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Composition of Gingerbread Fretwork: Case Studies of Chanthaboon Waterfront Community

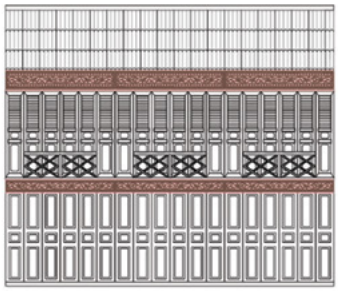
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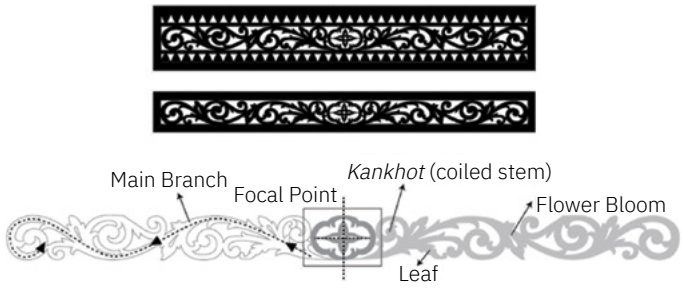
Abstract

The gingerbread pattern refers to ornate, perforated wooden carvings with curved motifs, commonly used to embellish architectural elements such as gables and balconies. This style gained considerable popularity during the reign of Queen Victoria of England (1837-1901). Architects designed countryside summer palaces in harmony with nature, incorporating gingerbread patterns into the buildings to evoke a sense of relaxation and softness. These patterns, influenced by Gothic art seen in cathedral decorations, feature distinct motifs such as tulips, spiraling vines, geometric shapes, and teardrop designs[1].

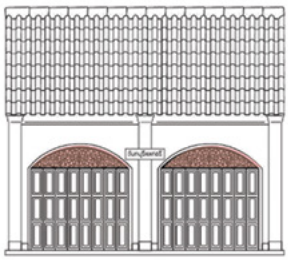
The introduction of gingerbread patterns in Thailand began during the reign of King Rama V, who visited Europe, a period when British and French artisans were also arriving in Siam. This led to a transformation in building styles and architectural ornamentation, with many European-style buildings emerging, initially in Bangkok before spreading to other regions. In Thailand's southern region, gingerbread patterns reflect a blend of Islamic artistic influences from Penang, Malaysia. In the northern region, some gingerbread designs were influenced by Burmese art. In the eastern cities, such as Chanthaburi, which was under French occupation for 11 years, gingerbread patterns are also prominently found within the town center[2]. Gingerbread patterns in Thailand are commonly found



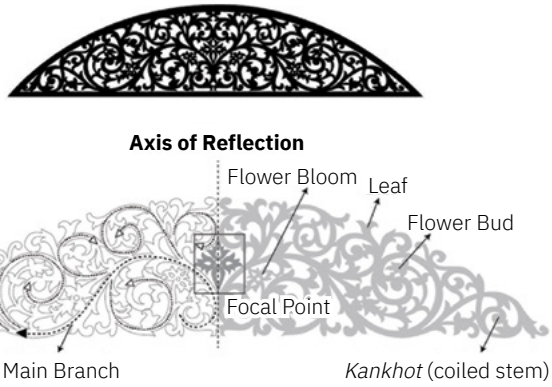
House No. 7-9



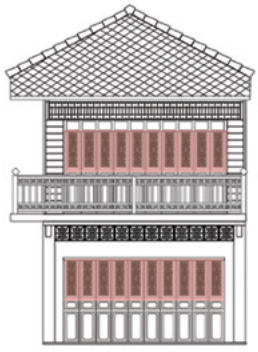
Pattern 26



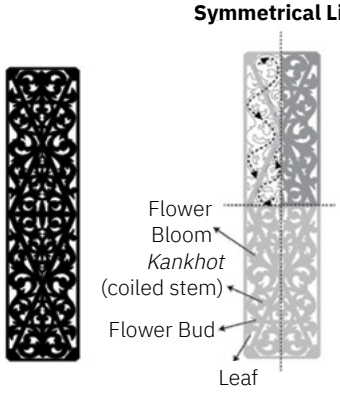
House No. 75



Pattern 22



House No. 137



Pattern 12

Composition of gingerbread fretwork patterns from the Chanthaboon Waterfront Community.

in areas where community administration centers are located, as well as in foreign residences or commercial hubs. These patterns frequently adorn the houses of the royal family, government buildings, affluent residences, and monastic dwellings.

This research explores the gingerbread fretwork patterns found in the Chanthaboon Waterfront Community, Chanthaburi Province, Thailand. This community is known for its cultural history and unique architecture, featuring traditional houses that blend Thai, Chinese, Vietnamese, and French influences[3]. This study aims to document, classify, and analyze the gingerbread fretwork patterns on these houses to preserve and understand the community's artistic heritage before it deteriorates further.

The research employs qualitative methods, including field surveys, interviews, photographic documentation, and analysis of existing literature. In selecting case studies, the focus was limited to houses situated in the Chanthaboon Waterfront Community with exterior gingerbread fretwork that remains intact and in good condition. The findings reveal that 15 houses along Sukhaphiban Road in the Chanthaboon Waterfront Community are decorated with gingerbread fretwork, with a total of 26 distinct patterns identified. The gingerbread patterns, often used in architectural features such as eaves, doors, windows, and balconies, not only enhance the visual appeal of the structures but also serve functional purposes, such as ventilation. These designs, primarily floral and geometric motifs, were found in various architectural elements.

The study categorized these patterns into three main types: attached, detached, and mixed—based on their design and carving techniques. The findings indicate that the gingerbread fretwork in the Chanthaboon Waterfront Community is influenced by Victorian and Gothic styles but has been adapted to the local environment and aesthetic preferences. This unique fusion reflects the diverse cultural background of the area.

Keywords: Chanthaboon Waterfront Community, gingerbread fretwork, ornamental pattern, architectural heritage

Introduction

The Thai way of life has been intertwined with wood since ancient times, from birth to death. This includes the use of wooden planks for postpartum recovery, as well as wooden houses, utensils, boats, carts, coffins, and other items. Wood was the primary building material for traditional Thai houses across all regions, even in the Sukhothai period[4]. Woodcarving is mostly found on religious objects such as Buddha images, scripture cabinets and boxes as well as architectural decorations of religious buildings, including pediments, doors, and windows of temples.

In the past, most of the wood carvings used in architecture were in the traditional Thai style. However, during the reign of King Rama V (1868-1910), a type of wooden house called a European-style gable house appeared[5]. Later, there were Manila houses, along with gingerbread houses that came into the country at that time, which were popular in the reign of King Rama V. The wood carving art that ornamented the gables, doors, and windows of these house was influenced by Eastern art.

In this article, the term "Gingerbread" is used instead of other architectural terminology, such as "Stick-style Fretwork," as it has become widely adopted in research and publications on wooden fretwork designs in Thailand. Notable examples include *Patterns of Traditional Houses in Siam* by Nor Na Paknam (1988), *A Study of the Gingerbread Motifs of Chanthaburi School* by Poradee Panthupakorn and Sakesan Tanyapirom (2004), and *Stick-style Fretwork: the Beauty of the Rattanakosin Period* by Phuchai Kuamsup (2017). Additionally, "Gingerbread" resonates with general readers, enhancing accessibility and understanding beyond specialized architectural circles. This terminology aligns with the article's focus on the design and cultural heritage of wooden fretwork patterns.

Gingerbread houses are colonial-style architecture decorated with gingerbread pattern fretwork associated with the Victorian Style (1837-1901)[6]. The openwork wood carving pattern, which is curved and connected like lace, is thought to have been influenced by Western culture. This pattern spread from Bangkok to other major cities in Thailand.

