

Investigating the influence of cultural conditions on the perception of visual aspects of architectural interiors

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Abstract

The lifestyle change resulting from the pandemic has led to a notable increase in the amount of time spent in residential interiors. This has resulted in an expansion of the range of activities performed in these spaces, which now encompass not only basic living functions but also work and access to culture. The evolution of interior design in an era of widespread migration, climate risks, demographic and social changes is evidenced by the changing functions, technologies and materials that are developing and expanding on a daily basis. This article presents a study of the visual perception of architectural interiors in representatives of different cultures, specifically those of Chinese (Vietnamese), Orthodox (Greek) and Western (Polish) civilizational backgrounds. The aim is to identify differences derived from cultural backgrounds. The objective of the study was to identify features that are sensitive to cultural diversity in interior design. In order to create fully inclusive interior design, it is essential to understand how interiors are perceived and how they affect the user by representatives of different audiences with different cultural backgrounds. This understanding can be used to preserve local identities, avoid globalisation and create fully inclusive places that are adapted to the needs of all users regardless of their ability or origin. The research has resulted in interior design guidelines that take into account the cultural diversity of users.

Keywords: inclusive design, addressing cultural diversity in design, interior design

1. Introduction

The lifestyle change resulting from the pandemic has led to a notable increase in the amount of time spent in residential interiors. This has resulted in an expansion of the range of activities performed in these spaces, which now encompass not only basic living functions but also work and access to culture. The evolution of interior design in an era of widespread migration, climate risks, demographic and social changes is evidenced by the changing functions, technologies and materials that are developing and expanding on a daily basis. Cultural background significantly shapes how individuals perceive and interact with interior spaces (Lee, 2010). Research shows that cultural norms and values influence spatial perception and preferences. Edward T. Hall's (Hall, 1966) theory of proxemics reveals that Asian cultures often favour modest, less intrusive spaces, reflecting a preference for privacy. In contrast, Western cultures tend to prefer open, interactive environments that encourage social interaction. Cultural priorities dictate spatial organization and functionality, with Chinese interiors emphasizing feng shui for harmony (Wang, 2015), while Western designs focus on functionality and aesthetics (Cieślak, 2017). These cultural nuances underscore the need for interior designs that respect and reflect diverse cultural values.

This article presents a study of the visual perception of architectural interiors in representatives of different cultures, specifically those of Chinese (Vietnamese), Orthodox (Greek) and Western (Polish) civilizational backgrounds. The aim is to identify differences derived from cultural backgrounds. The objective of the study was to identify features that are sensitive to cultural diversity in interior design. In order to create fully inclusive interior design, it is essential to understand how interiors are perceived and how they affect the user by representatives of different audiences with different cultural backgrounds. The study was based on a query performed in 2024 on groups of 43 architecture and interior design students or architects from Vietnam, Poland and Greece. The participants were asked to consider the importance of visual perception aspects such as luminosity, openness and colour. The query used exemplary pictures to prompt the participants to identify the emotions that the space evokes in designers from three different cultural circles. The understanding of cultural differences in visual space perception can be used to preserve local identities, avoid globalisation and create fully inclusive places that are adapted to the needs of all users regardless of their ability or origin. The research has resulted in interior design guidelines that take into account the cultural diversity of users.

2. Cultural diversity

In architectural and interior design, understanding cultural differences is essential for creating spaces that resonate with diverse users underlined by the UNESCO 2005 Convention on the Diversity of Cultural Expressions (Convention on Diversity of Cultural Expressions, 2005). Richard D. Lewis's framework provides practical insights into how cultural types influence preferences in spatial organization, aesthetics, and functionality. Unlike Oswald Spengler's and Samuel Huntington's broad theories, which focus on historical cycles and potential conflicts between civilizations, Lewis's model is more directly applicable to design.

