

The Study of the Physical Characteristics of the Architecture of Gingerbread Houses in the area of Bangkok Metropolis

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ABSTRACT

This research presents the physical characteristics of the architecture of the Gingerbread houses. Case Study: Bangkok Metropolis. The Gingerbread houses include those at Suan Plu Temple, Thewarat Kunchorn Temple and Ban Ekanak Museum. The research results are as follows: The Gingerbread houses are 2-storey wooden buildings, 2-storey half-wood, half-concrete buildings and 2-storey or 3-storey buildings. The decorations in the buildings comprise carved wood ventilation panel, wooden staircase railing, partition, sunlight protector, banister, eaves ornamental fringe, skid above door and window, gable, door frame, splashers and window. The popular colors of the Gingerbread houses are as follows: White buildings (cream) with red roofs include Golden Teak Museum, Thewarat Kunchorn Temple, Thewarat Thammasathit Building, Thewarat Thammasapa Building, Thewarat Kunchorn Building, MorWorKor. Chalerm Phra Kiat Building at Thewarat Kunchorn Temple and Ban Ekanak Museum. The newly painted buildings (red) comprise Gingerbread Monastic Cells at Suan Plu Temple. The Gingerbread roofs consist of gable roofs, such as Gingerbread Monastic Cells at Suan Plu Temple. Mixed hip-gable roofs include Golden Teak Museum, Thewarat Thammasathit Building, Thewarat Thammasapa Building, Thewarat Kunchorn Building, MorWorKor. Chalerm Phra Kiat Building at Thewarat Kunchorn Temple, Ban Ekanak Museum. The gable roofs include Phanthawakarn School and Suan Plu Temple. The materials for constructing the Gingerbread houses are classified into three groups, including wood, such as Gingerbread Monastic Cells at Suan Plu Temple, half-concrete, half-wood buildings at Thewarat Thammasapa Building, Golden Teak Museum, Thewarat Kunchorn Temple and Ban Ekanak Museum and brick and mortar at Thewarat Thammasathit Building, Thewarat Kunchorn Building and MorWorKor. Chalerm Phra Kiat Building at Thewarat Kunchorn Temple.

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Introduction

“Khanom Pang Khing” is the word translated from the word “Gingerbread”, meaning a type of pattern used for architectural decoration, having contorted characteristics like a ginger and having become popular for architectural decoration across Europe since Her Majesty Queen Victoria II onward. The Gingerbread pattern entered Thailand during the reign of King Rama V. The Gingerbread pattern has been used for decorating houses, including 1-storey and 2-storey wooden houses, brick-and-mortar houses and buildings. The buildings decorated with the Gingerbread pattern are splendid, comprising Vimanmek Mansion in Dusit Palace, deemed to be the most splendid building decorated with Gingerbread fretwork. The characteristics of the Gingerbread pattern consist of contort, coil and curve, or the Gingerbread pattern can be delicate, such as the floral pattern, lace pattern or crochet pattern. However, the traditional and most popular pattern is the tulip pattern, deemed to be the heart of the Gingerbread pattern, but the decoration of the Gingerbread pattern does not have a fixed form, depending on the work, decorated space, buildings’ owners and architects’ designs.

Based on the characteristics of the Gingerbread houses appearing and arising in Thailand, nobody studies the architecture of the Gingerbread houses seriously. The researcher is thus interested in presenting the physical characteristics of the architecture of the Gingerbread houses to promote the tourism of the architecture of the Gingerbread houses in Thailand, Case Study: Bangkok Metropolis, so that young people of the next generation truly understand the characteristics of the Architecture of the Gingerbread houses for the benefit of architectural conservation of the Gingerbread houses to ensure sustainability and the advantage of the study of architecture in the correct construction of the Gingerbread houses, as the Gingerbread houses are viewed to be splendid, delicate and exemplary by people in general, because the Gingerbread houses are exquisitely decorated and splendid with cooling fins and colorful fretwork.

