's behavior manifests itself in different communities (family, collective) by means of symbols that are a sign of both identity and community. In addition, focusing on conceptual psychology, the brain, having a certain conceptual structure, suggests the dependence of human behavior on the cognitive schemes available to the individual-cognitive maps, which are a conscious structural model of an object, route, or situation- a reference point that allows the individual to evaluate the object, relating it to a certain group or category (Wang, 2021).

Vecco (2020) distinguished two main characteristics of an object: "Space," indicating the three-dimensional organization of the constituent elements, and "character," manifesting the main property of a place. In his view, each space carries a certain symbolic load: A dwelling should protect, an office should be practical, a hall should be festive, and a church should be majestic. This refers to general character traits. The phenomenon of character reveals the individual traits of an object and is a factor in its recognizability, that is, identification. Identification and orientation are the main aspects for the cognitive person to be part of nature and understand their place in it (Wang, 2021).

Thus, for example, it should be considered that architectural space combines three morphological aspects: The way of construction and representation of the structure; symbolism (meaning and meaning); phenomenology (personal meanings arising in individual consciousness) (Holubchak et al., 2019). According to Bjerre (2021), an important role in the development of self-consciousness played an important role in the internalization of norms and standards of behavior that society broadcasts to man and the boundaries built by the rules contribute to the social adaptation of people. However, Horney (1994), as a representative of the psychoanalytic trend, emphasized the importance of exactly the flexibility of the internal borders in which people put themselves in order to adapt.

According to Csikszentmihalyi (2020), it is the home that is the hearth of uniqueness and security for a person, and it is the person who fills it with a variety of symbols that give it support in different life situations.

Passing the individual stages of development of ideas about space and form, each person determines the unity of himself and his feelings with the elements of the space of separation of the "I" from the "Other," which leads to the creation of certain boundaries for his space; the emergence of the first concepts-signs (intuition); the sense of form (sensorics), comprehension of form and space (logic); aesthetic organization of form (imagination); transfer of information (worldview, ideology) (Karaca and Karaca, 2021).

An interesting concept of Lynch (1960), who, by analogy with the concept of Jung (2016), proposed to divide architectural spaces into introverted (immersed in itself, weakly connected with the surrounding world, not causing any special emotions) and extraverted (open outward, with a bright emotional coloring). Using the results of psychological research, it becomes possible to take into account psychological aspects in the design of buildings and create a user-friendly structure, directly affecting the intra-emotional state of the person and forming stable reactions and habits in the human body, which can arise and act on the subconscious levels.

That is why one of the key factors in the creation of architectural space is the harmony of the components that can meet the aesthetic needs of man, and create the possibility of dialogue and co-creation (Karaca and Karaca, 2021). An important place in the work on the design project takes the study of the psychological mechanisms of space perception by a person, the relationship between the structure of space, behavior, and the human psyche, taking into account such personal qualities as the psychological content and psychological dynamics (Abd Elrahman and Asaad, 2021).

In this context, the notion of "social space" as multidimensional, without rigid boundaries in which different subspaces and two main aspects (physical and existing in the consciousness of man) is also worth attention. Giddens (2013) saw the important role of society in the active interaction of social structures and the individual who can change them. A special form of perception is aesthetic perception, which conditions the creation of an interior capable of influencing a person through the beauty, harmony of color, and perfection of form and texture which, according would help determine the visual properties and functional suitability of interior space on how we perceive and use it. At the same time, the aesthetic perception of the interior is a change of various impressions (Veraldi, 2017) and psychophysiological process associated with the sorting of information, adjusted according to the aesthetic setting and due to objective and subjective factors directly related to the psychology and physiology of the perceiver. From the point of view

of the modern interpretation of design ergonomics “beauty” is more important for design acceptance than ergonomics. Because beauty is a generalizing characteristic, an indicator of the integrity of the object-spatial environment of the interior, based on aesthetic principles of harmony and measure (Karaca and Karaca, 2021). In turn, Bechtel and Churchman (2003) proposed the notion of a “strong” and “weak” program of a building: If a strong program is embedded, it is able to determine human behavior and its style of communication with others. This once again confirms that the architectural form can accumulate important processes for the person: cognition, comprehension, communication, and realization of their own spiritual needs (Holubchak et al., 2019). Preston and Baimel (2021) proposed to apply the concept of “living environment,” which combines spatial and object, social, technological, and natural components.