Lewis identifies three primary cultural types: linear-active, multi-active, and reactive. Linear-active cultures, such as those in Germany, value organization and structure, leading to a preference for minimalist and orderly designs. Multi-active cultures, like those in Italy, prioritize relationships and emotional expression, favouring vibrant, flexible spaces that encourage interaction. Reactive cultures, such as Japan, emphasize harmony and

indirect communication, often preferring designs that incorporate natural elements and foster tranquillity (Lewis, 2018). Samuel Huntington's theory of cultural circles, categorizes the world into distinct civilizations with unique cultural identities. These cultural circles significantly influence visual and spatial perception in architectural and interior design. Each civilization's aesthetic values and spatial preferences shape how spaces are perceived and used. For example, Islamic cultures often incorporate geometric patterns and aniconic designs, while Western cultures might favour eclectic or minimalist styles (Huntington, 1996).

Spengler's theory suggests that the visual perception of space is deeply rooted in the cultural and historical context of a civilization. As civilizations progress through stages of growth, maturity, and decline, their aesthetic values and design principles also shift. For instance, classical Western architecture, characterized by grandeur and order, reflects a phase of cultural maturity and confidence. In contrast, modernist designs, with their emphasis on minimalism and functionality, represent a different phase of cultural evolution (Spengler, 1918).

As civilizations decline, their visual and architectural styles may become more introspective or eclectic, reflecting a search for meaning and identity amidst changing circumstances. This cyclical view helps explain how design trends emerge, evolve, and recede, impacting how spaces are perceived and utilized.

3. Differences in visual perception

Cultural differences play a crucial role in how people perceive and interpret architectural visuals, with varying aesthetic preferences and symbolic meanings attached to architectural elements. For example, in Western cultures, visual perception in architecture often emphasizes linear perspective, symmetry, and the use of light to create depth, rooted in Renaissance and Classical traditions (Rapoport, 1990). In contrast, East Asian cultures may prioritize harmony with nature, fluidity, and asymmetry, as seen in traditional Japanese architecture where natural materials and minimalism create a sense of balance and tranquillity (Nute, 2004). Similarly, Islamic architecture often features intricate geometric patterns and calligraphy, reflecting religious and cultural values that emphasize unity and the infinite nature of God (Necipoğlu, 1995). These cultural distinctions in visual perception highlight the importance of understanding local cultural contexts when designing or analysing architectural spaces, as they deeply influence how architecture is experienced and valued.

Cultural circles also affect spatial organization: East Asian designs may focus on harmony and balance, influenced by Feng Shui, whereas Western designs might emphasize open-plan layouts and functionality. Additionally, colour symbolism and material preferences vary widely; vibrant colours in Hindu interiors contrast with the muted tones and natural materials common in Scandinavian design.

The first part of the query aimed at evaluating the extent to which visual images influence the perception of interior spaces among students of architecture and interior design, as well as practising architects, across three distinct cultural backgrounds. The participants were of Polish, Greek, and Vietnamese nationality. The study sample comprised 43 participants from each country. The findings demonstrated considerable cultural variations in the manner by which visual images influence the perception of interior spaces. A significant majority of Polish participants (32) asserted that visual images wholly determine their perception of interiors. Similarly, 22 Greek and 22 Vietnamese participants indicated that visual images predetermine their perception, thereby underscoring a pronounced reliance on visual cues in comprehending and interpreting spatial environments. However, the strength

of this influence differed across cultures. A total of fifteen Greek and fifteen Vietnamese participants indicated that visual images play a pivotal role in shaping their perception of interior spaces, a view that was shared by only eight Polish participants. This variation suggests that while visual aesthetics are a significant factor across all cultures studied, the degree of influence may be moderated by different cultural priorities, such as functionality or contextual relevance.