Each region adapted the gingerbread house to its own climate, materials, and taste[7]. Gingerbread fretwork remained popular throughout the reigns of King Rama V (King Chulalongkorn) and King Rama VI (King Vajiravudh) but declined during the reign of King Rama VII (King Prajadhipok) (1925-1935)[8].

The name "gingerbread" is thought to have evolved from a traditional Christmas cookie recipe that features ginger and decorative icing[9]. As an architectural decorative motif, gingerbread is characterized by its intricate, curvilinear patterns. It often features delicate, lacy designs influenced by Gothic art. Distinctive elements include tulip motifs, scrolling vines, geometric shapes, S-curves, and floral patterns[10]. Famous examples of gingerbread houses include Vimanmek Mansion and Baan Wong Buri in Phrae Province.

Gingerbread patterns differ from traditional Thai art patterns, which have specific names such as "prajamyam" and "kanok". Gingerbread patterns are designs that are simplified and stylized versions of natural forms such as branches, leaves, flowers, fruits, and vines. Wood carving involves the intricate cutting of solid wood, requiring the remaining structure to be self-supporting and visually appealing from afar. The design patterns are versatile, adapting to the specific project, decorative space, owner's preferences, and the architectural vision. The patterns are often tailored to complement the local architectural style[11].

Chanthaboon Waterfront Community is a historic area in Chanthaburi province renowned for its beautiful gingerbread-style architectural decorations[12]. As a result, gingerbread patterns are visible along most streets in the area. As a researcher born in this community, I have witnessed wooden houses left to decay, destroyed by fire or replaced by modern buildings. The community's development has focused on tourism, neglecting the beauty of traditional wooden houses. While development to accommodate new lifestyles may be inevitable, documentation is something that researchers can do to contribute to the preservation and further development in the future. Furthermore, the Chanthaboon

Waterfront Community is a historic settlement over 100 years old, characterized by its trading activities and relatively slow pace of change compared to surrounding communities. It features a diverse social culture, influenced by European presence due to French occupation for 11 years[13]. As a result, various styles of gingerbread patterns remain, having resisted the shifts of modern social trends. The Chanthaboon Waterfront Community, therefore, represents a valuable area for studying the composition of gingerbread patterns.

There have been many studies on the architectural styles of the Chanthaburi Waterfront Community, but there has been limited research on the documentation and classification of gingerbread patterns in the community, as well as understanding the intentions of the craftsmen in the past. Data collection was conducted on July 30, 2023, from 9:00 a.m. to 4:00 p.m. This process involved taking photographs of gingerbread patterns and conducting interviews with homeowners in the Chanthaburi Waterfront Community. The field survey aimed to document the patterns and record their locations. Additionally, it sought to understand the historical context through insights provided by the residents.

Research Framework

This research is a qualitative study aimed at exploring the diversity, meaning, and characteristics of gingerbread patterns found on houses in the Chanthaboon Waterfront Community. The primary research question is: how diverse are the gingerbread patterns on houses in the Chanthaboon Waterfront Community? What do they signify, and what factors influenced their creation? This study will focus on patterns found on houses along Sukhapiban Road, Wat Mai Subdistrict, Mueang District, Chanthaburi Province. The community is situated along the banks of the Chanthaburi River, spanning both sides of Sukaphiban Road. It extends from the area near Wat Chantanaram Bridge to the end of the road at Soi Trok Krajang, covering approximately 900 meters.

In selecting case studies, the focus was limited to houses located within the Chanthaboon Waterfront Community that feature exterior gingerbread fretwork still intact and in good condition. Data will be collected from Interviews, books, related research, photographs, and field surveys to analyze the characteristics of the patterns, the materials used in their creation, and to categorize the patterns based on their features.

Analysis, Discussion and Results

1. Chanthaboon Waterfront Community

Chanthaburi Province is located in eastern Thailand, along the coast, approximately a four-hour drive from Bangkok. The province is renowned for its seafood, tropical fruits, and gemstone mining industry. It also offers natural tourist attractions and rich historical narratives, particularly in its historic communities along Chanthaburi River Road, known as the Chanthaboon Waterfront Community.

The Chanthaboon Waterfront Community is an important historical site. Its history dates back at least 300 years, originating during King Narai the Great's reign. Residents built roughly 200 houses along both sides of a 900-meter road that runs parallel to the Chanthaburi River[14]. Originally known as Liapnathee Road and later renamed Sukhaphiban Road, this is the first road in the province and the eastern region's first commercial street. It remains in good condition[15]. The community was divided into three distinct sections: the upper section served as an important port area and government center, the middle section was dedicated to trade, and the lower section was a central hub for various crafts such as weaving, jewelry making, and fishery products.

The early settlement of this community saw significant contributions from Chinese and Vietnamese residents. The Chinese played a major role in creating the characteristic of the community, reflecting their trading culture and establishing traditional Chinese-style architecture within

the area. The Vietnamese settled in Chanthaburi as early as the late Ayutthaya period (1711), bringing with them both Roman Catholicism and Buddhism the Mahayana and Hinayana sects[16]. During the period from 1893 to 1904, France occupied Chanthaburi province for 11 years due to the Paknam Incident[17]. These influences brought significant changes to social conditions and ways of life, fostering a blend of cultural characteristics. This fusion introduced a diversity of materials, construction techniques, and artistic styles, visible in the form of European-style houses and Chinese or Vietnamese-style shophouses, which together created a distinctive architectural identity unique to this community.

The architectural style of the community predominantly consists of residential-commercial buildings, reflecting its status as a trading district. Based on historical evidence, these architectural styles can be categorized into four phases[18].

1) **Early Architecture Style:** Single-story, gabled wooden structures from the late Ayutthaya period to the reign of King Rama III, none of which remains today.
2) **Chinese-style Architecture:** Evolving in response to improving family structures and social status of Chinese people, this style was prominent during the reigns of King Rama III to King Rama V.
3) **Western-style Architecture**: Influenced by the French presence in the community during the reigns of King Rama IV and V, these are primarily two-story buildings featuring arches that span the columns and often serve as the entrance to the home.
4) **Wooden House Architecture:** Mostly two-story buildings with hip roofs, often adorned with wooden fretwork along the roof edges and ventilation panels above windows and doors, continuing from later periods to the present day.

The architecture remaining in the Chanthaboon Waterfront Community can be categorized into three types based on construction materials: entirely wooden buildings, mixed wood and concrete buildings, and entirely concrete buildings[19]. Gingerbread-patterned woodcarvings often decorate windows and air vents above the doors. Brick buildings usually



Fig 1

feature decorative cornices above the windows, while the columns are molded in various styles, including Doric columns, Ionic columns, and Corinthian columns.

Fig 1
Chanthaboon Waterfront Community in 2015

This community is an old trading hub with historically valuable architectural styles, which have remained the most intact in the Eastern region[20]. The Chanthaboon Waterfront Community has faced significant challenges, including a major fire that destroyed numerous houses and repeated floods over several years. Urban expansion and the emergence of new commercial centers led to people moving away, reducing the community's prominence.

In 2012, the Chanthaboon Waterfront Community Development Committee was established to gather information on historic houses in the area and organize various activities each year, aiming to revitalize the community and restore its vibrancy[21].

2. Gingerbread Fretwork

A decorative motif known as a gingerbread pattern (Fig. 2), which derives its name from the word “gingerbread,” is characterized by twisting and bending patterns that resemble ginger roots. Since Queen Victoria’s reign (1837-1901)[22] and throughout World War I, this elaborate pattern has been a common architectural decoration throughout Europe. It involves delicately carved woodwork with linked swirls and curls that give buildings a delicate appearance.

While the term “gingerbread” can have various interpretations, this research specifically focuses on the decorative carving technique known as “gingerbread fretwork” or “gingerbread patterns” to ensure clarity and consistency. Gingerbread fretwork is created by carving out the wood to form delicate designs. Patterns used to decorate houses are inspired by Gothic art, including the cloverleaf, cross, and flame patterns. However, the gingerbread pattern has evolved from its original form and now includes unique elements such as tulip patterns (both vertical and horizontal), *kankhot* (coiled stem) patterns, geometric patterns, paisley patterns, and vegetable and fruit motifs[23].



