

The Cross-Sea Journey of Modern Colors: The Localization Process of Minnan Cement Patterned Tiles and Macau Portuguese Azulejos

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Abstract. The primary objective of this study is to compare the processes of colour localisation in Minnan cement patterned tiles and Macau Portuguese Azulejos from the late 19th century to the mid-20th century. This research is grounded in the historical context of global modernisation and colonial expansion. By examining the developmental trajectories of both as vehicles for trans-maritime and trans-cultural dissemination, this study observes that Minnan cement patterned tiles exhibit characteristics of 'active acculturation'. Colour techniques introduced from Southeast Asia blended with local Minnan aesthetics and folk beliefs, forming a visual system characterised by multiple hues and high saturation. These tiles became deeply embedded within the clan structures and identity narratives of overseas Chinese communities, evolving into flexible and creative cultural symbols that bear witness to the history of modern overseas Chinese migration. However, Macau Portuguese azulejos, represent a "passive transplantation". Their signature blue-and-white palette, serving as a visual emblem of Portuguese colonial culture, was systematically applied in public and religious architecture. This became a distinct cultural marker of colonial rule profoundly shaping the city's visual landscape. By comparing these two distinct pathways of colour localisation, this study demonstrates that colour serves not merely as a decorative element, but as a material testament to cultural adaptation and power relations within coastal regions of modern China.

Keywords: Minnan cement patterned tiles, Macau Portuguese azulejos, localised colour schemes, architectural decorative arts.

1. Introduction

This study examines the process of colour localisation in late 19th to mid-20th century Minnan cement patterned tiles and Macau Portuguese azulejos. This research holds significant value for deepening our understanding of the colour symbolism employed in these two trans-maritime, trans-cultural carriers. As well as the influence of overseas Chinese history and colonial history upon local architectural decorative arts. This study primarily examines the developmental trajectories of Minnan cement patterned tiles through 'active acculturation' and Macau Portuguese azulejos through 'passive transplantation'. Employing a literature analysis methodology to identify and review relevant materials and publications, this approach offers distinct advantages. It facilitates thorough analysis of the aesthetic and practical values inherent in both architectural decorative traditions, alongside their established innovative development models. Thereby enhancing the research process.

The ultimate objective of this study is to elucidate the significance of colour in cultural development by comparing the processes of colour localisation in two architectural decorative traditions serving as cross-regional cultural carriers. This approach aims to provide fresh perspectives for the advancement of architectural decorative arts and the localised development of distinctive urban cultures.

2. Literature Review

2.1. Overview of Minnan Cement Patterned Tiles

2.1.1 The origins and active assimilation of minnan cement mosaic tiles

The history of Minnan cement patterned tiles traces back to the 19th-century European Arts and Crafts movement. Through increasingly frequent international trade and population migration, these vibrantly coloured. Intricately patterned cement tiles gradually spread from the Mediterranean coast to Southeast Asia, before being introduced to the Minnan region by overseas Chinese returning home. These tiles retained the essence of European decorative arts while assimilating local Southeast Asian aesthetic elements, evolving into a culturally symbolic fusion. Upon reaching Minnan, they rapidly integrated with local traditions, completing their localisation. Particularly in the early 20th century, South Seas Chinese established decorative tile factories in locations such as Gulangyu Island in Xiamen. These enterprises not only introduced overseas production equipment and techniques but also designed and developed numerous patterns and styles tailored to local market preferences and demands. This enabled the tiles to retain their exotic character while aligning more closely with the aesthetic sensibilities and customs of the southern Fujian region (Fig. 1) [1]. During the first half of the 20th century, this architectural decoration gradually expanded beyond their initial use in the construction of grand residences built by wealthy overseas Chinese merchants. They became widely employed in the flooring and wall decoration of numerous dwellings, shops, and public buildings. It shaping a distinctive architectural character and cultural landscape. In historic districts such as Wudianshi Traditional Blocks, Wulin Traditional Culture Street, and Gulangyu Island. These tiles became integral components of the red-brick traditional houses (Fig. 2). In recent years, the continuous development of tourism in the Minnan region has spurred innovation in tourism-derived cultural and creative products and increased emphasis on the restoration of related historical buildings. With the rise of retro styles and heightened awareness of cultural preservation, this type of tile have once again attracted significant attention and appreciation.