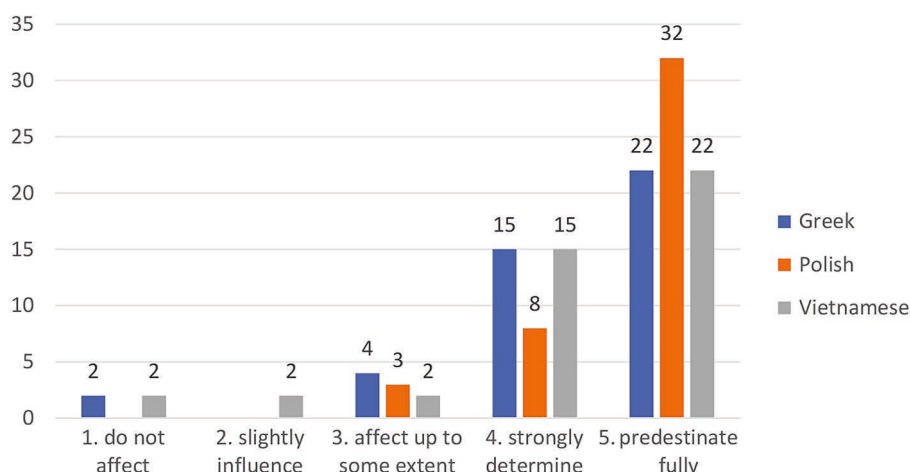


Fig. 1. To what extent visual impressions determine the perception of the interior? (by P. Haupt)

Furthermore, a smaller number of participants indicated that visual images exert a more moderate influence. Specifically, four Greek and three Polish participants, along with two Vietnamese participants, indicated that visual images affect their perception to some extent. Conversely, two Greek and two Vietnamese participants stated that visual images have a slight influence or no impact on their perception of interiors. These findings are consistent with existing research indicating that cultural backgrounds significantly influence visual perception, with some cultures placing greater importance on visual aesthetics than others (Nasar, 1992; Hall, 1966).

4. Spatiality

The first question of the study focused on how different colours influence the perception of spatiality in interior spaces. Participants from Western, Orthodox and Chinese cultural circles were presented with identical interior spaces, each painted in different colours – red, blue, green, and yellow – and asked to select which interior felt the most spacious. The results revealed significant cultural differences in colour perception and its impact on spatiality. Among the Polish participants, the majority (22) perceived the blue interior as the most spacious, a preference shared by 18 Greek and 19 Vietnamese participants. This aligns with previous research indicating that cool colours, particularly blue, are often associated with a sense of openness and calmness, which can make spaces feel larger (Guilford, 1934: 342–370), (Saito, 1996: 35–49).

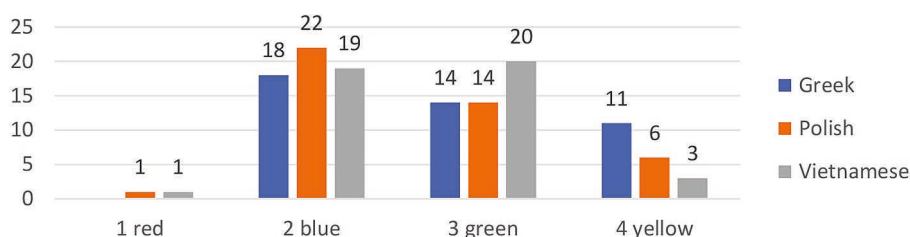


Fig. 2. How different colors influence the perception of spatiality in interior spaces (by P. Haupt)

Interestingly, 20 Vietnamese participants and a smaller number of Greek (14) and Polish (14) participants selected the green interior as the most spacious. Green, like blue, is a cool colour often linked to nature and tranquillity, which may contribute to perceptions of expanded space (Küller, 1976). In contrast, the red interior was perceived as the most spacious by only one Polish and one Vietnamese participant, suggesting that warm colours like red, which are often associated with energy and intensity, may reduce the perceived spatiality of a room (O'Connor, 2011: 229–234).

The yellow interior was perceived as the most spacious by the fewest participants: 11 Greek, 6 Polish, and 3 Vietnamese—indicating that yellow, while generally seen as bright and cheerful, may not evoke the same sense of openness as cooler colours. This finding supports the idea that warmer hues, while inviting, may lead to a perception of constricted space (Mahnke, 1996).

5. Intimacy

The study examined participants' preferences for intimacy basing on bedroom environments, focusing on the extent of space and openness they desired, and whether they preferred a bedroom characterised by a sense of cosiness, intimacy, openness, or spaciousness. The findings revealed notable cultural variations in these preferences among respondents of Greek, Polish, and Vietnamese backgrounds.

