

Creative Applicability of Dunhuang Floral Tiles in Architectural Modern Interior Decoration

Du Yanda¹, Prathabiai Suwanthada²

Abstract

Dunhuang art encompasses a variety of art forms. The production of interior furnishings in conjunction with Dunhuang floral tile art through moulding, painting, or carving methods was designed. Local artists' participants were interviewed and observed while recording data using a camera, video, and group discussion. There are 419 architectural models and mural replicas at the Dunhuang murals, which are ongoing at the Mogao caves' grottoes in Gansu province. Temples of Dunhuang: Buddhist Art on China's Silk Road, Dunhuang floral tiles with patterns are unique in shape, novel in conception, rigorous in structure, vivid in the image, and numerous in number and variety as a form of art for demonstrating their intrinsic, deep historical origins and cultural Chinese Buddhist culture. Dunhuang cave art is closely related to Buddhism. Chinese classical religious architecture protects relevant cultural relics, and the creative applicability of Dunhuang floral tiles in modern architectural interior decoration is significant.

Keywords: *Dunhuang floral tiles, traditional architectures and arts, modernized interior decoration, intangible cultural heritage, and Mogao cave temples.*

Introduction

The tile with a pattern is carved a pattern on the surface of brick or stone. Tile appeared as early as in the Shang and Zhou Dynasties. Since the Han and Jin dynasties, when Buddhism flourished, people believed in the present life and even more so in the afterlife, and thus, many prestigious families built large numbers of burial plots, a large number of tiles with patterns were a product of the reverence for thick burial (Chen, 2023) [1]. Tiles are mainly used for decoration, adding to the overall style of the caves. The method of making tile with pattern was to draw the outline of the pattern on the inner wall of the wooden mold, then imprint the picture on the brick with the mold, and then burn it to form a tile. Artisans from the Central Plains brought this craft to Dunhuang and integrated it with the thriving Buddhist art there to create tile patterns with Buddhist connotations (Guang-MingYin, 1988) [2]. In Dunhuang, tens of thousands of flower tiles have been unearthed from the tombs of the Sui, Tang, and Yuan dynasties, and they are still being unearthed today (Shichang, 1995) [3].

Dunhuang Arts

The more than 500 Buddhist caves dug out of the mountain's centuries earlier near Dunhuang look ordinary from the outside. But with more than 50,000 square metres of gorgeous murals, they are a rare gem in the world's history of art. Most cave owners or patrons also had the inside walls and ceilings of their caves painted with religious images and stories. Murals are covered with rows of small images of Buddha, both standing and seated positions with inconspicuous alterations in their postures' styles. This is probably how they have earned their shelters the "Thousand Buddha Caves" reputation has appeared. The painting style of the murals changed gradually in the following centuries, as traditional Chinese painting techniques such as line drawing replaced the imported ones. Maybe, it's also because more Chinese artists had been employed to do the job, but no one seems to know, surely (Zhang, 2017) [4] (Figure 1(a)).

¹ PhD's student, Faculty of Fine-Applied Arts and Cultural Science, Mahasarakham University, Maha Sarakham, 44150, Thailand. E-mail: 64012465002@msu.ac.th. Tel: +660839362041, ORCID ID: <https://orcid.org/0009-0006-6613-7255>

² Faculty of Fine-Applied Arts and Cultural Science, Mahasarakham University, Maha Sarakham, 44150, Thailand. E-mail: papasuwana66@hotmail.com. ORCID ID: <https://orcid.org/0009-0006-1077-4335>

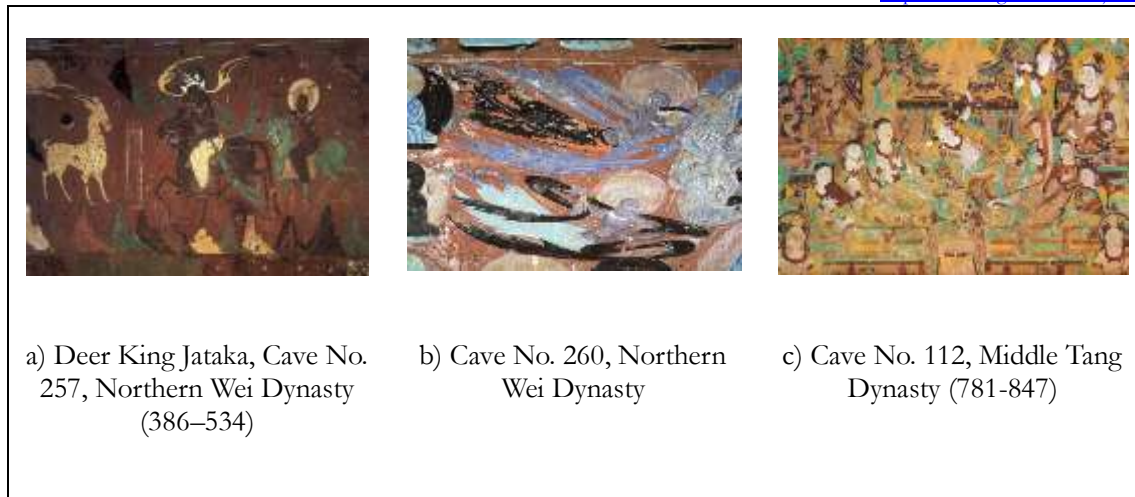


Figure Caption 1: Traditional Dunhuang Arts' mural paintings by Su Hanchen (AD 1094-1172) in Song Dynasty (AD 960-1279) using Ink and color on silk

Source: SHINE: National Palace Museum in Taipei (2017)[5]

Definition of Dunhuang Floral Tiles

Early murals show influences from India and Central Asia; in terms of content and technique, the figures' costumes are very foreign and even half-naked, a feature rarely seen in traditional Chinese paintings (Figure Caption 1(b)). Flying apsaras, which come from Hindu myths, are common among the murals. The Chinese paintings have more than 4,500 flying apsaras, which are estimated in the 270 Mogao caves, continually (Figure Caption 1(c)). The artists have created the art lines to show them graceful gradation including thickness, and all the images appearing in the murals in particular have become Dunhuang icons known to many of them surrounding the country. The image is a part of a Pure Land (Amitabha's Western Paradise) scene in the caves. Surrounded by an orchestra and barefoot on a carpet, the plump dancer holds a pipa behind her back. The artist used Chinese line drawing techniques to depict the beautiful movements of her costume (Figure Caption 1(c)). Chinese' researchers and scientists designed effective positions, to retard the processing of oxidation through the wall paintings from exposure to light and air.

Dunhuang tiles with patterns have an important decorative role in Dunhuang art. Each tile has a unique ornamental value and blends with the overall architecture, an integral part of Dunhuang's architectural art (Zhen, 2023) [1]. Dunhuang floral tiles, a minor branch of Dunhuang art, are commonly found in Mogao Caves, and ancient tombs and temples within the Dunhuang region, used for paving floors and walls for slip resistance and decoration. Floral tiles in China date back to the Warring States period and often employ molding techniques. Though appearing later, Dunhuang floral tiles extensively adopted molding (except for painted portrait tiles): Using wooden molds to imprint patterns on tiles before firing. With the prosperity of Buddhism during the Southern and Northern Dynasties and the Sui and Tang Dynasties, Dunhuang floral tiles not only absorbed the essence of Qin and Han floral tile art but also gradually adopted Buddhist themes, extensively used in Buddhist Grottoes and Temples (Wood, 2015) [6].