Fig 2

Gingerbread fretwork

Fig 2

The gingerbread pattern was introduced to Thailand during the reign of King Rama IV. It became more pronounced during the reign of King Rama V. During his travels to Europe and nearby countries, King Rama V observed European architectural styles, and this influence, combined with the arrival of British and French craftsmen working in Thailand, led to noticeable European elements being incorporated into Thai architecture. The use of gingerbread fretwork in building decoration initially began with government buildings, palaces, and royal residences, and later gained widespread popularity across the country. Gingerbread patterns are commonly found in residential areas that served as administrative centers, communities, religious sites, the homes of government officials and prominent merchants, and historically important streets. Some of the earliest examples of gingerbread patterns in Thailand can be seen in the Dusit Palace complex and within the royal inner court[24].

The architectural elements and placement of gingerbread fretwork decorations show minimal variation between buildings. Building owners may adapt the placement of gingerbread patterns to suit functional spaces and climate conditions. Gingerbread fretwork is commonly found on architectural elements such as gables, eaves, cornices, walls, windows, doors, low gates, and railings[25].

The gingerbread pattern design is not fixed and varies depending on the type of work, the area being decorated, the design, and the owner's preferences. Most of the patterns are inspired by nature, especially vine and plant motifs, which are commonly seen. The design uses main lines to represent main branches, secondary lines for branches, and thin lines for tender shoots. Buds and flowers follow a natural shape but are simplified for easier carving. The patterns often create a sense of continuous movement, commonly in the form of spiral vines, arranged symmetrically from the central axis. In some cases, letters or animal shapes are placed at the center to record the owner's story[26].

Gingerbread patterns are created by carving wood to make it perforated and delicate. The design must be arranged to suit the wood material and correspond with the area where the pattern is placed. Gingerbread patterns can be divided into two types: attached patterns, where the design remains connected to the wood surfaces, and cut-out patterns, where parts of the wood are removed to create perforated designs[27]. The decoration of gingerbread patterns complements wooden houses perfectly, enhancing the beauty of traditional Thai homes, making them appear more graceful, delicate, cozy, and cool. In Thailand, gingerbread patterns were widely seen during the reigns of King Rama V and VI, but their usage declined during the reign of King Rama VII[28].

In studies of gingerbread patterns, the use of these designs in woodwork from various regions is highlighted, including Malaysian woodcarving, patterns from Phrae province, and those found in Bangkok. Malaysian woodcarving has a distinct style, characterized by a unique interpretation of patterns that align with religious principles. Common motifs include Islamic calligraphy, floral designs, geometric patterns, and space motifs[29]. The intricate carvings are aesthetically pleasing, imbued with symbolic meaning, and emphasize balance according to religious beliefs, sharing similarities with the woodcarving traditions of southern Thailand. In Phrae, some gingerbread woodcarvings exhibit a blend of local Lanna motifs, incorporating floral, faunal, textual, and geometric patterns. These adornments can be found on gables, eaves, walls, doors, balconies, shades, ventilation panels. Some designs carry symbolic meanings, such as the rooster symbolizing the owner's Thai birth year[30].

In Bangkok, gingerbread carvings are commonly found on gables, eaves, ventilation panels, walls, windows, doors, and balconies. These carvings typically feature symmetrical, vine-like patterns with branches, leaves, and flowers, lacking clear symbolic meanings. The patterns are more diverse and intricate than those found in rural areas, as they were used to adorn royal palaces, palaces of royal families, wealthy mansions, and monastic cells.

Gingerbread patterns differ from other wood carving designs in that they do not have specific names like traditional Thai patterns[31]. They are typically used as decorative cutouts on buildings, such as at gables, eaves, ventilation panels, walls, windows, doors, short doors, and balconies. In terms of carving, gingerbread patterns can either involve cutting away the unwanted areas of the wood or carving out the design itself, leaving the pattern visible through the cut openings. The patterns often imitate natural forms and include elements such as tulip patterns, coiled stem (*kankhot*) patterns, geometric patterns, paisley patterns, and vegetable and fruit motifs, which are usually grouped together in a clear and distinct design.

3. Gingerbread Fretwork in Chanthaboon Waterfront Community

The gingerbread carving in Chanthaboon Waterfront Community reflects a unique fusion of local craftsmanship and Western influences, with some fretwork pieces being purchased from the capital city. In the past, buildings adorned with gingerbread patterns were typically the residences of affluent families, nobility, or government establishments, and these decorative elements often signified the residents' social status. Chanthaboon Waterfront Community served as a commercial center and trading port. It was the living and trading space for merchants, nobility, and government officials, leading to the prevalence of gingerbread-adorned buildings in this community[32].

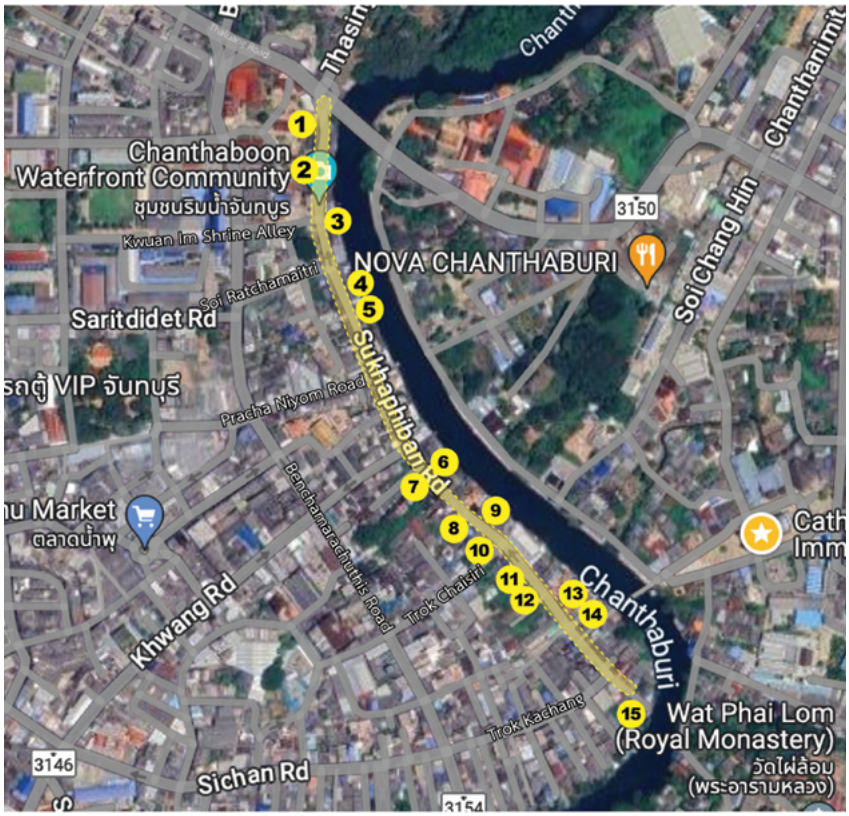
From a survey of 94 houses in the Chanthaboon Waterfront Community along the 900-meter Sukaphiban Road, houses with well-preserved gingerbread patterns were selected based on a defined set of criteria. The term "gingerbread patterns" here refers to decorative woodwork integrated into architectural structures, with designs often inspired by nature, such as tulip patterns, coiled stem motifs, geometric shapes, and paisley designs[33]. It was found that 15 houses, specifically Nos. 7-9, 73, 75, 89, 106, 110, 129, 137, 150, 166, 240, 242, 252, 255, and 273 (Fig. 4), are decorated with gingerbread patterns. Among the 15 houses identified,