The most frequently selected option was for a bedroom that could be described as “cozy”, with 49 participants indicating a preference for this style. It is noteworthy that Polish participants exhibited the most pronounced inclination towards a cosy bedroom, with 21 individuals selecting this option, compared to 14 Greek and 14 Vietnamese respondents. This may reflect a cultural emphasis on warmth and comfort in personal spaces within Polish culture, potentially linked to the colder climate which encourages the creation of a warm, inviting atmosphere indoors (Lechner, 2013). The preference for an “intimate” bedroom was the next most popular, selected by 34 participants. Polish respondents exhibited the strongest preference for this option, followed by Greek and Vietnamese participants. This indicates a preference for privacy and a personal, secluded space, which may be more pronounced in Polish culture. This may be attributed to social norms that value personal space and boundaries (Hall, 1966).

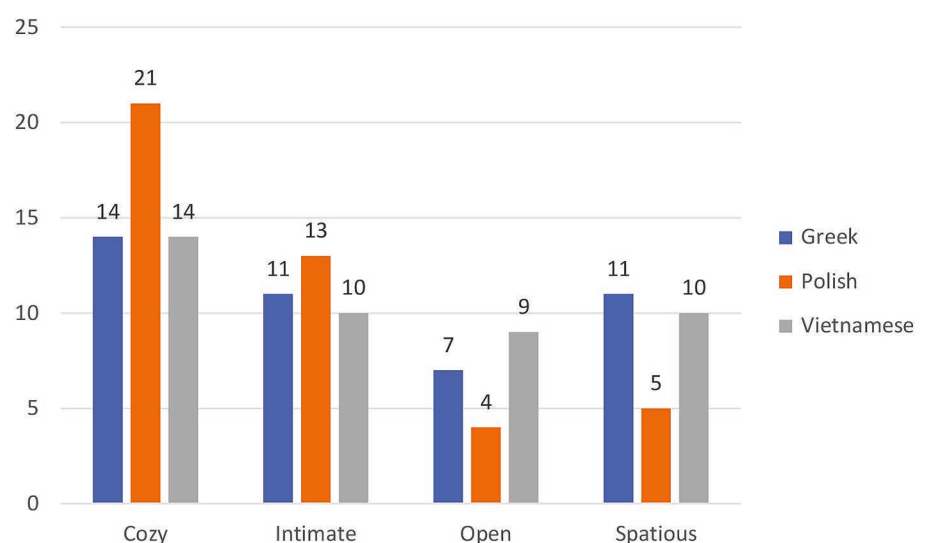


Fig. 3. How much space and openness do you expect in the bedroom? (by P. Haupt)

Twenty-six participants selected the “spacious” option, with a slightly higher preference among Vietnamese respondents. This may be attributed to the influence of traditional architectural styles in Vietnam, where spatial openness is associated with ventilation and a connection to the outdoors, which are crucial elements in tropical climates (Saito, 1996: 35–49).

The least preferred option was an “open” bedroom, chosen by only 20 participants. This indicates that, across these cultures, openness in a bedroom setting is less desirable than coziness or intimacy. This preference for enclosed, comforting spaces aligns with previous research suggesting that personal spaces like bedrooms are often designed to provide a sense of security and refuge (Guilford, 1934).

6. Lighting

The next part of the query explored participants’ preferences for lighting conditions in a living room environment by presenting them with images of the same interior under different lighting setups. The options included a daylight room with glazing on the right and reflections on the floor (Top Left), an artificially lit room with neutral temperature spotlights accentuating pictures on the wall (Top Right), a warmly lit room with ambient lighting from the top center (Bottom Left), and a dimly lit room with decorative omni lights (Bottom Right). The results revealed significant variations in preferences across the three cultural groups.

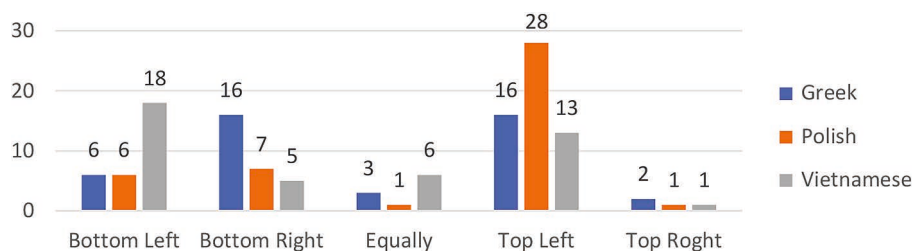


Fig. 4. When looking at the pictures of the same room attached below, do you equally want to spend time in all of them? (by P. Haupt)

The most popular choice overall was the Top Left (daylit room) option, which was selected by 57 respondents, including 28 Polish, 16 Greek, and 13 Vietnamese participants. This strong preference for natural daylight aligns with existing research, which shows that daylight is generally favoured for its positive effects on mood, productivity, and overall well-being (Boyce et. al., 2003). The preference for natural light was particularly pronounced among Western cultural circle participants, likely reflecting a cultural appreciation for bright, naturally lit spaces, especially in regions with long winters.