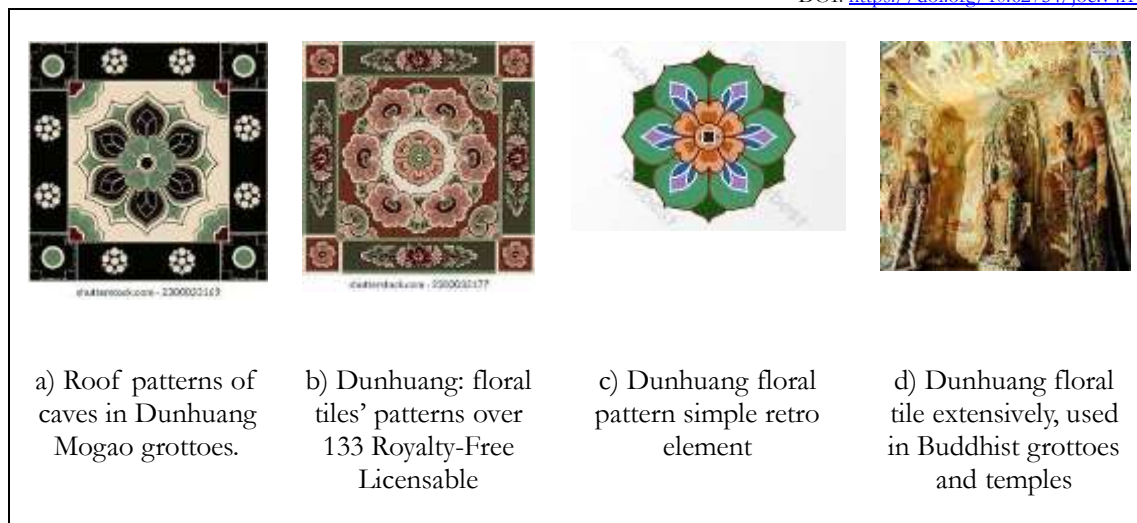


Figure 2: Dunhuang floral tiles' patterns and art graphics

Source: Photos by shutterstock.com, Shanghai Lantu Network Technology Co., Ltd. (2023)

Dunhuang was conquered in 1227 by the Mongols and became part of the Mongol Empire in the wake of Kublai Khan's conquest of China under the Yuan dynasty. During the Song dynasty, Dunhuang fell outside the Chinese borders. In 1036 the Tanguts who founded the Western Xia dynasty captured Dunhuang. From the recon quest of 848 to about 1036 (i.e. era of the Guiyi Circuit), Dunhuang was a multicultural entrepot that contained one of the largest ethnic Sogdian communities in China following the An Lushan Rebellion (Qiang, 2016) [7]. The Sogdians were signified to some extent and were bilingual in Chinese, Sogdians wrote their documents in Chinese characters, but horizontally from left to right instead of right to left in vertical lines, as Chinese was normally written at the time. The local historical periods of Dunhuang sometimes cannot be adapted into the national history (Galambos, 2015) [8] (see Figure Caption 2).

Artistic Forms of Dunhuang Floral Tiles

The tile with a pattern is carved a pattern on the surface of brick or stone. Tile appeared as early as in the Shang and Zhou Dynasties. The method of making tile with pattern was to draw the outline of the pattern on the inner wall of the wooden mold, then imprint the picture on the brick with the mold, and then burn it to form a tile. Dunhuang tiles are widely used in Mogao Grottoes, ancient tombs, and temples. Tiles are the main inventions used for decoration, adding to the overall style of the caves (Guang-Ming, 1988) [2]. Dunhuang floral tile art can be categorized as paving, relief portrait, and painted portrait tiles. Paving tiles are used for flooring in caves or buildings in front of the cave, with many featuring decorative patterns through the tile manufacturing process. Carving technology, subject content, and artistic style can be divided into three periods: development, formation, and decline (Wenjie, 1993) [10].

The Sui Dynasty is very important in the history of Buddhism in Dunhuang. Lotus is also closely related to Buddhism. In Buddhism, the lotus represents many beautiful and holy things. Flourishing period, the Tang Dynasty tile, there are twelve types. The fire of the tile is moderate, the material of the tile is hard, and the surface of the tile has a certain smoothness. Rosette is the respectful title of Buddhists to the Buddha. The rosette flower is a symbol of holiness and dignity. The rosette flower phase in the caisson of Dunhuang grottoes shows the characteristics of complexity and magnificence with the color of overlapping halo. The rosette tiles' techniques are combined with line carving and relief, showing that the layout is becoming dense, and full of vitality. The rosette flower tiling and caisson form echo, and constitute a more complete picture (Zhen, 2023) [1] (see Figure Cabtion 2).

Protection of Tiles

As evidence of the evolution of Buddhist art in the northwest region of China, the Mogao Caves are of unmatched historical value. These works provide the only abundance of vivid materials depicting various aspects of medieval politics, economics, culture, arts, religion, ethnic relations, and daily dress in Western China. The frescoes, caverns, and tiles of Dunhuang have been ruined by natural erosion and human activity over thousands of years. When historical sites are exposed to the elements, the warmth, and humidity cause them to oxidize by the air breathes pollutes, and oxidizes historical places. The visitor's scribbling and painting can harm great works of art. The unique artistic style of Dunhuang art is not only the amalgamation of Han Chinese artistic tradition and styles assimilated from ancient Indian and Gandharan customs but also an integration of the arts of the Turks, ancient Tibetans, and other Chinese ethnic minorities. Many of these masterpieces are creations of unparalleled aesthetic talent (UNESCO World Heritage Convention, 2024) [11].

Paving traditional and modernized Dunhuang floral tile techniques

The discovery of the Library Cave at the Mogao Caves in 1990, together with the tens of thousands of manuscripts and relics to contain, has been acclaimed as the world's greatest discovery of ancient Oriental culture. This significant heritage provides an invaluable reference for studying the complex history of ancient China and Central Asia. Chinese architecture is characterized by bilateral symmetry such as Feng Shui, a horizontal emphasis, and an allusion to various cosmological, mythological, or general symbolic elements. Chinese architecture traditionally classifies structures according to type, ranging from pagodas to palaces. Due to the frequent use of wood, a relatively perishable material, a few monumental structures built of more durable materials, much historical knowledge of Chinese architecture derives from surviving miniature models in ceramic and published diagrams and specifications (New China TV, 2017) [12].

On the western edge of the Gobi Desert, near the oasis town of Dunhuang, China, hundreds of cave temples—the Mogao Grottoes—were carved into a cliff face and decorated with Buddhist wall paintings and sculptures by artists about whom we know little. From the 4th to the 14th centuries, this site was an extraordinary place for the interchange of religion, culture, and commerce along the trade routes linking the East and West, known collectively as the Silk Road, paving traditional Dunhuang floral tile techniques as shown in Figure 3.