The quality of the chosen environment in the modern world becomes one of the decisive factors in the realization of human potential because the architectural space can both promote development and limit it, affecting behavior and psychological state (Mellander and Florida, 2021).

Perceiving the architectural environment, one not only feels the belonging of another person but also self-reflects and analyzes one's attitude. In this process, an important factor is an interest caused primarily by the complexity, novelty, uniqueness of architectural forms, and saturation with details (Holubchak et al., 2019). At the same time, harmonious detailing activates cognition and interest, oversaturation, overload of details, and bright elements can disorient and exhaust (Bechtel and Churchman, 2003). A clear example of the combination of all modern design trends is the emergence of co-working (in 2005 in the United States) which was a space equipped with everything necessary for work, that is rented to anyone for the required period. Developed first for freelancers and professionals not tied to the workplace, this format has proven itself in recent years, in particular during the period of total quarantine. The peculiarity of this innovative space is the possibility of informal cooperation and communication, which contributes to increased productivity, as well as the availability of a variety of spatial areas for both individual and collective work (Semarkhanova et al., 2017). The co-working format is one of the most successful examples of introverted design, because the available variability, and the possibility of privacy, when necessary, create the most comfortable conditions for the introverted personality type, which is characterized by restraint, seriousness, and monotasking (Cain, 2013). According to Jung (2016), who explored this topic in detail in his Psychological Types, introverts focus on the inner world of thoughts and feelings, comprehending everything in detail, and needing to be alone to recover. Introverts work more slowly and deliberately, prefer to perform only one task at a time, have an outstanding ability to concentrate, and are relatively insensitive

to the temptation of wealth and fame. However, personality traits, such as a tendency to perceive and make sense of reality instead of interacting with it immediately, contribute to productive scientific and creative work (Cain, 2013). Unlike introverts, the extrovert prefers action to risk-taking, is confident, and tends to make quick decisions without fear of making mistakes. He works well in a team and finds common ground with others. Extroverts are people and objects focused on the outside world and who try to join the action as quickly as possible and are energized by communication (Cain, 2013; Jung, 2016). Many psychologists also agree that introverts and extroverts have different work styles. Extroverts tend to get down to tasks quickly. They make quick (sometimes rash) decisions, are comfortable with multi-level tasks, and are willing to take risks, enjoying the “thrill of danger” and rewards like money and status. However, modern experts in personality psychology interpret the concepts of “introvert” and “extrovert” somewhat differently. According to them, such traits as developed intellect, rich inner world, deep consciousness, minor anxiety or shyness, and a tendency to avoid risks should be associated not with introversion, but with the openness of experience, conscientiousness, and neuroticism (Cain, 2013). This is the type that most public and office spaces were designed for because for quite a long time it was believed that this is the format that can positively affect the overall productivity of work. But it should be noted that even Jung (2016) argued that there are no pure introverted or extroverted personalities (Cain, 2013), which once again confirms the need for hybrid architectural spaces. Returning to the topic of the formation of introverted space, it should be noted that the focus on the extroverted type of personality provoked the subordination of it to the needs of most areas of life. The design of work and living spaces is no exception. If we take into account the research of Youngs Kim and Richard de Diar, representatives of the Faculty of Architecture at the University of Sydney, most workers prefer having a private space, an office, explaining the advantages of this type of working conditions, the absence of distractions, the restriction of unwanted social contacts (Park and Peterson, 2010). According to Cain (2013), rooms with an open floor plan create discomfort for those who are there, reduce work productivity, provoke aggression, and the opposite, deprive a sense of security, which can also negatively affect the physiological state. The peculiarity of the designer's work in the plane of the co-working space is to create a comfortable and multifunctional space, for people of different professional orientations and with different requirements. There is a certain distribution of co-working spaces according to the following features: According to user needs (universal and niche); according to specialization (creative, engineering, manufacturing, business co-working, etc.); according to professional orientation (for designers, programmers, writers, etc.). An important distinguishing feature of the co-working

space is the ability to choose a location in an open space, in a team, or, for example, in a separate office. That is, the space is designed in such a way that it adjusts to the maximum needs of its visitors, leveling the need to leave the comfort zone, for work or a meeting. For example, the structure of a co-working space involves a community lounge or shared space, a mini-office, and an office studio. In addition, workspaces have different levels of privacy: individual, arranged in rows or in groups. Another advantage is that the spaces are not assigned to the users, but are temporarily rented (for different terms), which makes it possible to act according to one's own needs and focus on comfort (if we talk about introverted personality types), alternating, for example, privacy and communication in the team (Lorne, 2020).