Conversely, the Bottom Left option, featuring warm ambient lighting, was particularly favoured by Vietnamese participants, with 18 choosing this setting. This preference could be linked to the cultural association of warm lighting with comfort and relaxation in more intimate settings, as supported by studies that highlight the calming effects of warm light in residential environments. Interestingly, the Bottom Right (darkest room with decorative omni lights) was most popular among Greek participants, with 16 choosing this option. This might reflect a cultural preference for atmospherically lit environments that emphasize intimacy and cosiness, as suggested by studies on Mediterranean lighting preferences that favour softer, more diffused lighting (Fotios, Cheal, 2007). The least popular was the Top Right (artificial spotlight) option, chosen by only 4 respondents across all groups. This suggests that while accent lighting can be aesthetically pleasing, it may not be conducive to prolonged comfort in living spaces, where softer, more ambient lighting is generally preferred.

7. Home feeling

The survey results, which asked participants to choose the interior they most associate with the feeling of “home,” reveal deep-seated cultural and personal preferences shaped by design elements such as material use, lighting, and ambiance. The interiors presented ranged from rustic to minimalist and eclectic to modern. The participants were further asked to justify their choices, with common descriptive words being “cosy”, “fireplace”, “light”, “natural”, “warm” and “open”.



Fig. 5. Distribution of attributes of homey atmosphere generated using word cloud method (by P. Haupt)

The fourth interior, characterized by a modern design with a strong connection to nature (a large glazed wall opening to a garden), was overwhelmingly preferred, with 208 participants selecting it as the most homely. The frequent use of words like “light”, “natural” and “open” in justifications highlights a universal preference for spaces that integrate natural elements and provide ample daylight. This aligns with biophilic design principles, which suggest that connecting with nature in interior spaces fosters psychological well-being (Kellert, 2005).

The first interior, featuring rustic elements like stone and a fireplace, was particularly popular among Polish respondents, with 25 out of 54 choosing it. Words like “cosy” and “fireplace” were commonly cited in justifications, suggesting a cultural inclination towards traditional, warm, and inviting spaces. This preference echoes findings in studies on cultural attachment to home environments, where warmth and a sense of tradition are critical factors (Lewis, 2010).

Vietnamese participants showed a notable preference for the third, eclectic, and slightly darker interior, with 30 respondents choosing it. Their justifications often included terms related to personal expression and comfort, such as

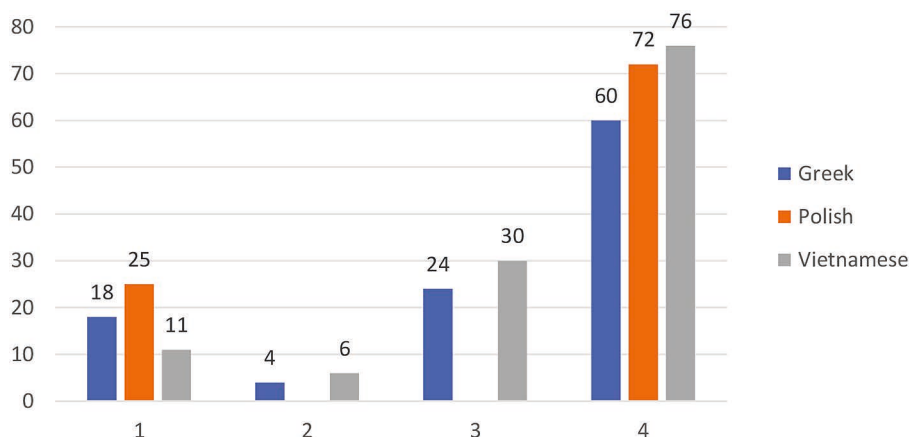


Fig. 6. In which of the rooms would you feel the most at home? .Can you explain why? (by P. Haupt)

“cosy” and “warm”, reflecting a cultural value placed on individuality and artistic expression in home spaces. Previous research supports this, indicating that environments which allow for personalization contribute significantly to the feeling of being at home (Csikszentmihalyi, Halton, 1981).