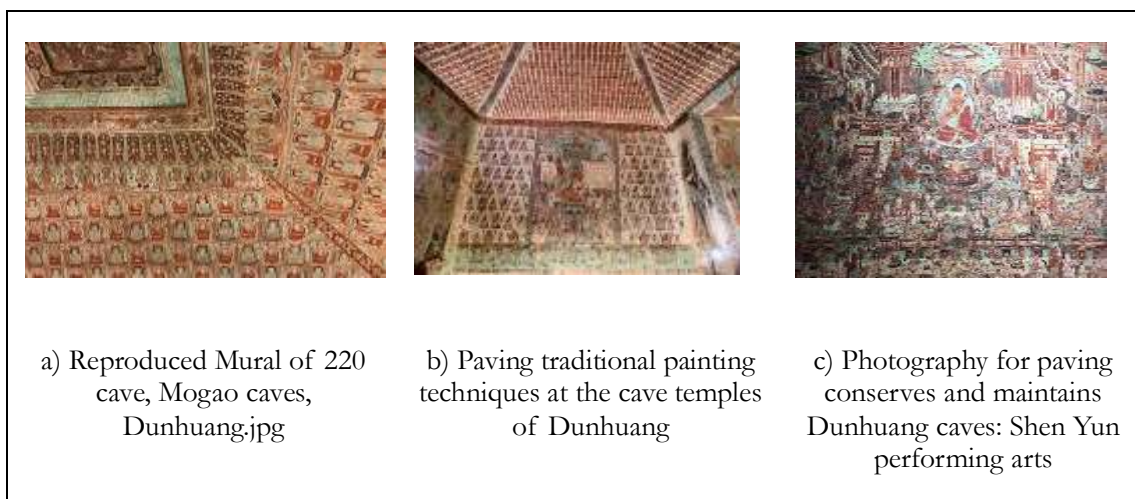


Figure Caption 3: Paving traditional Dunhuang floral tile techniques

Source: Marcia Reed (2016) [13]

Paving modernized Dunhuang floral tile techniques, when it comes to interior design, is no different from the trends in fashion or beauty. As the years go by and demand for modern housing rises, these are becoming more expectant of beautiful interior decor from the get-go (see in Figure 4).



Figure 4: Modernized paving Dunhuang floral tile techniques

Source: Wendy Wei (2018) [14]

Dunhuang grotto paving tiles

One of the world-famous art treasures, the Mogao Grottoes, or Caves of One Thousand Buddhas, are situated 25 kilometers southeast of Dunhuang City, with invaluable murals and sculptures made between the 4th and 14th centuries. The Dunhuang Grottoes include the Mogao Grottoes, the Yulin Grottoes, the West Qianfo Grottoes, and the Lesser Qianfo Grottoes. Of them, the Mogao Grottoes are the best known. The Yulin Grottoes, also called the Ten Thousand Buddha Gorge, lie at one key point on the Silk Road, on both of the precipitous stony banks of the Yulin River, 75 kilometres south of *Anxi County*. Now there are 41 grottoes, over 100 painted sculptures, and over 1,000 square meters of murals in existence. They are indispensable parts of the Dunhuang art. The murals of Grotto No. 25 portray plump, healthy human figures, and manifest the aesthetic characteristics of the Tang Dynasty (618--907) (Rebecca & Ronnie, 2002) [15].

Dunhuang floral tiles represent a fusion of architecture and decoration, whether in grottoes, tombs, or temples, showcasing their practicality. In terms of decoration, Dunhuang floral tiles often employ arrangements and combinations, extending horizontally, vertically, or in all directions with thoughtful variations in patterns and compositions, creating unique decorative environments. Excavated into a mile of cliff face outside Dunhuang, an oasis town at the edge of the Gobi Desert, the site's Chinese name Mogaoku means "peerless caves." Also known as the Mogao Grottoes, this UNESCO World Heritage site is one of the greatest arts and religious wonders in the world heritage (Stephan, 2016) [16].

This qualitative research method on the creative applicability of Dunhuang floral tiles in architectural modern interior decoration of ancient Chinese art, famous for its exquisite murals and sculptures were investigated, observed, interviewed, video and camera recording data were reported, the traditional or modernized the sponsorship of Buddhist monks, local officials, and wealthy families who wished to build karmic merit and perform an act of the veneration at the cave temples of Dunhuang are surrounded by austere desert were adapted and modified to the global architecture by the Dunhuang molded floral tile arts of Chinese architectural style must have influenced architecture throughout the world. In addition, the decorative patterns in the Grottoes are rich and varied with brilliant colours, demonstrating the fusion of the cultures of the Central Plains and the Western Regions.

Qualitative methodology method

After China entered a fully industrialized society, the national culture of modern design in architecture became stronger and stronger, and caisson motifs are constantly being re-explored and applied to interior design. This qualitative study uses observational, interview, literature studies, and survey methods to explore the relationship between the traditional creative applicability of Dunhuang floral tiles and architectural modern interior decoration design through the role and forms of Dunhuang floral tiles in Dunhuang cultural and traditional arts from the Mogao Grottoes in interior design.

Research Framework

The design and production of interior furnishings in conjunction with Dunhuang floral tile arts were investigated and presented, in which patterns on Dunhuang floral tiles are created through moulding, painting, or carving methods. This research framework was designed ideas that detailed in Figure 5.

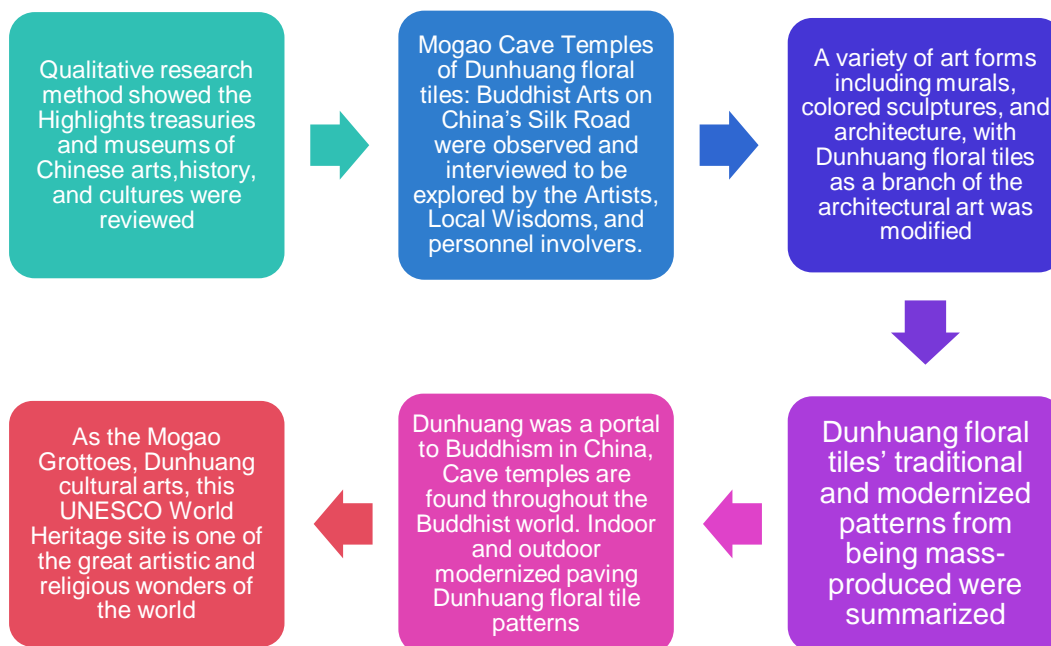


Figure 5: Designing the research framework

The production of portrait tile decorations and images was mainly through pressing and moulding, with a few directly carved with incised patterns on the clay. Local artists' participants were interviewed and observed while recording data using a camera, video, and group discussion.