Modern design often uses the trend of an open plan, where individual areas associated with certain persons or functions must be separated from the influence of undesirable factors, have specific functional conditions, and require identification by means of design and at the expense of modern technology. Such manipulations optimize human activity and make it possible to combine previously incompatible activities: Work (e.g., remote), recreation, communication, entertainment, etc. Functions are densified in space, but it does not provoke a loss of identity of the individual, or a decrease in psychological comfort, because the task of the designer is to allocate an individual space for each person and to create the possibility of implementing a comfortable stay in such a multifunctional room. There is a certain personification (personification) of space - a kind of transfer of human characteristics onto objects. Thus, a fragment of space is given individual traits corresponding to the personality of the user, aware of his needs and place in the community. The personalization of space in the interior in this way occurs when the following conditions are met: highlighting the spatial element (zone) and marking its boundaries; creating functional conditions corresponding to the persona, the user; providing individual signs of the space to ensure its external identification (Veraldi, 2017). It should be noted that the following categories are characteristic of modern space: ecological (natural materials); biomorphic (soft forms); functional, emotional (light play); topographical (open socially directed space) (Bamhdi, 2021). This leads to the desire for modern design in the color design of the interior to rely on the system of "man-color-space." Seeing the purpose of interior design as functional improvement, aesthetic enrichment, and psychological optimization of the inner space, the researcher notes that the materials and objects that surround us can become the conductors of certain truths, and must form the desire to surround themselves only with significant elements that can positively affect condition, deliver aesthetic pleasure, and preserve memories. In such circumstances, it is not the style that comes to the forefront, but one's own story and

feelings. In addition, the increased focus on creating calming, comfortable interiors has provoked the use of multisensory design, which helps activate all of the basic five senses (seeing, hearing, smelling, tasting, touching) in humans. This indicates that modern interior design is more personal, becoming more meaningful and emotional. Its main features are:

1. Minimalism (minimum details, functionality, clear lines) (Hnatyshyn and Kryvuts, 2020).
2. Spaciousness (studio apartments are not losing popularity, but more attention is paid to the creation of cozy niches, and separate zones).
3. Transformability (the room can be divided into many zones if necessary).
4. Coloristic:
 - a. A bold combination of colors, zoning with color;
 - accentuation with color;
 - combination of unusual shades;
 - b. Use of purely neutral shades.

A popular style is still "fusion," which is a harmonious mix of different directions and styles, allowing you to create the most individual interior thanks to its variability. The previously popular "loft" style is still in the ratings, thanks to the freedom and simplicity of lines, natural materials, and the possibility of using the latest technology. Among the main interior design trends remain Ergonomics; functionality; freedom of choice and combination of styles; strengthening the position of eco-directions friendly to nature; diversity; vastness. Each of these categories can easily transform into another, replace the other and create a unique interior space (Yang et al., 2019). As noted above, understanding the harmony of color in a modern person is a complex process that concentrates on a set of images, associations, and traditional aesthetic norms, which levels the possibility of influence on the color perception of such factors as social status, age, and gender, level of intelligence. The physiological influence of color on the body of a particular individual is primarily conditioned by ethnic, historical, ceremonial, symbolic signs, and cultural traditions, which should be taken into account when choosing interior colorism (Shugrina et al., 2019). Therefore, the designer's task is to transform the forms of the real world and humanize the entire subject environment, as well as to shape personality through the direct influence of color on the human psyche (Spence, 2020). Research by Cook (2021), in the field of psychosomatics of color, indicated that the main task of color in the interior is to create harmony in the spatial environment and all its components. In turn, designers, based on psychological and medical research, in interior design operate on the principle of "trinity," which consists in giving preference to one of the chosen

colors by criteria of both saturation and the area occupied (floor, walls, ceiling). Thus, the dominant color models the overall mood of the entire interior environment, the second color complements the interior (curtains, furniture, blinds, windows), while the third color is chosen for accents (lighting fixtures, toys, decorative decorations).

This indicates the importance of interior color harmony as a factor of human mental health, directly related to aesthetic taste.

The impact of interior color, in which a person stays for a long time, is also due to the specific structure of the senses (including vision), which are in a complex multilateral connection through central (brain), humoral (blood) connections, and conditioned reflexes. The study of the simplest cases of human muscle activity under the influence of different colors has shown that during very short-term action the red color increases efficiency by accelerating blood circulation and improving breathing, while blue and violet greatly reduce it by slowing pulse and breathing. During long-term work, the best results are observed from the action of the color green, which does not cause active activity of the respiratory and circulatory organs and is best for rooms with a high level of noise.