The minimalist, industrial-style second option was the least preferred, garnering only 10 selections, despite the contemporary popularity of such designs. This could suggest that while minimalist aesthetics are visually appealing, they may not evoke the warmth or personal connection that many associate with the concept of “home”. The lack of terms like “warm” or “cosy” in the justifications for this choice further supports this interpretation (Rybczyński, 1986).

8. Stimulation

This part of the study assessed emotional stimulation by interior design by presenting respondents with various interior spaces. The interiors varied significantly in their design: “Option 1” featured a white, empty space, “Option 2” was colourful and messy, and “Option 3” was a neat prison cell.

The results show that the majority of respondents across all three cultural groups—Greek, Polish, and Vietnamese—found “Option 3” to be the most unbearable, with a total of 73 participants selecting it. This significant preference suggests that the sterile, restrictive environment of a prison cell is universally perceived as psychologically distressing and uncomfortable. Previous studies have indicated that environments lacking in aesthetic and personal elements can lead to feelings of isolation and discomfort (Ulrich, 1991).

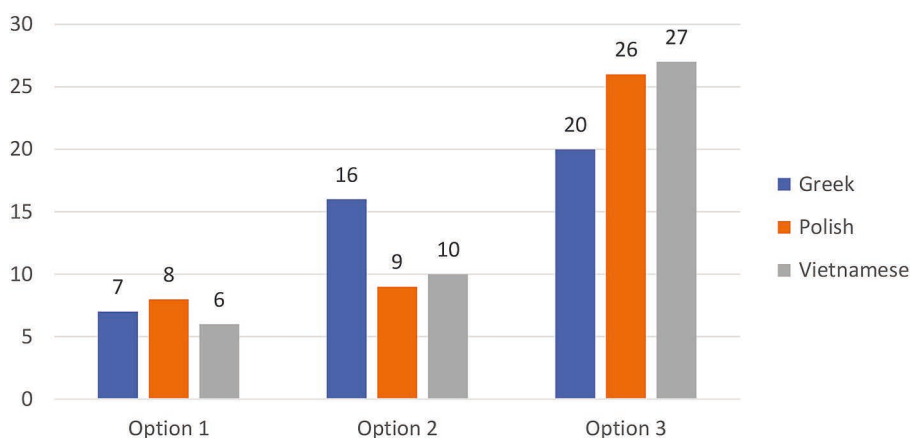


Fig. 7. Which space do you perceive the most unbearable to you? (by P. Haupt)

“Option 2,” the colourful and messy interior, was identified as unbearable by 35 participants, with Greek respondents showing a particularly strong aversion to this space. The chaos and lack of order in this design may have contributed to its negative perception, as cluttered spaces are often linked to increased stress and decreased cognitive performance (Rosenbaum et. al., 2009: 522–527). This reaction aligns with findings from environmental psychology, which suggest that visual clutter can overwhelm the senses and create a sense of mental disarray (McMains, Kastner, 2011).

Lastly, “Option 1”, the white and empty space, was considered the least unbearable, with only 21 participants selecting it. This preference may reflect a cultural or psychological tolerance for minimalism, where simplicity and the absence of stimuli are not as distressing as cluttered or confining environments. Minimalist spaces are often associated with calmness and mental clarity, which might explain why fewer respondents found this option unbearable (Cohen et. al., 2017: 153–160). Overall, the results of this query underline the importance of personal and cultural factors in the perception of interior spaces, as well as

the significant impact that design elements such as order, colour, and spatial constraints can have on psychological comfort.

The study explored how different cultural groups—Vietnamese, Polish, and Greek—perceive various interior designs in terms of their ability to stimulate creativity, evoke calmness, and cause annoyance. Six distinct interiors were evaluated: an Op-Art design (phot. 1, Room 1), a green moody room with plants (as in phot. 2., Room 2), a classic style with historical details (as in phot. 3, Room 3), a simple colourful interior (as in phot. 4, Room 4), a longitudinal minimalist space with strategic lighting (as in phot. 5, Room 5), and a strictly minimalist white interior (as in phot. 6, Room 6).