Research Propose

To create the applicability of Dunhuang floral tiles in architectural modern intangible cultural heritage interior decoration from previous dynasties' cultural integration of ethnicities and religions to design of different tile patterns, which have led to the incorporation of both traditional Chinese and modernized intangible cultural heritage arts for designing outdoor and indoor modernized architecture by hand-painted replicas of Mogao cave temples.

Research Procedures

The creative applicability of Dunhuang floral tiles in architectural modern interior decoration would be

presented in the story of preserving these caves. Displayed objects originally found there, paving tiles, relief portrait tiles, painted portrait tiles, and hand-painted replicas of three spectacular Mogao cave temples were applied.

Step I: Displayed objects were originally Dunhuang floral tile cultural arts

To study the background of original Dunhuang floral tile cultural arts via literature reviews. Dunhuang Art is a culture and tourist center. It attracts much attention from tourists and pilgrims from all over the world. The Mogao Caves near Dunhuang were first constructed in the 4th century AD and were used as a site of Buddhist worship and pilgrimage. The caves contain over 400,000 square feet of frescoes and sculptures, making them one of the repositories of Buddhist art in the world. Once Indian Buddhism was embraced by East Asia people, and developed country, the foundations of Chinese civilization such as Chinese characters, paintings, sculptures, crafts, architecture, construction, and casting methods, were then transformed by Chinese Buddhism and Chinese Buddhist art. In one of the cave temples, a rich collection of about 60,000 paper manuscripts, printed documents, and fragments dating from the 5th to the 11th century was walled up about 1015 and displayed objects were originally developed as Dunhuang floral tile cultural arts.

Step II: Dunhuang Paving Floral Tiles

To observe, interview, and record data of Dunhuang paving floral tiles to local and traditional artists, architects, and ancient scientists, the wall pictures in the caves surrounding Dunhuang County. An innovative design method suitable for the tradition's lotus pattern, so that the design objects can better inherit excellent characteristics and meet the aesthetic needs of modern people were created. Dunhuang caisson lotus pattern types and characteristics, then used the diagramming method by compasses and straightedge rulers to geometricize the lotus pattern structure and evolved the lotus pattern structure based on the shape grammar rules through the classic blue and white colour to colour the pattern, thus derived innovative patterns. According to the shape of the petals, the caisson lotus pattern is mainly divided into simple round-wheel lotus and flat-petal lotus; the peach-shaped lotus, known as the prototype of the Baoxiang flower; the complex and colourful mixing Baoxiang flowers' designs, which is the most popular form in the Tang dynasty; and afterward, it returned to the simple shape but with the rotating effect of the curl petal lotus. Through the analysis of the evaluation score of the design effect of the new patterns, it can be seen that each pattern gives a different feeling; on the whole, the new lotus patterns have unique, simple, innovative, and neat characteristics.

Step III: Dunhuang relief portrait floral tiles

To observe, record, interview, and discuss the art historians and scholars of Buddhist studies. This material in situ, which lies fragmented in many parts of the world, is an invaluable world heritage comparable to the artistic creativity evidenced in Ajanta in India. Since the establishment of the Dunhuang Academy in 1944, hundred caves have been painstakingly hand-carved out of the alluvial conglomerate rock cliff face, under the sponsorship of Buddhist monks, local officials, and wealthy families who wished to build karmic merit and perform an act of veneration as custodians, art historians, and painters.

Due to historical reasons, Dunhuang art declined during the Song Dynasty. Compared with the world-famous Dunhuang murals, the tile and tile art of Dunhuang is a minority art and has not attracted enough attention so far. As early as the Shang and Zhou Dynasties, tile technology appeared in the architecture, and the central Plains artisans brought the tile technology to Dunhuang. And gradually rose in the Sui period. During the Eastern Han and Six Dynasties, it continued to develop with the popularity of thick burials and brick tombs of Dun Huang relief portrait floral tiles. Using the relief technique, there are many dots in the center of the expanded lotus, and the eight-petal lotus is arranged symmetrically in the center of the circle, and the shape of the petals is full.

Step IV: Dunhuang's cultures were painted on portrait tiles in intangible cultural heritage architectures

To discuss the recording photos and visual videos, despite their great age, the sculptures and wall paintings in the Dunhuang caves remain remarkably well preserved, in part due to the dry desert climate and their remote location. For over 25 years, the Getty Conservation Institute (GCI) and the Dunhuang Academy, which studies and stewards the caves, have been collaborating on ways to preserve the Mogao cave temples for the future. At that time, the technology is not mature, the heat is low, and the texture of the tiles is loose. The Sui Dynasty is very important in the history of Buddhism in Dunhuang. Lotus is also closely related to Buddhism. In Buddhism, the lotus represents many beautiful and holy things. The use of the decorative pattern brick cooperated with the adornment design of the integral cave, tile design, and mural design are closely related. The fire of the tile is moderate, the material of the tile is hard, and the surface of the tile has a certain smoothness.

Most cultural Dun Huang's painting on portrait tiles in architectures, where the visual width of the cave temples was emphasized in depth and height, is attractive Chinese Tang dynasty (618–907) architecture; perhaps it is simply an account of its architecture. The planning and construction are exquisite and authentic, with beautiful interlocking bracket sets that connect the temple columns with their roofs (*Dou Gong*) and intricately worked faces of mythical guardian beasts (*Shou Mian*) on the roof tiles. The tiles of the Tang Dynasty have clear patterns and rich and diverse themes. There are such patterns as the rosette flower, the pomegranate flower, and the curly grass grain with certain characteristics, especially the skilled use of line carving. Based on the artistic technique of the deformation, the shape is fine and the pattern is complex, showing ecological and vigorous intention and strong decoration. The technological level at this time also reflects the high development of the Dunhuang economy and culture from one side.

Step V: Outdoor and indoor modernized architectures on Dunhuang floral tiles by hand-painted replicas of Mogao cave temples were applied.

To design the group discussion method for summarizing the outdoor and indoor modernized architectures on Dunhuang floral tiles by hand-painted replicas' creative applicability of Mogao cave temples. Mogao caves, the first constructed in 366AD represented the great achievement of Buddhist art from the 4th to the 14th century. 492 caves are preserved, housing about 45,000 square meters of murals. There are more than 2,000 painted sculptures. Discovered at the site were Confucian, Daoist, and Christian texts and documents in multiple languages, including Chinese, Sanskrit, Tibetan, and Old Turkish. After this discovery, many of the objects from the cave were acquired at the site by explorers and archaeologists from the West and Japan.

The honeysuckle pattern was introduced into Dunhuang along with Buddhist art. The patterns of the tiles vary little from those of the honeysuckle in the murals and are largely copied. The tiles inherit the earlier structural norms and are composed in combination with the patterns of the lotus tiles. The tiles have an overall wavy structure with a large petal shape and the use of ovate and fine, long leaf lines, depicting the front and side of the flower petals. In the production and development of Dunhuang tiles with pattern art, the overall development process and style of tiles with pattern art are directly related to the overall development of Dunhuang art.