Equally important is the color of lighting, which can affect visual acuity: Increases with yellow and white and decreases with blue light (Spence, 2020). It is also known to divide colors into two groups: stimulants (red, orange, yellow, green in the morning, blue and purple in the evening) and depressors (blue and purple) and found out their dependence on the time and state of the researcher (Spence, 2020). Focusing on the basic provisions of the semantics of color, the choice of a certain spectrum of colors can be seen as a reflection of the dominance of the need for stability, poise, and relaxation over the need for activity, growth, and development (Thorstenson et al., 2018; Hanada, 2018).

Chitturi et al. (2019) singled out the problem of color harmony as one of the most complicated problems of aesthetics because a person's attitude to color is formed under the influence of many different factors. The action of color and specificity of its internal meaning does not depend on a person's attitude to it, as the nature of its influence on the psyche does not depend on the state of the organism at the moment of exposure. The choice of a favorite color has an important value for the characteristic of the person and his or her psychological condition (Lüscher, 1995) allocated four types of personalities: 1) "Blue-type" people (can be correlated with introverts) see housing as a shelter, prefer small spaces, rounded shapes, niches, soft-touch materials; 2) "Green-type" people choose rooms of regular rectangular shape with clearly fixed corners, tall halls, tall windows, rigid materials (marble, stone, or metal). 3) "Yellow type" people prefer open spaces, wide windows, like glass, mirrors, and souvenirs; 4) "Red type" people prefer spaces with long corridors and aisles, huge offices

decorated with leather, and sports trophies. Wettstein et al. (2018) compared human preferences with a typology of temperament by I.P. Pavlov, got the following data: Phlegmatic-calm, uncommunicative person, who prefers the interior with heavy massive furniture, with a clearly organized space, gray and brown colors, melancholic-sensitive, his chambers should be as far away as possible, with perfect soundproofing, interior colors-pastel, prefer circular, soft forms. Sanguine-an active person, a bright house, open to the outside, with huge windows, choleric-lively energetic person, who suits the modular systems that allow easy transformation of space, blue and green colors.

3. Results and discussion

The gradual change of the extroverted paradigm, due to the modern focus on the human own self and its uniqueness, has initiated the formation of new types of interaction with space, and its modeling. There is no doubt that individualization of the approach to the design of a room or an architectural structure is an important factor in creating the optimal conditions for life and work. The conducted studies allow us to confirm the relationship between psychological type and the organization of the surrounding space, including the design of rooms. For example, the introverted type suggested by Jung (2016) correlated with the "blue-type people" according to Lusher and the phlegmatic and, partially, the melancholic (Wettstein et al., 2018).

They share common character traits such as poise, moderate to low sociability, desire for privacy, and caution in decision-making. This is also reflected in aesthetic preferences: The perception of housing as a shelter; the choice of restrained, soft colors and textures (pastel or dark colors); the desire to zone the room and organize space; a clear assertion of their personal (including physical) boundaries. It is important to note that this should also be taken into account in interior planning, because the ability to maintain a comfortable distance will help improve communication between people, regardless of personality type. Besides the issues of classifications of personality types, it is important to pay attention to the lack of the need to single out one dominant type, a certain benchmark for design development, because the absence of a pure psychological type, the mobility of the population, the rapid change of trends, make it necessary to create hybrid interior designs with a high level of transformability. This is of particular importance in the context of pandemic threats when comfortable distancing becomes possible through a properly designed model of space.

It is important to pay attention to the ratio of temperament, color, shape, and texture, the successful combination of which can create a positive psycho-emotional atmosphere, increase efficiency, and improve the physiological indicators of the person. Thus, combining studies of the

psychological characteristics of the personality with a study of the peculiarities of architectural design and interior design, it becomes clear the need to focus on the personality, rather than on generalized interests and familiar formats. Society, oriented to the more comfortable extroverted type, for a long time promoted this very format of relations, asserting it through culture. Given the proven diversity of the human personality, it is unfair to all types because those belonging to the extroverted also need personal space, and rest, and have the right to deviate from the usual line of behavior. It is the declaration of freedom of choice both for artists who design and construct architectural space and for consumers of their cultural product that guarantees optimal aesthetic and practical satisfaction of needs. Quite noticeably, the change in the extroverted paradigm in design has helped to open up new potentials and new formats, exemplified by the popularization of co-working spaces as spaces of maximum freedom to choose the format of work and relationships.