Fig 3

Gingerbread fretwork in Chanthaboon Waterfront Community in 2015

Fig 3



1. House No. 273
2. House No. 255
3. House No. 252
4. House No. 242
5. House No. 240
6. House No. 166
7. House No. 137
8. House No. 129
9. House No. 150
10. House No. 89
11. House No. 75
12. House No. 73
13. House No. 110
14. House No. 106
15. House No. 7-9

Fig 4

Map indicating the locations of 15 houses featuring gingerbread fretwork

Fig 4

Wooden Building



1. House No. 273



4. House No. 242



5. House No. 240



8. House No. 129



10. House No. 89



12. House No. 73



13. House No. 110



15. House No. 7-9

Half-cement Half-wood Building



7. House No. 137



14. House No. 106

Concrete Building



2. House No. 255



3. House No. 252



6. House No. 166



9. House No. 150



11. House No. 75

Fig 5

Fig 5
Fifteen houses featuring gingerbread fretwork

when categorized by construction materials, there are 8 wooden buildings (Nos. 7-9, 73, 89, 110, 129, 140, 242, and 273), 2 half-cement, half-wood building (Nos. 106 and 137), and 5 concrete buildings (Nos. 75, 150, 166, 252, and 255) (Fig. 5)

The researcher categorized the houses with gingerbread patterns by house number. It can be observed that between Nos. 5 and 6 (Fig. 4), there are no houses featuring gingerbread patterns, as the original buildings were lost in a fire in 1990 and have since been replaced entirely with modern concrete structures.

The 15 houses with gingerbread patterns include wooden buildings, half-concrete-half-wood buildings, and fully concrete buildings. The type of building does not determine the gingerbread pattern but influences its placement of the decorative area. For example, in fully wooden houses, gingerbread patterns are often found horizontally above the doors on the first floor, in the ventilation space below the ceiling on the second floor, and above the doorways. In a building with three adjoining units, where each unit has a different facade width, gingerbread patterns are found above the doors at the front of the building. Although the pattern width varies according to each unit's facade, the design remains consistent. The pattern is extended horizontally on both sides to accommodate the width differences, as seen in Nos. 8, 10, and 12 (Fig. 5).

In the half-concrete-half-wood buildings No. 14, House No. 106 (Fig. 5), gingerbread patterns are found only on the balcony area. In concrete buildings, gingerbread patterns can be found on the eaves, canopies, balconies, and above the windows, such as in House Nos. 2, 9, and 11, where a half-circle frame pattern, which is not found in wooden buildings, appears. This may be due to the influence of curved doors or windows from the Western style of the time. In some buildings, multiple gingerbread patterns are found in different areas. For example, House No. 2 features patterns above the windows, above the doors, and on the eaves, while House No. 9 has patterns on the door vent and on the eaves.

In Phuchai Kuamsup's book *Stick-style Fretwork: the Beauty of the Rattanakosin Period*[34], the gingerbread patterns in the Bangkok area are described as being found on gables, eaves, ventilation panels, boards, walls, windows, doors, low gates, and balustrades. However, the survey found that there were no gingerbread patterns on the gables in Chanthaboon Waterfront Community. This is likely because the houses in this community face the road, and the narrow road width means the gables are less visible to passersby. Instead, gingerbread fretwork is more commonly seen in highly visible areas such as above windows, doors, and ventilation panels. Furthermore, no gingerbread patterns were found on low gates in this community either.

A total of 26 distinct patterns were identified on these buildings, primarily located on the eaves, structural connectors, doors, windows, balconies, and internal beams (Fig. 6). The patterns observed are mostly botanical, featuring coiled stem designs with main and secondary stems, as well as buds, leaves, and fully bloomed flowers. The researcher assigned pattern codes sequentially, starting from the first house in the north and moving southward.

Most commonly, gingerbread patterns are horizontally carved into large wooden panels within the ventilation panel, which is often decorative and installed beneath the roof eaves or ceiling to allow airflow and regulate temperature within the structure. This pattern was found in all wooden houses, specifically in nine houses: Nos. 7-9, 73, 89, 110, 129, 166, 240, 242, and 273. In concrete houses, these patterns were more commonly found on doors, such as curved canopies and gingerbread-style carvings. These were observed in three houses: Nos. 75, 150, and 255. Additionally, these patterns were found above windows (Nos. 240 and 255), adorning louvered doors (Nos. 129 and 173), on balcony railings (No. 160), on eaves (Nos. 150, 240, 252, and 255), and under rafters (No. 129) (Fig. 6).