When assessing creativity, the longitudinal minimalist space (Room 5) was most favoured, particularly by Vietnamese participants (34), followed by Polish (24) and Greek (20) respondents, indicating that this design's clean lines and lighting were universally inspiring. Conversely, the classic style interior (Room 3) resonated more with Polish (32) and Greek (26) participants, suggesting a cultural preference for traditional and sophisticated environments in fostering creativity.

In terms of calmness, the Op-Art design (Room 1) unexpectedly emerged as the most calming for Vietnamese participants (36), while also being appreciated by Polish (24) and Greek (10) respondents. This finding challenges typical assumptions about Op-Art's chaotic patterns, indicating that structured visual elements might provide a sense of order and calm for some individuals. Additionally, the minimalist white interior (Room 6) was recognized for its calming effect, especially among Polish (12) and Greek (6) participants, highlighting a cross-cultural appreciation for simplicity.

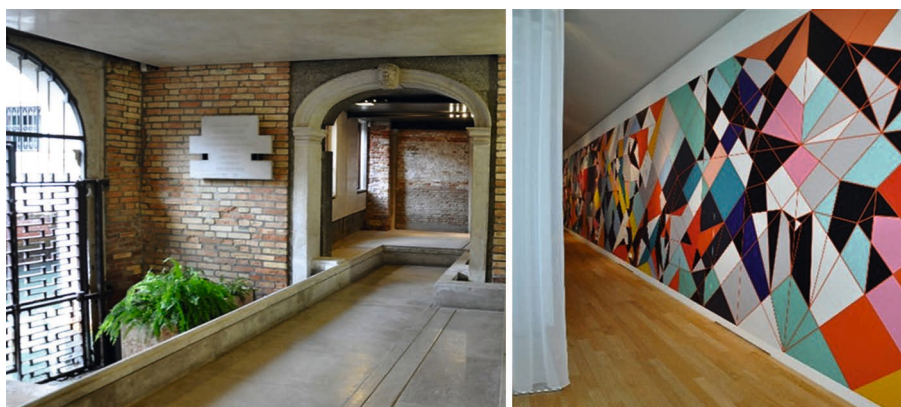
Fig. 8. Op-art. Interior, Tobias Rehberger, Venice (photo by P. Haupt)

Fig. 9. Bella Sky Copenhagen, BIG (photo by P. Haupt)



Fig. 10. Fondation Querini Stampalia, Carlo Scarpa, Venice (photo by P. Haupt)

Fig. 11. VitraHaus, Hezog&deMeuron, Weil am Rhein (photo by P. Haupt)



However, the Op-Art design (Room 1) was also deemed the most annoying, particularly by Greek (38), Polish (31), and Vietnamese (40) participants, likely due to its intense visual stimuli. The simple colourful light blue interior (Room 4) also provoked significant annoyance, especially among Vietnamese (29) and Greek (14) respondents, suggesting that overly vibrant or eclectic designs can be unsettling, depending on cultural context.

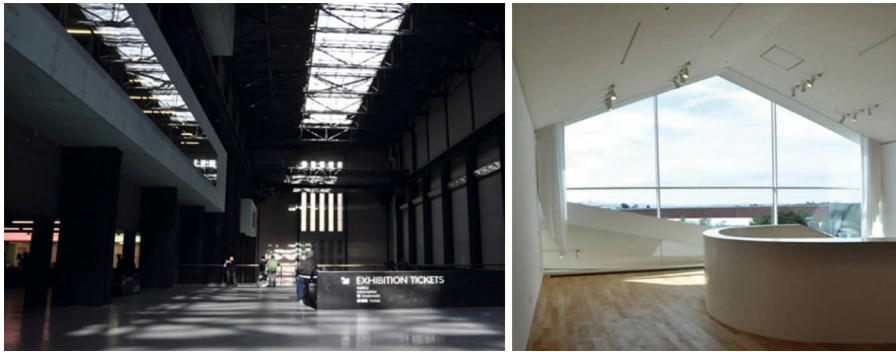


Fig. 12. Tate Gallery, London
(photo by P. Haupt)