The creative applicability of Dunhuang floral tiles in the architectural modern interior decoration and Dunhuang tiles' ornamental patterns from previous dynasties are clear. Dunhuang floral tiles illustrate the formation, alteration, and progress of Chinese decorative art. With its rich cultural implications, Dunhuang art depicts the integration of art across the ages as well as the cultural integration of many ethnicities and religions. The decorative designs on the tiles are made up of different patterns, which have led to the incorporation of more artistic works with elements of both traditional Chinese art and modern art for designing outdoor and indoor modernized architecture on Dunhuang floral tiles by hand-painted replicas of Mogao cave temples.

Sample Size

Sample size consisted of the ancient researchers in Dunhuang County, the Dunhuang Government officials, Dunhuang architects, Local artists' participants, Gansu Provincial Government Officials, UNESCO's researchers, the World Heritage Committee of the Secretariat of UNESCO's memberships, the visitors who attended at the Exhibition Cave Temples of Dunhuang; Buddhist Art on China's Silk Road explored the history and art of the Mogao Caves in Northwestern China, the tourists who visited at Mogao Caves and the Dunhuang Museum - History of Dunhuang and Silk Road, and research team.

Research Tools

The overall architectural appearance and colour integrate several cultural symbols such as the Great Wall, beacon tower, and ancient castle, forming a solemnly beautiful style, and Dunhuang floral tiles in architectural modern interior decoration using cameras, video recording data, interviewees, visitors', and tourists' opinions and perceptions.

Qualitative Data Analysis

The design qualitative data analysis (QDA) process of the creative applicability of Dunhuang floral tiles in architectural modern intangible cultural heritage interior decoration for interpreting qualitative research data was reported. Conceptual pieces of information and patterns were answered to the research purpose and actions to improve the research data were produced and reported.

Designing and producing intangible cultural heritage interior furnishings in conjunction with Dunhuang floral tile art was investigated and presented, in which patterns on Dunhuang floral tiles are created through moulding, painting, or carving methods. The production of portrait tile decorations and images was mainly through pressing and moulding, with a few directly carved with incised patterns on the clay. Local artists' participants were interviewed and observed while recording data using a camera, video, and group discussion. Based on the inheritor of Dunhuang coloured sculpture-making skills and the artistic path of inheriting intangible cultural heritage, the article points out the pain and difficulties of intangible cultural heritage inheritance from the perspective of social economy and the nature of intangible cultural heritage and further explores the new path of Dunhuang intangible cultural heritage inheritance in the era of cultural and scientific integration with the example of coloured sculpture art inheritance.

Results

The design and production of interior furnishings in conjunction with Dunhuang floral tile art were investigated and presented, in which patterns on Dunhuang floral tiles are created through moulding, painting, or carving methods. The production of portrait tile decorations and images was mainly through pressing and moulding, with a few directly carved with incised patterns on the clay. Local artists' participants were interviewed and observed while recording data using a camera, video, and group discussion.

Creative Applicability of Dunhuang Floral Tiles

There are 419 architectural models, mural replicas, and cultural relics. Technology gives 1,000-year-old murals new life. The beauty of architecture in the Dunhuang murals is ongoing at the Mogao Grottoes, Dunhuang, Gansu province. There are currently 735 caves of 9 different architectural forms in the Mogao Grottoes. The names of the architectural forms were not historically recorded or told, except for a few large caves like the "Large Statue Cave". Modern archaeologists categorized and named these caves based on their unique features. Based on the grouping, each Mogao cave could be categorized as one of these forms: Central Pillar Cave, Truncated Pyramid Cave, Hall Cave, Monumental Statue Cave, Nirvana Cave, Meditation (Zen) Cave, Monk's Cave, Image Cave, and Burial Cave interior architectures (see some caves in Figure 6).

Over thousands of years, different caves in the Mogao Grottoes were built based on religious ceremonies, belief needs, and ethnic aesthetics from periods differently were combined with local sandy rock geological characteristics, these caves developed gradually to form today's cave groups, witnessing the historical, cultural, and artistic transition through the long history of Dunhuang.

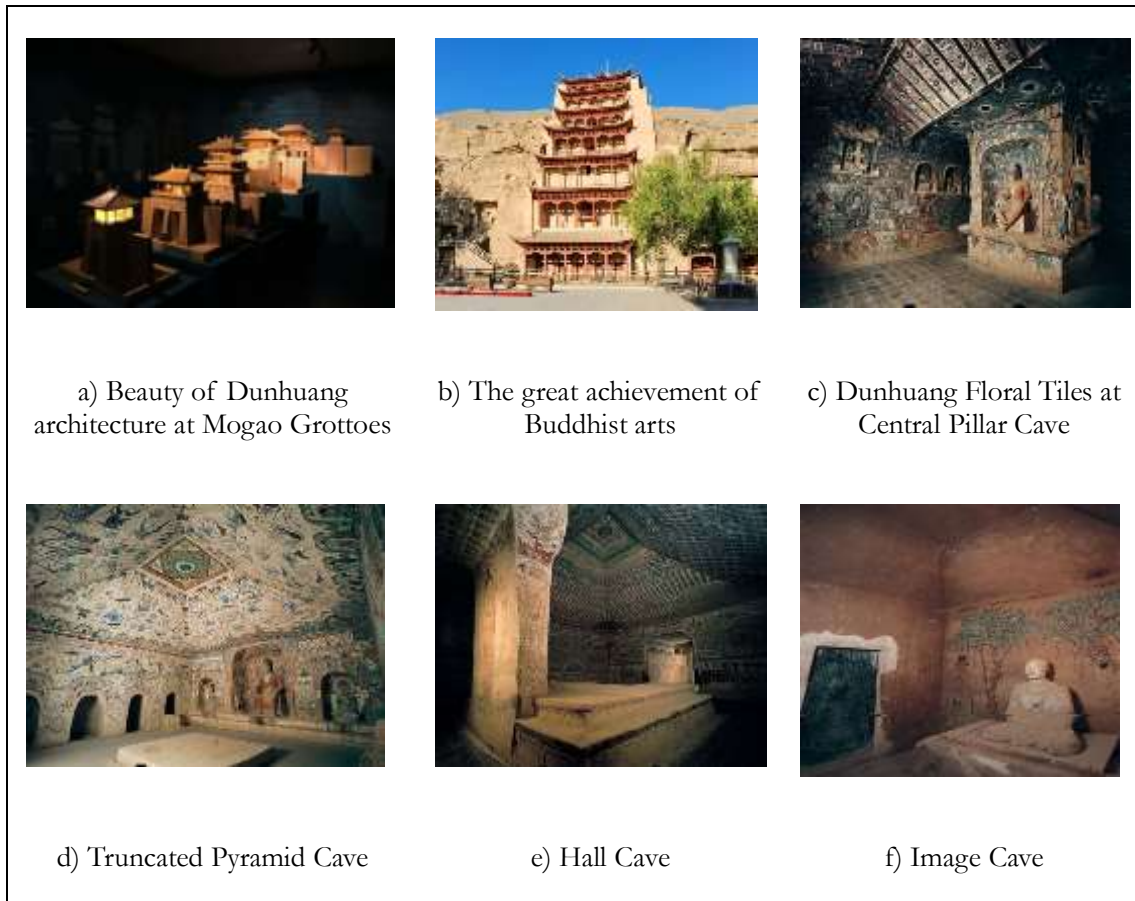


Figure Caption 6: Architecture models, mural replicas, and cultural relics of the Dunhuang Grottoes are on Dunhuang floral tiles' patterns at the Mogao Grottoes in Dunhuang, Gansu province.