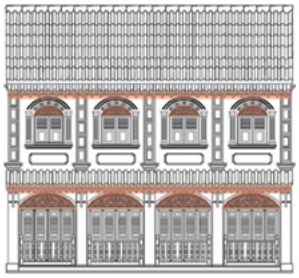


1. House No. 273

Ventilation Panel



Pattern 1



2. House No. 255

Ventilation Panel



Pattern 2



Pattern 3

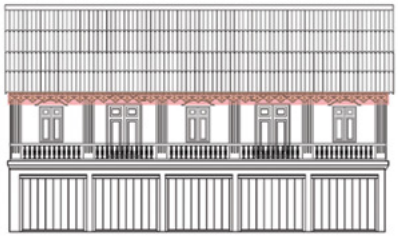
Eaves



Pattern 4



Pattern 5



3. House No. 252

Eaves



Pattern 6



4. House No. 242

Ventilation Panel



Pattern 7

Fig 6

Fig 6
Gingerbread fretwork details for each house



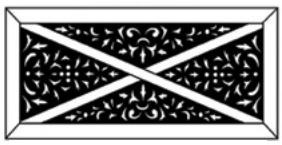
5. House No. 240

Ventilation Panel



Pattern 8

Windows

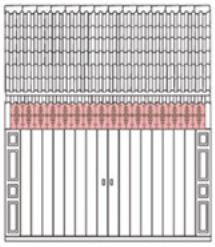


Pattern 9

Eaves

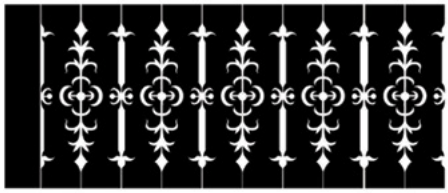


Pattern 10

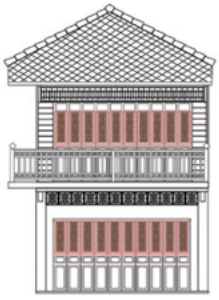


6. House No. 166

Ventilation Panel



Pattern 11

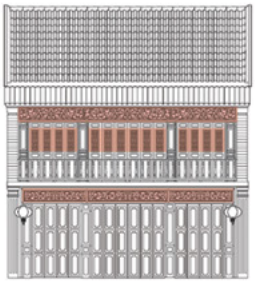


7. House No. 137

Windows



Pattern 12



8. House No. 129

Windows



Pattern 13

Ventilation Panel



Pattern 15



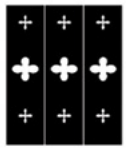
Pattern 16

Internal Beams



Pattern 17

Ventilation Panel



Pattern 14

Fig. 6

Fig. 6
Gingerbread fretwork details for each house



9. House No. 150

Doors



Pattern 18

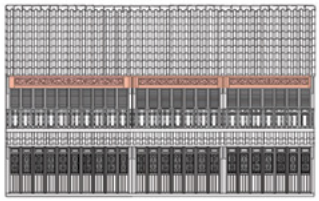


Pattern 19

Eaves



Pattern 20

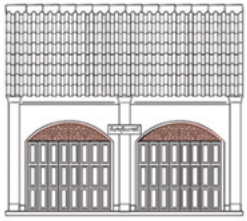


10. House No. 89

Ventilation Panel



Pattern 21

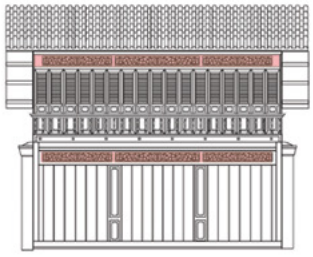


10. House No. 75

Doors



Pattern 22



12. House No. 73

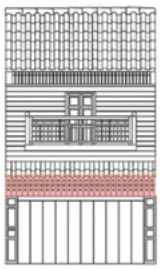
Ventilation Panel



Pattern 23

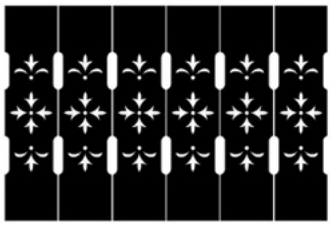
Fig. 6

Fig. 6
Gingerbread fretwork details for each house

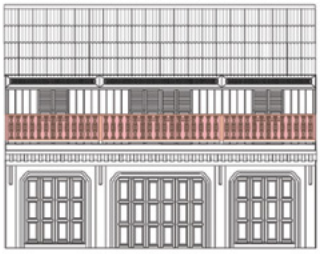


13. House No. 110

Ventilation Panel



Pattern 24

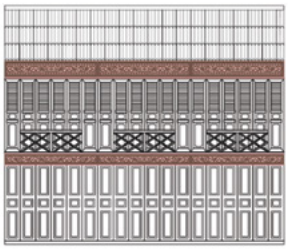


14. House No. 106

Balconies



Pattern 25



15. House No. 7-9

Ventilation Panel



Pattern 26

Fig 6

Gingerbread fretwork patterns can be oriented vertically or horizontally, adapting to the specific location. For instance, a semi-circular ventilation opening above a door would be complemented by a similarly shaped floral pattern. The pattern's arrangement is tailored to the space. Identical patterns can be scaled to fit different lengths by adding vines or scrolls on either side, maintaining the original proportions (e.g., Patterns 15, 16, and 23, Fig. 7). To increase the width of a pattern, additional graphic elements are incorporated to fill the space without altering the original design (e.g., Pattern 25, Fig. 7).

Fig 6
Gingerbread fretwork details for each house

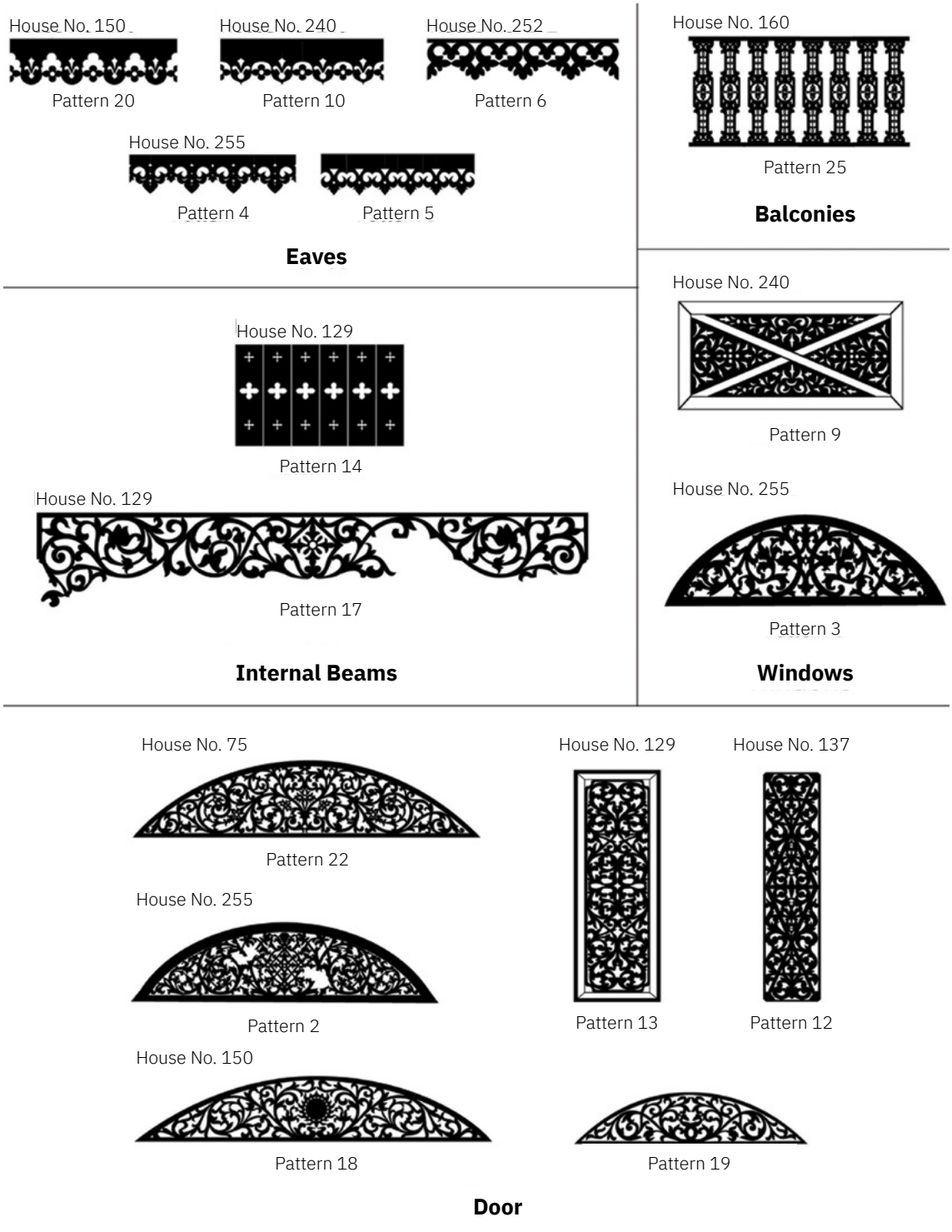


Fig 7

Fig 7
Gingerbread fretworks categorized by placement on the house.

House No. 7-9



Pattern 26

House No. 73



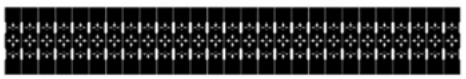
Pattern 23

House No. 89



Pattern 21

House No. 110



Pattern 24

House No. 129



Pattern 15

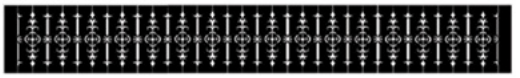
House No. 129





Pattern 16

House No. 166



Pattern 11

House No. 240



Pattern 8

House No. 242



Pattern 7

House No. 242



Pattern 1

Ventilation Panel

Fig 7

Fig 7
Gingerbread fretworks categorized by placement on the house.

4. Patterns and Motifs

Gingerbread patterns can be categorized based on their characteristics into three types: attached, detached, and mixed. Attached patterns (Fig. 8, a) are created by carving out the unwanted parts of a single wood piece to reveal the gingerbread-like pattern. This pattern is the most common, often found in larger sizes. The patterns are typically found with curved or horizontal frames, most often above door and second-floor vents.