It should be noted that no hyperbole towards any psychological type or cultural paradigm is useful because it narrows, or too rigidly limits the cultural potential. It is important to pay attention to a certain undisclosed topic of introverted design in scientific research specifically in the field of architecture and design: the growing actualization of the personal approach in all areas of life requires a comprehensive and deep interdisciplinary analysis for further implementation in design and architectural projects.

4. Conclusion

Consequently, we can conclude that the change of the extroverted paradigm, which focused on active communication between people, multitasking, openness, and non-zoning of space to more free, opened up new possibilities for interior design and modeling. This allowed a person not to adjust to the design, but to use the whole scope of its tools to improve not only the aesthetics of the surrounding space but also physical and psychological well-being. Thus, using the achievements of psychology, sociology, and other related sciences, interior design can take into account the influence of a number of circumstances on the effectiveness of his work: the right choice of color scheme, taking into account for both the psycho-type of man and the purpose of the room and its location, increases productivity and increases the sense of harmony.

Zoning spacious rooms and providing certain compartmentalization allows a person to choose independently the space he or she needs at a given stage. The characterized tactics contribute to the reduction of tension in society and, through the combination of elements, symbols, and the aestheticization of space, improve the psycho-emotional state of an overwhelming number of social groups.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

- Abd Elrahman AS and Asaad M (2021). Urban design and urban planning: A critical analysis to the theoretical relationship gap. *Ain Shams Engineering Journal*, 12(1): 1163-1173. <https://doi.org/10.1016/j.asej.2020.04.020>
- Arnheim R (1969). *Visual thinking*. University of California Press, Berkeley, USA.
- Bamhdi A (2021). Requirements capture and comparative analysis of open source versus proprietary service oriented architecture. *Computer Standards and Interfaces*, 74: 103468. <https://doi.org/10.1016/j.csi.2020.103468>
- Bechtel RB and Churchman A (2003). *Handbook of environmental psychology*. John Wiley & Sons, New York, USA.
- Bjerre J (2021). In the shadow of sociology: Bateson through the lens of Durkheim. *Journal of Classical Sociology*, 21(2): 165-187. <https://doi.org/10.1177/1468795X20944348>
- Cain S (2013). *Quiet: The power of introverts in a world that can't stop talking*. Broadway Books, Portland, USA.
- Chitturi R, Londono JC, and Amezcua CA (2019). The influence of color and shape of package design on consumer preference: The case of orange juice. *International Journal of Innovation and Economic Development*, 5(2): 42-56. <https://doi.org/10.18775/ijied.1849-7551-7020.2015.52.2003>
- Cook M (2021). *Perceiving others: The psychology of interpersonal perception*. Routledge, London, UK. <https://doi.org/10.4324/9781003173908>
- Csikszentmihalyi M (2020). *Finding flow: The psychology of engagement with everyday life*. Hachette, London, UK.
- Giddens A (2013). *The consequences of modernity*. John Wiley and Sons, Hoboken, USA.
- Hall ET (1963). A system for the notation of proxemic behavior. *American Anthropologist*, 65(5): 1003-1026. <https://doi.org/10.1525/aa.1963.65.5.02a00020>
- Hanada M (2018). Correspondence analysis of color-emotion associations. *Color Research and Application*, 43(2): 224-237. <https://doi.org/10.1002/col.22171>
- Hnatyshyn O and Kryvuts S (2020). Models of realization of the concept of «naturalness» in the interior design of hospitals for children. <https://doi.org/10.30525/978-9934-588-53-2-44>
- Holubchak K, Yu C, Savchuk T, and Negrych I (2019). The phenomenon of creative economy in Ukraine and defining its place in the architectural space. *Advances in Economics, Business and Management Research*, 99: 73-78. <https://doi.org/10.2991/mdsmes-19.2019.15>
- Horney K (1994). *The neurotic personality of our time*. Routledge, London, UK.
- Jung C (2016). *Psychological types*. Routledge, London, UK. <https://doi.org/10.4324/9781315512334>
- Karaca E and Karaca M (2021). Environmental psychology approaches within the relationship of nature and health in terms of landscape architecture. *OPUS International Journal of Society Researches*, 18(42): 5781-5802. <https://doi.org/10.26466/opus.910271>
- Katz I (2021). Architecture on the move: (Re) Creating a place in a displaced world. In: Seethaler-Wari S, Chitchian S, and Momic