Source: Dunhuang Foundation Association (2022). [17]

Dunhuang Floral Tiles' Intangible Cultural Heritage Architectural Modernized Interior

Dunhuang Grottoes are one of the treasures of ancient Chinese art, famous for their exquisite murals, and sculptures. The decorative patterns in the grottoes are rich and varied, with brilliant colours, demonstrating the fusion of the cultures of the Central Plains and the Western Regions. The caisson motifs, in particular, are grand in scale and rich in variety, leaving a deep impression on people. These motifs complement the architectural structure of the grottoes, and together, they form a beautiful and harmonious artistic landscape. After China entered a fully industrialized society, the national culture of modern design in architecture became stronger and stronger, and caisson motifs are constantly being re-explored and applied to interior design (see Figure Caption 7).

Since the Han and Jin dynasties, when Buddhism flourished, people believed in the present life and even more so in the afterlife, thus many prestigious families built large numbers of burial plots. The tiles with patterns were a product of the reverence for thick burial. In Dunhuang, tens of thousands of flower tiles have been unearthed from the tombs of the Sui, Tang, and Yuan dynasties, and they are still being unearthed today. Dunhuang tiles with patterns have an important decorative role in Dunhuang art. Each tile has a

unique ornamental value and blends in with the overall architecture. It is also an integral part of Dunhuang's architectural art.

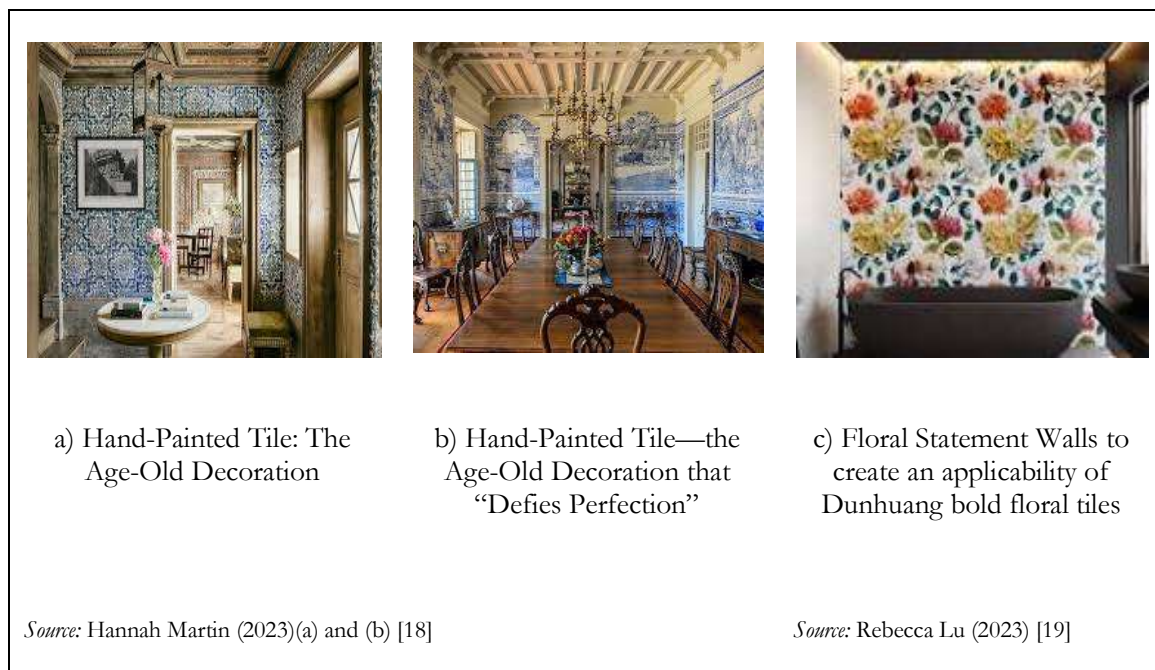


Figure Caption 7: Creative applicability of Dunhuang floral tiles in architectural modern interior decoration

Finally, as an important variant of Chinese classical religious architecture, compared with the Indian Ajanta Caves as its prototype, the Dunhuang Cave Temple has undergone considerable localization in the independent evolution of the millennium, which is reflected in the embodiment of the central tower and the shape of the top of the bucket, the gradually decentralized traffic flow and the subject matter of the paintings that attempt to analyze this from the perspective of typology combined with the shape and fresco style of some of the Mogao Grottoes, and further discusses some feasible measures for the protection of relevant cultural relics of the creative applicability of Dunhuang floral tiles in architectural modern interior decoration, significantly.

Discussions

Dunhuang is a city in western Gansu Sheng (province), Northwestern China, situated in an oasis in the Gansu-Xinjiang desert region. It is at the far western limit of traditional Chinese settlement along the Silk Road across Central Asia. Dunhuang was the first trading town reached by foreign merchants entering Chinese-administered territory from the west. The city is the site of the renowned Mogao Caves and was designated a UNESCO World Heritage Site in 1987. This relative isolation from the outside world made possible over the centuries the flowering and refinement of the Chinese culture but also left China ill-prepared to cope with that world when, from the mid-19th century, it was confronted by technologically superior foreign nations (Jin & Sharudin, 2023) [22].

A Dunhuang commandery, separated from Jiuquan prefecture, was established there in 111 BCE. A defensive line for protection from the Mongols was built to the north, and a sizable military force was stationed there. In 1987 the city of Dunhuang was set up to replace the former Dunhuang County. In addition to the Mogao Caves, ruins of the ancient Yumen and Yangguan passes (the westernmost gates of the Great Wall) are in the northwestern part of the city, and the Mingsha (“Gurgling Sand”) Dunes are southwest of it; all are famous tourist destinations. Dunhuang also has an airport, to the east of the city, with flights to domestic cities (Cheng & Falkenheim, 2018) [20].

The combinations with the characteristics of Dunhuang's intangible cultural heritage, cultural and creative products with high practicability or high appreciation are launched, promoted, and sold through the Internet. Exquisite cultural propaganda cards are made and placed on the orders of customers. While satisfying customers' love for cultural and creative products, they are allowed to learn more about intangible cultural heritage to stimulate their interest in travelling or studying in Dunhuang or other intangible cultural heritage sources and form a long chain of intangible cultural heritage transmission and inheritance (Liang, 2023) [21]. The development and evolution of Chinese cave art as a high historical status in cave art; Mogao Grottoes art through the dynasties, the caisson pattern is an important part of the Dunhuang cave art, which decorates and connects the caverns in the building, sculpture, and murals, but also has its independent form with the pattern decoration, the grotto art is complete. It can fully demonstrate its prosperity and beauty. These brilliant and colourful motifs light up the dark and airtight caves, giving them a captivating glow and allowing everyone to experience the harmonious beauty of this artistic creation (Jin & Sharudin, 2023) [22].