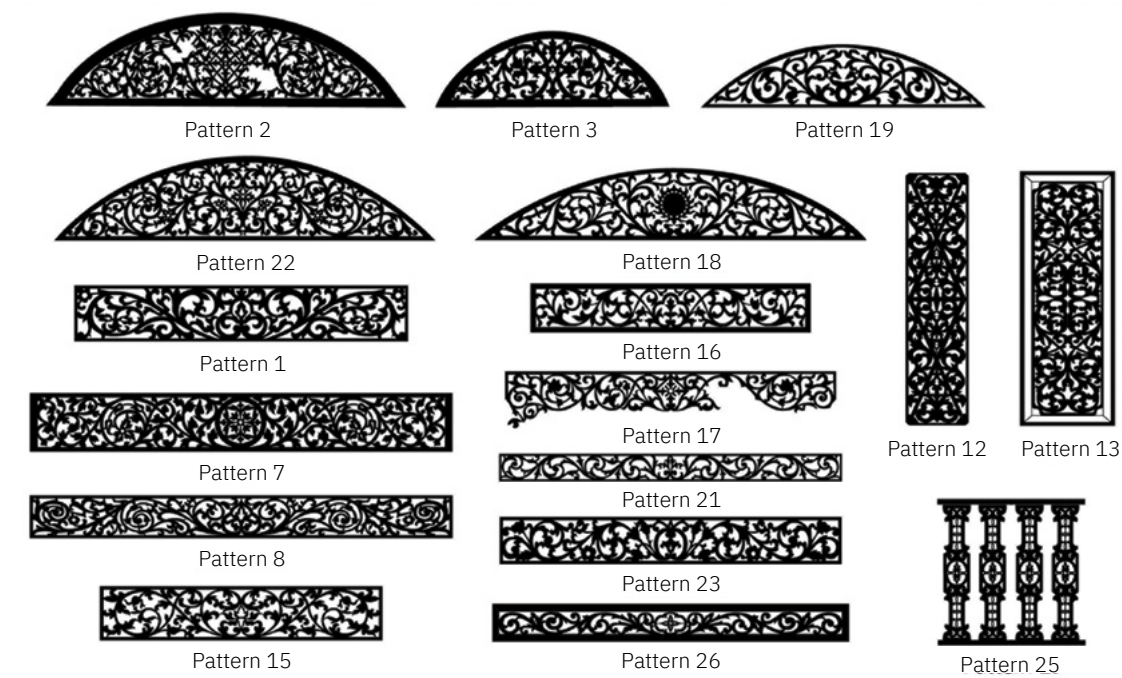
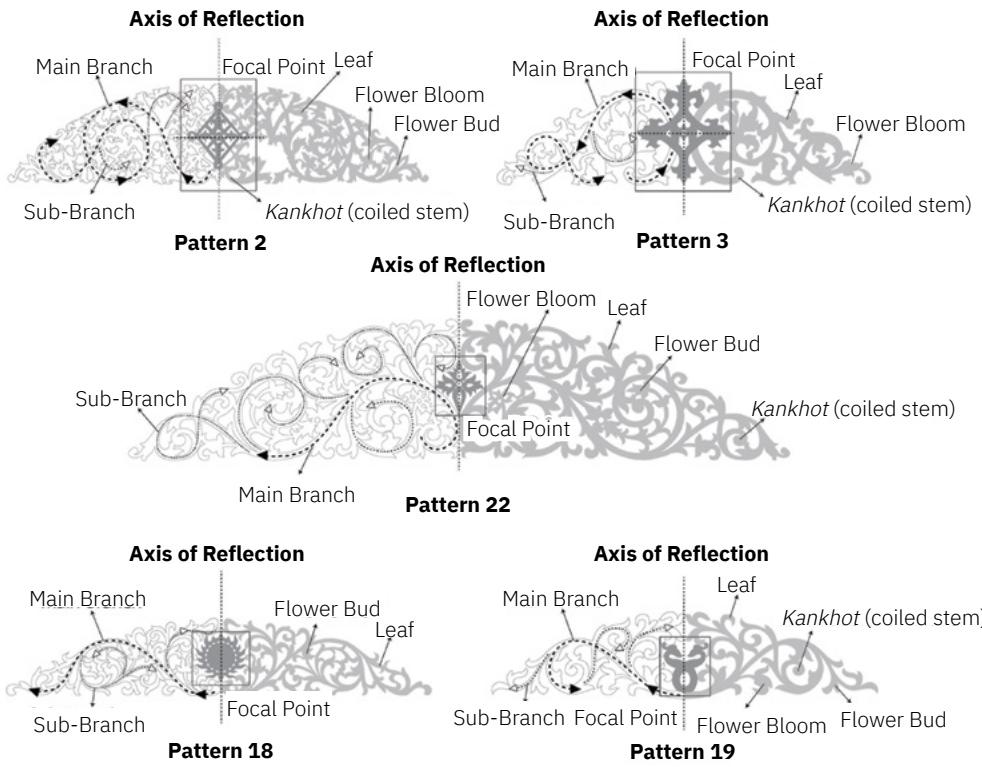


Fig 8

Fig 8
Composition of gingerbread fretwork

Vertical frames are typically found on casement windows and doors, whereas eaves, porches, and interior beams often lack frames. Detached patterns (Fig. 8, b) are created by carving out the desired pattern, leaving the rest of the wood as the background. This less common pattern is found in various sizes typically above second-floor windows and doorways. Mixed patterns (Fig. 8, c) are a combination of attached patterns and detached patterns. This pattern is uncommon and is typically found on eaves.



(a1) Attached Patterns - Semicircular

Fig 9

Fig 9
Composition of gingerbread fretwork (a1 Attached Patterns – Semicircular)

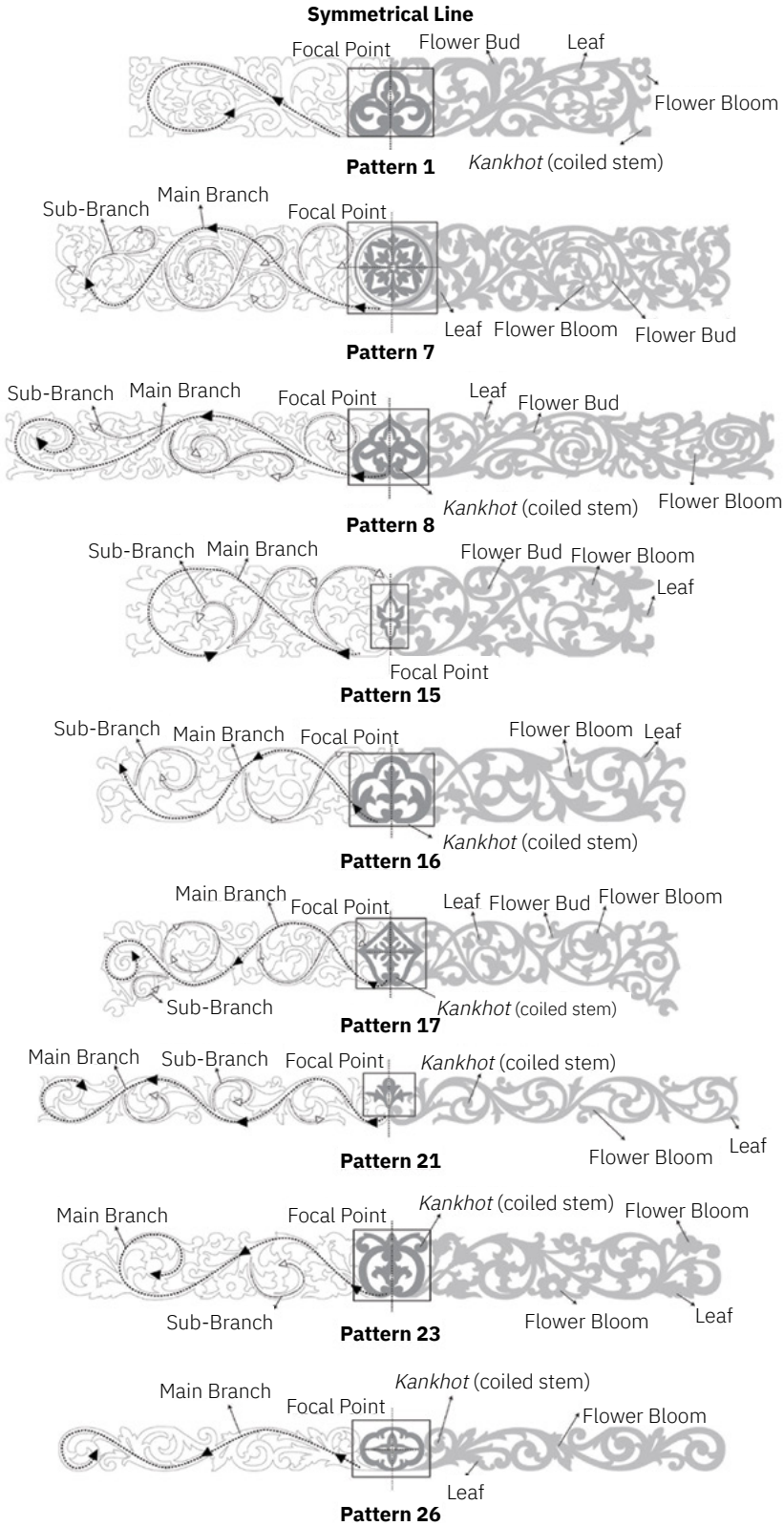


Fig 10

Composition of gingerbread fretwork (a2 Attached Patterns – Horizontal Rectangle)