Fig 1. Renderings of patterned tiles designed for clients by the Xiamen factory.



Fig 2. Patterned tiles adorning walls and floors within traditional Minnan dwellings.

The introduction of Minnan patterned tiles followed a spontaneous, commercial route originating from grassroots communities. Unlike passive colonial expansion, these tiles were proactively introduced by overseas Chinese. Initially serving to showcase the wealth of the diaspora and express nostalgia for their homeland, their purpose gradually shifted towards commercialisation. This unique driving force enabled this architectural decoration to undergo rapid, innovative, and creative local adaptation. For instance, while retaining the geometric symmetry aesthetic of Europe, the motifs no longer feature European or South Seas botanical patterns. Instead, they incorporate common local plants from Southern Fujian such as sweet potato leaves, the swastika symbol reflecting religious beliefs, or auspicious elements favoured by local residents like phoenixes and magpies. Thus, this type of patterned decoration represent a product of rapid cultural assimilation and symbolisation, emerging as a significant indigenous cultural emblem within the overseas Chinese homeland culture of southern Fujian. They embody not merely Western or Southeast Asian architectural ornamentation, but also express the nostalgia of the overseas Chinese known as ‘Fanke’ (foreign guests), alongside the Minnan spirit of ‘daring to strive and win’ and its inherent openness and inclusivity [2].

2.1.2 Colour localisation of Minnan cement patterned tiles

Minnan cement patterned tiles predominantly feature red, yellow, green and blue hues with high saturation. This shift in colour tone and saturation stems from the original Southeast Asia patterned tiles. Southeast Asia tiles primarily employed blue, green or low-saturation colours (Fig. 3), resulting in a distinct visual effect compared to these cement tiles. The Southeast Asia region's tropical climate where the predominantly blue-green hues achieve a visual cooling effect in interior settings. Upon introduction to the Minnan region, these tiles underwent adaptation influenced by local climate, cultural traditions, and resident preferences, resulting in greater diversity in both colour palette and decorative patterns [2].



Fig 3. Patterned tiles from Southeast Asia.

The colour system of Minnan patterned tiles comprises a complex, tension-filled combination of multiple hues, featuring precisely balanced “friendly colours” and “opposite colours”. This complementary pairing generates intriguing tonal variations, achieving both visual tension and harmonious, beautiful colour effects. ‘Friendly hues’ refer to adjacent colours on the colour wheel, while ‘opposite hues’ are diametrically opposed. This broader concept differs from complementary or contrasting colours. As the commonly used blues and greens in these tiles occupy opposite ends of the colour wheel to the frequently employed reds and yellows, they exhibit pronounced tonal contrasts. This characteristic colour system distinctly reflects the tiles' localised adaptation.

In the localisation of patterned tile colours, the most direct influencing factor is climate. The Minnan region experiences a subtropical climate, which is somewhat milder than the tropical climate of Southeast Asia. Consequently, Minnan has de-emphasised the visual emphasis on cooling effects originally prioritised in Southeast Asian designs. Additionally, the influence of Minnan's folk culture on these terrazzo tiles warrants attention. Quanzhou in southern Fujian served as a pivotal hub along the Maritime Silk Road during the Song and Yuan dynasties, while Xiamen emerged as a significant modern Special Economic Zone. This unique geographical position fostered an openness and integration of diverse religious cultures within southern Fujian, with Buddhism notably influencing numerous local folk customs and beliefs. Local residents place great emphasis on auspicious meanings such as ‘good fortune,’ ‘celebration,’ and ‘vibrant prosperity.’ These connotations correspond to vivid colours like red and yellow, characterised by high saturation and contrast, which directly shape the aesthetic preferences and tastes of the local populace [3]. Concurrently, the region's traditional architecture features ancient dwellings constructed with red bricks and tiles. The red brick surfaces possess a matte, uniform finish, whereas the coloured patterned tiles often exhibit three-dimensional relief patterns and a lustrous glazed texture. This contrast complements the red dwellings perfectly, enriching their colour palette and enhancing visual depth and layering.