Focused on Dunhuang floral tile pattern styles, the Dunhuang/敦煌 style refers to the art, fashion, and culture depicted in the Dunhuang Murals/敦煌壁画 of China, which are located in the Mogao Caves in Dunhuang, Gansu Province. From the 4th to 14th century, the caves were constructed by Buddhist monks to serve as shrines with funds from donors. These caves were elaborately painted, the cave paintings and architecture serving as aids to meditation, visual representations of the quest for enlightenment, and teaching tools for Buddhist beliefs and stories. The major caves were sponsored by patrons such as important clergy, local ruling elite, foreign dignitaries, and Chinese emperors. The Dunhuang Murals depict many patrons & donors of the caves, people of high standing in society dressed in elaborate garments. The collection of the Dunhuang Academy, whose design on this tile is a lotus flower with eleven curling lotus petals and a bud in the center formed by four heart-shaped motifs (Campbell, 2023) [23].

The origin of Dunhuang tiles is much earlier than Anhui tiles, and its cultural relics and tile-making skills should be protected to be applied to the national intangible cultural heritage. The handcrafted art of making Maolin tiles with patterns began in the Ming Dynasty and flourished in the Qing Dynasty. The war led to the shutdown of the kiln factory, and the craft was lost after the War of Resistance against Japan in the 1990s, the Maolin tiles with patterns factory began to restore the process, and the first results were seen. Xuancheng County, Anhui Province, applied for the Anhui Provincial Intangible Cultural Heritage in 2014 [5]. In contrast to Anhui tiles with patterns, which have been included in the protection of provincial intangible cultural heritage, Dunhuang tiles with patterns appeared in the Sui Dynasty (Anhui Province Intangible Cultural Heritage. (n.d.) [24].

The origin of Dunhuang tiles with patterns is much earlier than that of Anhui tiles with patterns. In terms of application, the Dunhuang bricks came from caves and temples, and their patterns are closely related to the rise of Buddhism. The patterns are simple and smooth, ancient and pure, and the production process is superb and exquisite. Whether, the study of human civilization, religious culture, or artistic value, the preservation of Dunhuang tiles with pattern techniques is a matter of urgency. It should not be submerged in the aura of Dunhuang frescoes and let the world know that Dunhuang is not only the frescoes' "flying fairy" but also the Dunhuang tiles with pattern-making processes that are earlier than the Dunhuang frescoes and need to be applied to the national intangible cultural heritage's architecture (Zhen, 2023) [1].

However, Chinese architecture is the embodiment of an architectural style that has developed over millennia in China and has influenced architecture throughout East Asia (McCannon, (2018) [25]. Since its emergence during the early ancient era, the structural principles of its architecture have largely remained unchanged. The main changes involved diverse decorative details. Starting with the Tang dynasty (Steinhardt, 2004) [26], Chinese architecture has had a major influence on the architectural styles of neighbouring East Asian countries such as Japan, Korea, Vietnam, and Mongolia, in addition to minor influences on the architecture of Southeast and South Asia, including the countries of Malaysia, Singapore, Indonesia, Sri Lanka (Bandaranayake, 1974) [27], Thailand (Sthapitanond & Mertens, 2018) [28], Laos, Cambodia, and the Philippines (Sicheng, 1972) [29].

Dunhuang murals have received worldwide attention and state key protection as an important part of Dunhuang art. Intangible cultural heritage interior design products infused with creativity have emerged as significant cultural development and heritage carriers. Chinese architecture varies widely based on status or affiliation, such as whether the structures were constructed for emperors, commoners, or religious purposes. Other variations in Chinese architecture are shown in vernacular styles associated with different geographic regions and ethnic heritages. ‘Cave Temples of Dunhuang’ also provides a chance to comprehend the creative, intellectual, and spiritual environment of early medieval China and the considerable cultural impact of the transmission of Buddhism along the Silk Road. The Dunhuang floral tiles in architectural modern interior decoration were created and used for applicability, which illustrates how a combined knowledge of art history and conservation science can work together to deepen our collective understanding and safeguard the world's intangible cultural heritage architectures, significantly.

Conclusion

The design qualitative research method was to investigate, observe, interview, record data, conduct a literature review, and discuss with the group discussion method to determine the applicability of Dunhuang floral tiles in architectural modern interior decoration. This was presented and reported by the ancient artists, ancient scientists, local government officials, etc. to the participants in this research study in six steps of the research procedures that were followed by the research framework. Originally the National Dunhuang Art Research Institute, established in 1944, the Dunhuang Research Academy is situated at the Mogao Caves. It is the research unit of Dunhuang Studies as well as an intangible cultural heritage institution that studies, conserves, and maintains nine types of Dunhuang's cave temples. Mogao Caves encompass caves, wall paintings, painted sculptures, ancient architecture, movable cultural relics, and their settings.

The property area and buffer zone contain all the attributes that demonstrate the values of the Mogao Caves and thus ensure the integrity of both the heritage site and its environment. These attributes were discovered through archaeological investigations in the 243 caves in the northern area of the Mogao Caves, which was the area for monks to live and meditate and also served as the graveyard in the past. The Mogao Caves comprise the Northern Area and Southern Area caves together to tell the story of one of the world's greatest cultural treasures—the complexities of its genesis and proliferation, the threats to it from humans and nature, and its miraculous survival over more than 1,500 years.

Chinese culture is vast and profound. The Dunhuang tiles with patterns, as a form of art, clearly demonstrate their intrinsic, deep historical origins and cultural background. As a vehicle for Chinese Buddhist culture, the development and decline of Dunhuang cave art are closely related to the spread and political status of Buddhism in China. Dunhuang floral tiles with patterns are unique in shape, novel in conception, rigorous in structure, vivid in the image, and numerous in number and variety. The carving and painting techniques of Dunhuang floral tiles with patterns were exquisite and skillful, reaching a high level from the Sui Dynasty to the Yuan Dynasty, and reaching the peak of production techniques in the Tang Dynasty. The floral tiles are a rare combination of ancient painting techniques and carving art, and they have a unique ornamental value that blends perfectly with the entire building.

The art and architecture research method is mainly engaged in the recording and reproducing of Dunhuang frescoes, the theoretical research, and the artistic creation activities of Dunhuang art. This artistic research methodology argues for artistic research as a context-aware and historical process that works inside-in, beginning and ending with acts committed within an artistic context for recording data. An architectural methodology is a system of principles and methods for designing and constructing enterprise architectures. It is used to guide the development process and ensure that the final product meets the Dunhuang Data Centre organization's specific needs at the Dunhuang Research Academy.

Especially, ‘Cave Temples of Dunhuang: Buddhist Art on China's Silk Road’ is the result of an intercultural exchange of another kind. In addition to exploring the art-historical and cultural significance of the Mogao caves, the exhibition highlights more than 25 years of collaboration between the Getty Conservation

Institute (GCI) and the Dunhuang Academy to protect and conserve this UNESCO World Heritage Site. GCI scientists and conservators, led by scientist Neville Agnew, have worked closely with colleagues at Dunhuang to stabilize the cliff face at this site, and to study and mitigate the danger posed by flooding and sand storms. They have also developed techniques to conserve the wall paintings and sculptures to create the applicability of Dunhuang floral tiles' data in architectural modern interior decoration, whose They have also developed techniques to conserve the wall paintings and sculptures.

Acknowledgment

At first, I would like to thank the ancient researchers in Dunhuang County, the Dunhuang Government officials, Dunhuang architects, local artists' participants, Gansu Provincial Government Officials, UNESCO's researchers, the World Heritage Committee of the Secretariat of UNESCO's memberships, the visitors who attended the Exhibition Cave Temples of Dunhuang: Buddhist Art on China's Silk Road, who explored the history and art of the Mogao Caves in Northwestern China, the tourists who visited the Mogao Caves and the Dunhuang Museum: History of Dunhuang and Silk Road, who were given the independent data of their opinions and discussions' participants with the research team.