Fig 10 **(a2) Attached Patterns - Horizontal Rectangle**

In attached patterns with semicircular (a1: Patterns 2, 3, 22, 18, and 19, Fig. 9) and horizontal rectangle frames (a2: Patterns 1, 7, 8, 15, 16, 17, 21, 23, and 26, Fig. 10), the patterns are arranged in a way that the central flower pattern expands to the left and right using curved stems. The stems are then extended to the end of the frame and filled in with leaves, buds, and flowers. The center or focal point of the pattern is dominated by a main pattern that includes flowers, geometric patterns, and sun motifs. The left and right sides of the pattern are identical, with a central axis of symmetry. Attached patterns with vertical frames (a3: Patterns 12, 13, and 25, Fig. 11) are divided into two types: framed and unframed patterns. The patterns are symmetrical along two axes, vertical and horizontal, which intersect at the center of the pattern. Framed patterns consist of motifs of stems, leaves, buds, and flowers. However, the main curved stem is not clearly visible. The curved stem is divided into four parts in the areas divided by the axes of symmetry. Unframed patterns consist of motifs that are simplified from leaves and flowers to almost geometric shapes. The only motif clearly indicating its floral origin is the coiled stem or *Kankhot* motif.

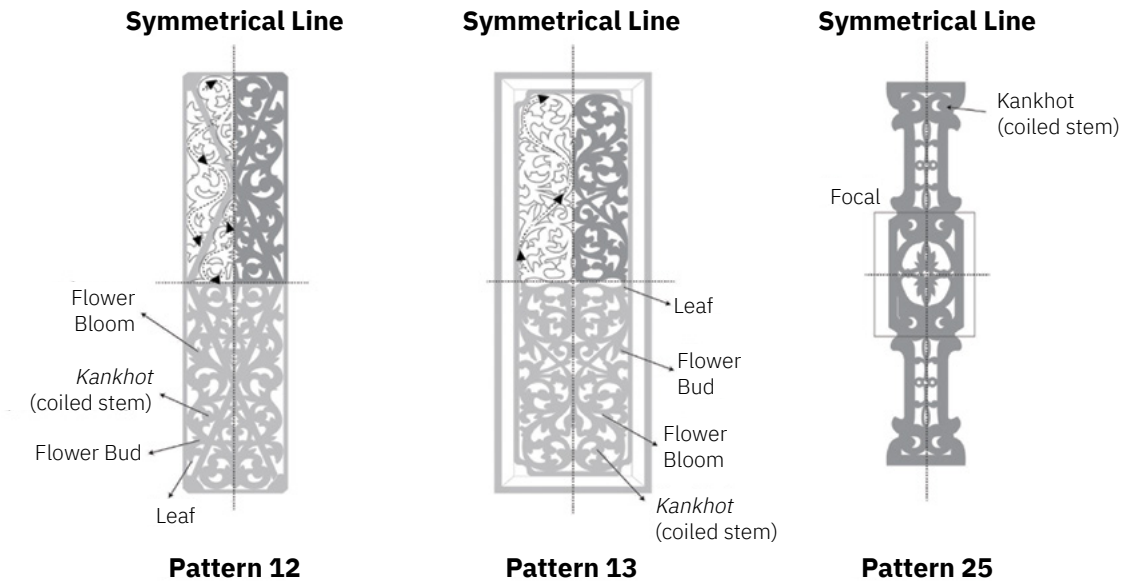
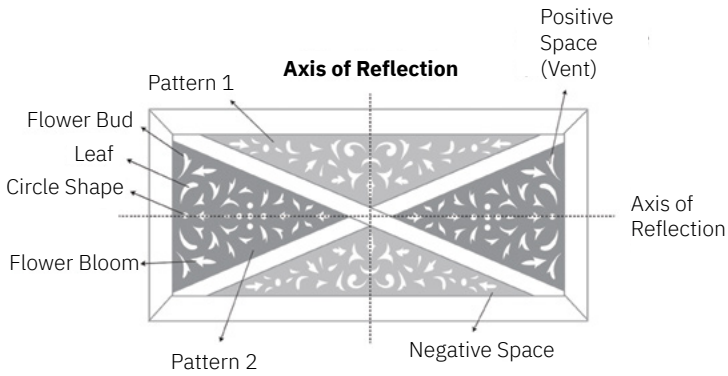


Fig 11

Fig 11
Composition of gingerbread fretwork (a3 Attached Patterns – vertical)



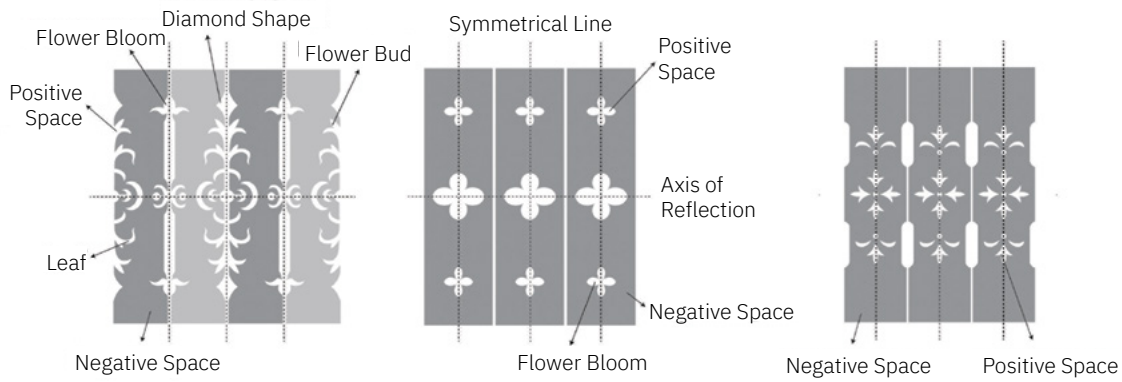
Pattern 9

(b1) Detached Patterns - Horizontal Rectangle

Fig 12

Fig 12

Composition of gingerbread fretwork (b1 Detached patterns – Horizontal Rectangle)



Pattern 11 **Pattern 14** **Pattern 24**

(b2) Detached Patterns - Vertical Rectangle

Fig 13

Fig 13

Composition of gingerbread fretwork (b1 Detached Patterns – Vertical Rectangle)

Detached patterns are also symmetrical along two axes, horizontal (Fig. 12) and vertical (Fig. 13), which intersect at the center of the pattern. Unlike attached patterns, detached patterns use motifs instead of curved stems to create their designs. The detached pattern in a vertical rectangle (Fig. 13) consists of a series of identical sheets of wood that are arranged in a long line. In some cases, two sheets of wood with different motifs are arranged, with patterns positioned at the edges of the wood. When the two sheets of wood are placed alternately, the patterns are created from the opening space at the edge of the wood and in the middle of the sheet of wood. The motifs found in detached patterns include geometric shapes, flowers, leaves, and buds.