Fig. 13. VitraHaus, Hezog&deMeuron,
Weil am Rhein (photo by P. Haupt)

9. Materiality

The study's findings on material preferences in office and home environments reveal distinct cultural variations, particularly in the context of office interiors. Greek participants exhibited a preference for concrete flooring (option 3) in office settings, with 22 votes, indicating a cultural inclination towards modern, industrial aesthetics and the durability that concrete offers and the reference to the local stone materials typically used for finishes in more formal environments. Conversely, Polish participants demonstrated a marked preference for wood flooring (option 1), receiving 27 votes, suggesting a cultural affinity for traditional, warm materials that contribute to a more inviting office atmosphere. Vietnamese participants presented a more nuanced preference, with wood (18 votes) being slightly favoured, yet carpet tiles (option 2) also received considerable support (15 votes), reflecting a balance between comfort and traditional aesthetics in Vietnamese office environments.

In the home environment, material preferences showed less cultural divergence, particularly in the choice of bedroom flooring. Wood (option 1) emerged as the predominant choice across all cultural groups—35 Greek, 28 Polish, and 24 Vietnamese participants selected wood—highlighting a widespread preference for the warmth and comfort that wood provides in private spaces. The significantly lower preference for carpet and marble flooring in the bedroom suggests a universal valuation of wood's aesthetic and functional qualities.

Regarding living room furniture, the preference for fabric-covered sofas (option 1) was consistent across cultures, with 24 Greek, 37 Polish, and 30 Vietnamese participants favouring it. This indicates a shared cultural prioritization of comfort and versatility in living room settings. Leather (option 2) was more favoured by Greek participants (18 votes) compared to Polish and Vietnamese participants, who predominantly rejected it, pointing to varying cultural perceptions of luxury and formality in home furnishings.

In dining table preferences, wood (option 2) was overwhelmingly preferred across all cultural groups, with 30 Greek, 30 Polish, and 31 Vietnamese participants selecting it. This preference underscores wood's universal appeal due to its durability and timeless aesthetic, in contrast to the lower popularity of glass and stone tables, which garnered only 19 votes each. These findings suggest that while cultural differences influence material choices in office settings, there is a convergence towards shared preferences for wood and fabric in home environments, reflecting common values of comfort, warmth, and classic design.

10. Conclusion

The Chinese and Vietnamese cultures, which are deeply rooted in Confucian values, place a strong emphasis on the family unit and the broader community. This is frequently manifested in their interior design. This cultural inclination is reflected in the design of spaces that facilitate family gatherings and community interactions, thereby underscoring the importance of communal living. The integration of conventional elements, such as wooden furnishings and natural motifs, is a prevalent practice, symbolising a profound connection to nature and cultural heritage. This approach to interior design emphasises the importance of achieving a state of harmony and balance, as well as utilising natural materials. This approach aligns with the broader cultural values of respect for tradition and the natural environment.

The incorporation of religious and historical symbols into interior spaces is a notable aspect of Greek culture, which has a strong Orthodox Christian heritage. Such elements contribute to the creation of environments that are imbued with spiritual and cultural significance. Icons, religious motifs and classical architectural elements frequently constitute prominent features, reflecting the profound religious and historical awareness that characterises Greek society. Moreover, Greek interiors place considerable emphasis on hospitality and warmth, frequently incorporating expansive communal spaces conducive to gatherings and celebrations. This emphasis on the creation of welcoming environments is consistent with the cultural significance attributed to family, community, and the religious practice of hospitality, known as “philoxenia”.

In contrast, Western cultures, including Polish, tend to prioritise modernity and innovation in interior design. Polish interiors exhibit a pronounced emphasis on minimalism, efficiency, and the incorporation of technology, reflecting a cultural predilection for progress and functionality. Nevertheless, they also exemplify a distinctive confluence of historical influences and contemporary trends, showcasing a synthesis of tradition and modernity. This synthesis illuminates the Polish approach to interior design, which venerates historical and cultural heritage while embracing modern innovations, resulting in functional and aesthetically pleasing spaces.

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