2.2. Overview of Portuguese azulejos in Macau

2.2.1 The origins and passive transplantation of Portuguese azulejos in Macau

The term ‘*azulejos*’ derives from the Arabic ‘*Al-zuleique*’, meaning ‘smooth little stones’. This artistic form gradually developed in Portugal through the fusion of multiple cultures, finding widespread application [4] (Fig. 4). Following the commencement of the Age of Discovery in the 15th century, Portugal's colonial expansion into the Far East during the 16th century led to its formal

settlement in Macau in 1557. Subsequently, in 1887, the Qing government and Portugal signed the *Sino-Portuguese Treaty of Amity and Commerce*, confirming Portugal's long-term administration of Macau. Under over four centuries of influence, Macau not only fell under Portuguese political jurisdiction but also saw its urban development and architectural styles profoundly shaped by Portugal. A prime example of this legacy is the distinctive Portuguese-style tiles [5]. With the continuous development of modern cities, Portuguese azulejos have gradually become one of the distinctive features of Macau's urban culture. In 2020, they were included in Macau's list of intangible cultural heritage. For instance, the signage in Macau's public spaces, churches, government buildings and so on, predominantly feature ‘azulejos’ designs [6] (Fig. 5).



Fig 4. ‘azulejos’ adorning walls in Portugal's public spaces.



Fig 5. Portuguese azulejos adorning walls and road signs in Macau's public spaces.

Portuguese azulejos played a significant role in decorating the colonial powers' spaces of authority, creating a Europeanised landscape in Macau. This evokes associations with Tianjin's extant ‘Five Avenues’ and Italian Quarter. Both historical remnants of modern colonial concessions. Such artefacts were intended by the colonisers to replicate and reaffirm the cultural identity and aesthetic sensibilities of the colonial state, thereby reinforcing its political presence and legitimacy.

Through documentary research, the author discovered that in the early application of Portuguese-style tiles in Macau, historical circumstances led to a marked conservatism. For instance, their motifs

predominantly featured religious narratives, maritime elements, and European botanical patterns. While the production techniques for their glazed painted surfaces strictly adhered to and perpetuated Portuguese traditions. Even in later periods, although this type of architectural decoration were influenced by Chinese blue-and-white porcelain and gradually incorporated traditional Chinese motifs and Chinese characters, they continued to suffer from a lack of locally adapted creativity and innovative design applications in Macau. The construction of Macau's urban public spaces constitutes a transplantation of medieval European urban spatial structures. Consequently, this architectural decorative art in Macau function more as an imported, direct cultural symbol—passively replicated and pasted into the city's fabric—maintaining a certain sense of distance and independence from the local Cantonese culture throughout [7].

Consequently, the localisation of Portuguese tiles in Macau has followed a relatively passive and gradual trajectory. Even into the modern era, they remain widely regarded as emblems of a foreign culture, serving as a significant symbol of Macau's role as a bridge for cultural exchange between East and West.

2.2.2 Colour localisation of portuguese-style tiles in Macau

Portuguese-style tiles first appeared in Macau predominantly in black and white. With the continuous development of global trade and the fusion of diverse regional cultures, this type of tile also underwent influence from the colour palette of Chinese blue-and-white porcelain. Additionally, reflecting the coastal Portuguese penchant for maritime culture, they gradually shifted towards a predominant use of blue and white [4]. With the development of cities and the increasing emphasis on and diverse applications of these tiles, a small proportion incorporate subtle accents of colour such as red, yellow, or green to enhance their visual richness and decorative appeal. However, compared to Minnan cement patterned tiles, Macau Portuguese azulejos generally maintain a simpler, more monotonous colour palette and style, with relatively fewer designs featuring multiple high-saturation, high-contrast colour accents.