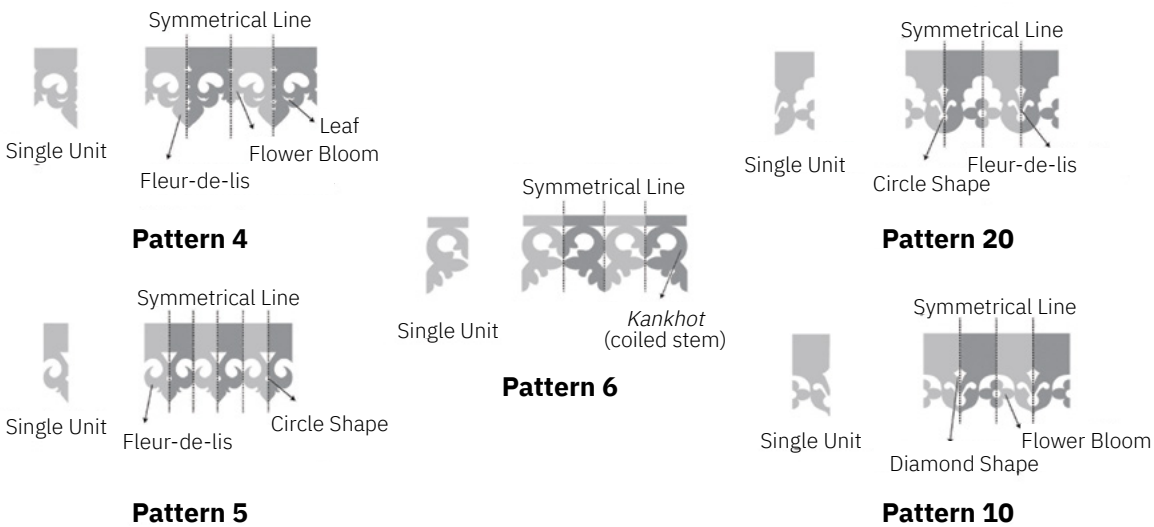


Fig 14

Fig 14
Composition of gingerbread fretwork (c1 Mixed Patterns – Horizontal)

Mixed patterns (Fig. 14) are repeating patterns formed by arranging one or two sets of motifs in a horizontal row. The motifs can be arranged in vertical reflection pattern or zigzag arrangement. The pattern is also symmetrical. A line of symmetry can be drawn through the center of the pattern, dividing it into two identical halves. The motifs found in mixed patterns can be geometric shapes, flowers, or leaves.

Most motifs are derived from nature, including leaves, flower buds, coiled stems, flowers, and geometric shapes, often arranged in S-curve patterns. Unique motifs, such as suns, coats of arms, Chinese characters, flower bouquets, and pairs of swans serve as focal points, generating additional subsidiary patterns. The tulip or fleur-de-lis motif, in various orientations, is a characteristic feature of gingerbread fretwork (Fig. 15).

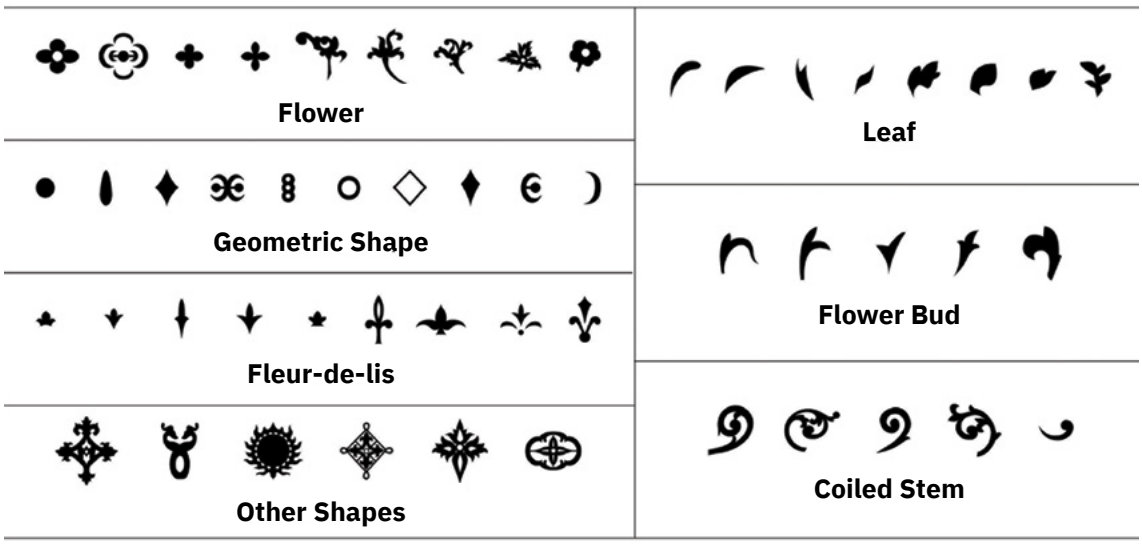


Fig 15

Fig 15
Motifs of Gingerbread fretwork

Conclusion

The study of gingerbread fretwork patterns in the Chanthaboon Waterfront Community highlights a distinctive architectural tradition that reflects both functional and aesthetic values. This analysis of 15 houses shows that the gingerbread fretwork appears consistently in ventilation panels, decorative windows, doors, eaves, and balconies, regardless of the building material. These features not only enhance the architectural beauty but also serve practical purposes, such as promoting airflow within the structures.

The 26 patterns are predominantly floral, characterized by curved stems that twist and turn like vines, filling the entire frame. The arrangement of the patterns is designed to be appropriate for the space in which they are to be located. The patterns, carved out of a single sheet of wood, are categorized into three types: attached, detached, and mixed. They are symmetrical along two axes, vertical and horizontal, which intersect at the center of the pattern. The motifs include geometric shapes, flowers, leaves, buds, and often a central motif that is created specifically for the pattern. Although no clear Thai or Chinese motifs are present, geometric forms and fleur-de-lis patterns influenced by Western cultures are evident. Furthermore, the individual patterns do not appear to carry specific symbolic meanings.

Overall, the gingerbread fretwork in Chanthaboon reflects both the historical influences and the social status of its community. While less elaborate than royal palace designs, these patterns underscore the artisans' skill and reflect broader architectural trends of the period. The preservation of these structures not only protects Chanthaboon's architectural heritage but also offers a glimpse into the cultural exchange that shaped the region's aesthetic identity.

Acknowledgment

This article is part of a PhD dissertation entitled "Thai Gingerbread Fretwork Patterns as Inspiration for Home Décor Designs" for the Doctor of Philosophy Program in Design Arts at the Faculty of Decorative Arts, Silpakorn University, Thailand.

Notes

1 Phuchai Kuamsup, **Lāimai chalu bǣp khanom pang khing suntharīyaphāp hæ̆ng krung Rattanakōsin [Stick-style Fretwork: the Beauty of the Rattanakosin Period]** (Bangkok: Office of Archaeology, Fine Arts Department, 2017), 8.

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3 Poradee Panthupakorn and Sakesan Tanyapirom, **Kānsu̓ksā rūaprūam lūatlāi mai chalu bǣp khanom pang khing sakun chāng Čhanthaburī [A Study of the Gingerbread Motifs of Chanthaburi School]** (Chonburi: Faculty of Fine and Applied Arts, Burapha University, 2004), 8.

4 Naengnoi Punjabhan and Somchai Na Nakhonphanom, **Sinlapa mai kæ salak Sukhōthai, 'Ayutthayā, Rattanakōsin [The Art of Thai Wood Carving: Sukhothai, Ayutthaya, Ratanakosin]** (Bangkok: Rerngrom Publishing, 1992), 1.

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Illustration Sources

All illustrations by the authors unless otherwise specified.

Fig. 2 John T. Jenson, **Victorian Fretwork: Over 100 Ready-To-Use Patterns and Decorative Ideas** (Garden Way Publishing, 1990), 13, 44, 91, 92.