- M (Eds.), *Inhabiting Displacement: Architecture and authorship*: 47-59. Birkhäuser, Basel, Switzerland. <https://doi.org/10.1515/9783035623710-005>
- Lindenthal T (2020). Beauty in the eye of the home-owner: Aesthetic zoning and residential property values. *Real Estate Economics*, 48(2): 530-555. <https://doi.org/10.1111/1540-6229.12204>
- Lorne C (2020). The limits to openness: Co-working, design and social innovation in the neoliberal city. *Environment and Planning A: Economy and Space*, 52(4): 747-765. <https://doi.org/10.1177/0308518X19876941>
- Lüscher M (1995). *Signals of personality*. MODEK, Voronezh, Russia.
- Lynch K (1960). *The image of the city*. Volume 11, Massachusetts Institute of Technology, Cambridge, USA.
- Mellander C and Florida R (2021). The rise of skills: Human capital, the creative class, and regional development. In: Fischer MM and Nijkamp P (Eds.), *Handbook of regional science*: 707-719. Springer, Berlin, Germany. https://doi.org/10.1007/978-3-662-60723-7_18
- Park N and Peterson C (2010). Does it matter where we live? The urban psychology of character strengths. *American Psychologist*, 65(6): 535-547. <https://doi.org/10.1037/a0019621> **PMid:20822195**
- Preston JL and Baimel A (2021). Towards a psychology of religion and the environment. *Current Opinion in Psychology*, 40: 145-149. <https://doi.org/10.1016/j.copsyc.2020.09.013> **PMid:33113462**
- Semarkhanova EK, Bakhtiyarova LN, Krupoderova EP, Krupoderova KR, and Ponachugin AV (2017). Information technologies as a factor in the formation of the educational environment of a university. In the International conference on Humans as an Object of Study by Modern Science, Springer, Volgograd, Russia: 179-186. https://doi.org/10.1007/978-3-319-75383-6_23
- Shugrina M, Zhang W, Chevalier F, Fidler S, and Singh K (2019). Color builder: A direct manipulation interface for versatile color theme authoring. In the 2019 CHI Conference on Human Factors in Computing Systems, Association for Computing Machinery, Glasgow, Scotland: 1-12. <https://doi.org/10.1145/3290605.3300686>
- Sommer AE, Ortmann K, Van Heerden M, Richter T, Leadbeater T, Cole K, Heitkam S, Brito-Parada PR, and Eckert K (2020). Application of positron emission particle tracking (PEPT) to measure the bubble-particle interaction in a turbulent and dense flow. *Minerals Engineering*, 156: 106410. <https://doi.org/10.1016/j.mineng.2020.106410>
- Spence C (2020). Senses of place: Architectural design for the multisensory mind. *Cognitive research: Principles and implications*, 5(1): 1-26. <https://doi.org/10.1186/s41235-020-00243-4> **PMid:32945978 PMCID:PMC7501350**
- Thorstenson CA, Elliot AJ, Pazda AD, Perrett DI, and Xiao D (2018). Emotion-color associations in the context of the face. *Emotion*, 18(7): 1032-1042. <https://doi.org/10.1037/emo0000358> **PMid:29172620**
- Vecco M (2020). Genius loci as a meta-concept. *Journal of Cultural Heritage*, 41: 225-231. <https://doi.org/10.1016/j.culher.2019.07.001>
- Veraldi R (2017). Tradition and modernity: Working culture in the Western model and Japanese model, as an expression of a cultural models: A first reading. *Science and Philosophy*, 5(2): 19-24.
- Wang Z (2021). Research on commercial interior environment design based on computer aided design. In the 4th International Conference on Information Systems and Computer Aided Education, Dalian, China: 247-278. <https://doi.org/10.1145/3482632.3482689>
- Wettstein M, Wahl HW, and Schwenk M (2018). *Life space in older adults*. Oxford Research Encyclopedia of Psychology. Oxford University Press, Oxford, UK. <https://doi.org/10.1093/acrefore/9780190236557.013.441>
- Yang L, VanDam KH, Majumdar A, Anvari B, Ochieng WY, and Zhang L (2019). Integrated design of transport infrastructure and public spaces considering human behavior: A review of state-of-the-art methods and tools. *Frontiers of Architectural Research*, 8(4): 429-453. <https://doi.org/10.1016/j.foar.2019.08.003>