The colour system of Portuguese-style tiles is primarily confined to a single hue of blue, with variations achieved solely by adjusting the brightness or saturation of this blue. Unlike the Minnan cement patterned tiles, Macau Portuguese azulejos do not incorporate the application of “complementary colours” or “contrasting colours”. This high degree of uniformity lends Portuguese tiles a visually striking sense of order and cohesive aesthetic appeal. Though the high-contrast blue-and-white palette is monochromatic, its application across vast wall and floor surfaces throughout Macau's urban landscape delivers a potent visual impact. This seems to underscore the presence of a distinct cultural symbol. From a colour psychology perspective, blue is universally associated with emotions such as ‘calmness,’ ‘rationality,’ and ‘sacredness’. Also white is commonly linked to ‘purity,’ ‘light,’ and ‘holiness.’ This aligns precisely with the colonial and religious aspirations to convey authority and power.

3. Discussion

To gain a deeper understanding of the developmental trajectory of Minnan cement patterned tiles and Macau Portuguese azulejos, thereby facilitating a more effective comparative study. The author consulted relevant specialised research materials, which were primarily divided into two sections:

Minnan cement patterned tiles were introduced to China's Minnan region from the West. Through the fusion of diverse cultures, particularly local traditions, they became an integral part of the region's architectural decorative arts. Characterised by their rich colours, exquisite patterns and diverse varieties. These tiles reflect the aesthetic sensibilities of Minnan residents, serving as an outward expression of local taste. They have gradually evolved into an indispensable cultural symbol within the region's architecture. At present, research on patterned tiles primarily focuses on their aesthetic value and practical applications.

In terms of aesthetic value, Zhang Yaheng and Chen Qing explore the stylistic characteristics, regional culture and spirit of the era embodied in Minnan cement patterned tiles, drawing upon the

history of overseas Chinese from the Minnan region [2]. Chen Juan and Zhang Qiumei analysed the artistic value, functionality, practicality, and social significance of Xiamen cement patterned tiles [8]. Regarding their applied value, Wang Yunheng contends that the patterns of Minnan patterned tiles demonstrate remarkable cultural inclusivity. Their rich motifs, vivid colours, and distinctive textures offer abundant inspiration for packaging design [1]. Wang Suxin, Tu Yongjian, Xie Lingyun, and Xu Haiyan employed a factor structural model of Minnan patterned tiles combined with AHP questionnaire research. By integrating traditional culture with contemporary luggage design, they enhanced the efficiency and quality of the applied design process, offering reference for innovative design practices incorporating traditional cultural elements [9].

Macau Portuguese azulejos trace their origins to the historical context of Sino-Portuguese cultural and maritime trade during the modern era. Particularly under Portugal's prolonged colonial rule, these tiles reflect the profound influence exerted by the colonisers upon Macau's urban spatial layout and cultural fabric. Contemporary research into it primarily focuses on their distinctive artistic characteristics and innovative developmental approaches.

Regarding its distinctive artistic characteristics, Chen Xuanxuan contends that Portuguese azulejos bear profound influence from the artistic forms of ancient Chinese porcelain, with their style exhibiting direct or indirect connections to contemporary Chinese cultural elements [10]. Guo Jiayi, through comparative research between Portuguese azulejos and Chinese blue-and-white porcelain, explores how the unique elements formed through artistic exchange, collision. And refinement between Chinese and Portuguese ceramics across historical eras represent an extension of their artistic and creative journey [4]. Regarding innovative development approaches, Jiang Youxuan employed shape grammar to extract core elements for application in Macau's cultural and creative product design, offering fresh perspectives on the innovative application of traditional patterns [6]. Zhai Yuqiao utilised documentary analysis, observation, and case studies to explore creative insights for the cultural and creative product design sector, thereby uncovering innovative forms of Portuguese-style tile art within cultural and creative design [11]. Huang Guanghui proposed the concept of 'Macau graphics', emphasising culturally significant graphic expression. This approach involves re-creating designs by integrating local Macau culture during the direct transplantation of Portuguese cultural elements. Huang also offered recommendations and prospects for the future inheritance and development of Macau graphic culture within its contemporary reconstruction [12].