I would like to thank my supervisor and my colleagues at Mahasarakham University for their invaluable contributions to the data collection process. Their meticulous efforts ensured the accuracy and reliability of our research findings.

I would like to extend my heartfelt appreciation to Prof. Dr. Toansakul Tony Santiboon, a Research Postdoctoral Administrator at Queen's University Belfast, Northern Ireland, UK, who is an excellence in reviewing Scopus Journal Awards for his invaluable contributions to the editing data collection process.

References

- Chen, Y. (2023). Research on the tiles with patterns of Dunhuang Mogao cave art, China. *Advances in Social Science, Education, and Humanities*, 739, 146–153.
- [2] Guang-Ming, Y. (1988). A Preliminary study on the art of Dunhuang patterned tiles. *Journal of Dunhuang Studies*, (Z1), 123–129.
- [3] Shichang, M. (1995). Buddhist cave temples and the Cao family at Mogao Ku, Dunhuang. *World Archaeology*, 27 (2), 303–317.
- [4] Zhang, P. (2017). *Dunhuang Murals: Gem in the world's history of art and traditional Chinese painting*. Shanghai People's Association for Friendship with Foreign Countries. Retrieved on November 14, 2017. <https://www.shine.cn/feature/art-culture/1711146354/>
- [5] SHINE: National Palace Museum in Taipei (2017). The collection of the National Palace Museum in Taipei. *Shanghai Daily News*. Retrieved November 14, 2017. <https://www.shine.cn/feature/art-culture/1711146354/>
- [6] Wood, F. (2015). The Silk Road: Two thousand years in the heart of Asia. The International Dunhuang Project, the British Library. Retrieved by <https://idp.bl.uk/>
- [7] Qiang, N. (2019). *Dunhuang studies - chronology and history*. Silk Road Foundation. Retrieved on January 4, 2019. <http://www.silk-road.com/dunhuang/dhhistory.html>
- [8] Galambos, I. (2015). *The Association Circulars from Dunhuang*, in Antje Richter. *A History of Chinese Letters and Epistolary Culture*, Brill: Leiden, Boston, 853–877.
- [9] Shanghai Lantu Network Technology Co., Ltd. (2023). *Dunhuang Floral Pattern Simple Retro Elements*. shutterstock.com. Retrieved May 8, 2023. <https://www.shutterstock.com/zh/image-vector/roof-patterns-caves-dunhuang-mogao-grottoes-2300033169>
- [10] Wenjie, D. (1993). *Dunhuang art: The treasure of the Silk Road*. Proceedings of the International Conference on the Conservation of Grotto Sites. Mogao Grottoes, Dunhuang the People's Republic of China. October 3–8, 1993.
- [11] UNESCO World Heritage Convention. (2024). *Mogao caves*. Retrieved May 6, 2024. <https://whc.unesco.org/en/list/440/>
- [12] New China TV. (2017). *On the Silk Road: Exploring Mogao Grottoes in China's Dunhuang*. Retrieved June 4, 2017. <https://www.youtube.com/watch?v=G2LccA9W0q8>
- [13] Reed, M. (2016). *The sacred, ancient grottoes where world cultures came together*. Retrieved April 27, 2016. <https://www.apollo-magazine.com/the-sacred-ancient-grottoes-where-world-cultures-came-together/>
- [14] Wei, W. (2018). *Research academy focusing on the caves in Dunhuang*. Dunhuang Research Academy. China Daily. Retrieved November 30, 2018. <https://govt.chinadaily.com.cn/s/201811/30/WS5c00db8d498eefb3fe46d6a8/dunhuang-research-academy.html>
- [15] Rebecca, M., & Ronnie, C. (2002). *General information about Dunhuang*. CCTV: English Channel. July 22, 2002. <http://www.cctv.com/special/646/1/38265.html>

- [16] Stephan, A. (2016). 14 Fascinating facts about the cave temples of Dunhuang. *Getty Research Journal*. September 10, 2016. <https://www.getty.edu/news/14-facts-cave-temples-dunhuang/>
- [17] Dunhuang Foundation Association. (2022). Beauty of Dunhuang architectural designs at Mogao Grottoes' caves. govt.chinadaily.com.cn. Retrieved June 1, 2022. <https://www.dunhuang.ds.lib.uw.edu/mogao-cave-420-sui-dynasty/>
- [18] Martin, H. (2023). Designers are adding color, pattern, and artistic flair to their projects with hand-painted tile. Retrieved March 29, 2023. <https://www.architecturaldigest.com/story/hand-painted-tile-is-having-a-moment>
- [19] Lu, R. (2023). Interior design - Eclectic - Bathroom. Retrieved August 8, 2023. <https://www.pinterest.com/pin/628955904189421226/>
- [20] Cheng, C. Y., & Falkenheim, V. C. (2018). The Editors of Encyclopedia Britannica. (2018). Dunhuang, China: Article History. Retrieved August 8, 2018. <https://www.britannica.com/place/Dunhuang>
- [21] Liang, X. (2023). Exploration of the inheritance of Dunhuang's intangible cultural heritage through Mr. Du Yongwei's artistic path sculpture life with faith. The proceedings series Advances in Social Science, Education, and Humanities Research (ASSEHR) of the 2nd International Conference on Culture, Design and Social Development, 179–186.
- [22] Jin, J., & Sharudin, S. A. (May 2023). Design of the Mogao Caves caisson and its application to modern interior design. *Global Journal of Emerging Science, Engineering & Technology*, 1(1), 26-36.
- [23] Campbell, M. (2023). Design: Floor tile with eleven-petaled lotus (and rubbing) in Tang dynasty (618–907) clay. Retrieved May 8, 2023. <https://www.pinterest.com/pin/219972763040500423/>
- [24] Anhui Province Intangible Cultural Heritage. (n.d.). Skill in making tiles with patterns. Anhui Province Intangible Cultural Heritage Network. Retrieved October 18, 2022. <http://www.anhuify.net/Page/Content?ContentId=1553>
- [25] McCannon, J. (2018). *Barron's how to prepare for the AP World History Examination*. Barron's Educational Series. ISBN 9780764118166. Retrieved 19 March 2018. https://books.google.co.th/books?id=tA_3y2XsMMsC&redir_esc=y
- [26] Steinhardt, N. S. (June 2004). The Tang architectural icon and the politics of Chinese architectural history". *The Art Bulletin*, 86 (2), 228–254. doi:10.2307/3177416
- [27] Bandaranayake, S. D. (March 1974). *Sinhalese monastic architecture: The Vihāras of Anurādhapura*. BRILL Academic Publishers.
- [28] Sthapitanond, N., & Mertens, B. (March 2018). *Architecture of Thailand: A guide to tradition and contemporary forms*. Editions Didier Millet. ISBN 9789814260862. Retrieved March 19, 2018. https://books.google.co.th/books?id=hC5TMZ5QTV0C&redir_esc=y
- [29] Sicheng, L. (January 1972). *A pictorial history of Chinese architecture: A study of the development of its structural system and the evolution of its types*, ed. by Wilma Fairbank, Cambridge (Mass.): MIT Press.