4. Conclusion

A journey through modern hues has left two distinct yet equally resplendent paths upon the cement mosaic tiles of southern Fujian and the Portuguese azulejos of Macau. Though both originated from imported craftsmanship, they embarked upon entirely divergent localisation processes—one of “active acculturation” and the other of “passive transplantation”—under the influence of differing historical forces and cultural contexts.

Macau Portuguese azulejos, as a cultural symbol brought by colonial power, present a sense of calm and solemn order through their classic blue-and-white palette. Their localisation has been restrained and limited. The colours themselves, as an authoritative and sacred visual system, were transplanted wholesale. Their “unchanging” nature precisely highlights the purity and symbolism of their cultural origins. However, the cement patterned tiles of southern Fujian were actively introduced by overseas Chinese from Southeast Asia, swiftly sparking a vibrant reimagining of colour. Embracing the local visual philosophy wholeheartedly. Their high saturation and multi-hued splendour forged a distinctive cultural symbol deeply intertwined with the emotional expressions of the local populace.

The author observes that the degree of cultural autonomy is reflected in the localised variations of colour: the hues of Macau Portuguese azulejos passively preserve an alien culture. Whereas the colours of Minnan cement patterned tiles actively express the local culture through self-expression.

These two exquisite forms of architectural decorative arts, though originating from distinct traditions and possessing markedly different styles. They collectively stand as unique testaments to modern Sino-Western cultural exchange. Both were conceived abroad yet matured locally, carrying the spark of foreign craftsmanship while radiating the creative ingenuity of indigenous artisans and communities. Their chromatic significance transcends mere visual architectural decoration; it embodies a cultural ethos and the sedimentation of history. This modern transoceanic journey of colour demonstrates that true cultural fusion is not mere replication or transplantation. Rather, it emerges through encounter, collision, and dialogue, giving birth to a new artistic life that remembers its origins while taking root in the present. This represents both a historical legacy and a precious insight for contemporary cultural innovation and identity construction.

References

- [1] Jiang Y. X. Innovative design and application of Portuguese tile patterns from a shape grammar perspective. *Design*, 2024, 37(13): 46–51.
- [2] Wang S. X., Tu Y. J., Xie L. Y., et al. Innovative application of Min Nan floral brick patterns in luggage design under factor structure models. *Leather Science and Engineering*, 2025, 35(5): 97–104.
- [3] Chen J., Zhang Q. M. Research on the artistic value of Xiamen cement patterned tiles. *Furniture and Interior Decoration*, 2017, (3): 124–125.
- [4] Zhang Y. H., Chen Q. A study on the aesthetic value of floral tile decorative art in Southern Fujian historic dwellings. *Chinese and Foreign Architecture*, 2022, (10): 127–130.
- [5] Huang G. H. A study on the construction of visual imagery in Macau. *China Academy of Art*, 2016.
- [6] Li S. J., Xu H. Y., Zhong H. F. An exploration of the pattern characteristics and value of Min Nan floral tiles. *Journal of Quanzhou Normal University*, 2022, 40(3): 29–36.
- [7] Zhang X. The overseas Chinese influence and artistic characteristics of modern floral tiles in Southern Fujian. *Art Panorama*, 2016, (4): 152.
- [8] Wang Y. H. Application of floral tile patterns from Southern Fujian's ancient dwellings in packaging design research. *China Packaging*, 2025, 45(1): 93–98.
- [9] Chen X. X. Exploring the clash and development of Chinese-Portuguese cultural integration: The case of Portuguese-style tile painting in Macau. *Youth Times*, 2023, (Z2): 111–113.
- [10] Zhai Y. Q. Research on the application of Portuguese tile art in cultural and creative design. *Foshan Ceramics*, 2023, 33(4): 139–141.
- [11] Chen C. J. Jesuit-style churches and the early construction of Macau's urban space. *World Religions and Cultures*, 2021, (6): 142–149.
- [12] Guo J. Y. A brief analysis of the development processes of Portuguese azulejos and Chinese blue-and-white porcelain. *Ceramic Research*, 2021, 36(4): 8–10.