Study Methods

- Collection of Data from Related Research Documents
- Survey of Actual Locations (Field Study): The Gingerbread houses in this study are as follows:
- Monastic Cell of Abbot, Suan Plu Temple, Bangkok Metropolis
- Building of Phanthawakarn School, Suan Plu Temple,

Bangkok Metropolis

- Monastic Cell of Monk, Suan Plu Temple, Bangkok Metropolis
- Thewarat Thammasathit Building, Thewarat Kunchorn Temple, Bangkok Metropolis
- Thewarat Thammasapa Building, Thewarat Kunchorn Temple, Bangkok Metropolis
- Golden Teak Museum, Thewarat Kunchorn Temple, Bangkok Metropolis
- Thewarat Kunchorn Building, Thewarat Kunchorn Temple, Bangkok Metropolis
- MorWorKor Chalerm Phra Kiat Building, Thewarat Kunchorn Temple, Bangkok Metropolis
- Ban Ekanak Museum, Bangkok Metropolis
- Interview and Observation by Using Observation Form as a Tool for Data Survey
- Taking Photos and Videos of the Architecture of the Gingerbread Houses for Field Survey
- Architectural Drawing of Gingerbread Houses
- Data Analysis Using Descriptive Data Analysis
- Conclusion, Discussion and Suggestion

Study Result

The architecture of the Gingerbread houses in Bangkok Metropolis is classified into the following details.

The Gingerbread pattern is found in these buildings.

- Thai Traditional Buildings
- Monastic Cells, Suan Plu Temple
- Golden Teak Museum
- Thewanaruemit Building, Thewarat Kunchorn Temple
- Thewarat Thammasapa Building, Thewarat Kunchorn Temple
- Thewarat Thammasathit Building, Thewarat Kunchorn Temple
- MorWorKor Chalerm Phra Kiat Building, Thewarat Kunchorn Temple
- Ban Ekanak Museum

Materials used for constructing the Gingerbread houses are divided into 3 groups.

Wooden Building

- Monastic Cells, Suan Plu Temple
- Half-Wood-Half-Concrete Buildings
- Thewarat Thammasapa Building, Thewarat Kunchorn Temple
- Golden Teak Museum, Thewarat Kunchorn Temple
- Ban Ekanak Museum
- Brick-and-Mortar Buildings
- Thewarat Thammasapa Building, Thewarat Kunchorn Temple
- Thewanaruemit Building, Thewarat Kunchorn Temple
- MorWorKor, Chalerm Phra Kiat Building, Thewarat Kunchorn Temple
- Three building plans are found in the construction of the Gingerbread houses.
- Rectangular drawings consist of monastic cells in Suan Plu Temple and Thewarat Thammasathit in Thewarat Kunchorn Temple
- Square drawing with octagonal drawing at the end comprises Ban Ekanak Museum.
- Independent Drawings include Thewarat Thammasapa Building in Thewarat Kunchorn Temple, Golden Teak Museum in Thewarat Kunchorn Temple, Thewanaruemit Building in Thewarat Kunchorn Building, MorWorKor, Chalerm Phra Kiat Building, Thewarat Kunchorn Temple.

The Gingerbread houses have 3 forms of roof.

- Manilla Roof: Monastic Cells, Suan Plu Temple
- Hip-Manilla Roofs: Golden Teak Museum in Thewarat Kunchorn Temple, Thewarat Thammasapa Building in Thewarat Kunchorn Temple, Thewarat Kunchorn Building in Thewarat Kunchorn Temple, Thewarat Thammasathit Building in Thewarat Kunchorn Temple, MorWorKor. Chalerm Phra Kiat Building in Thewarat Kunchorn Temple, Ban Ekanak Museum
- Gable Roof: Monastic Cells, Suan Plu Temple

The number of floors in the buildings is as follows:

- 2-Storey Buildings: Monastic Cells in Suan Plu Temple, Thewarat Thammasapa Building in Thewarat Kunchorn Temple, Thewarat Kunchorn Building in Thewarat Kunchorn Temple, Mor.Wor.Kor. Chalerm Phra Kiat Building in Thewarat Kunchorn Temple, Ban Ekanak Museum
- 3-Storey Building: Thewarat Thammasathit Building in Thewarat Kunchorn Temple

The popular colors of the Gingerbread houses are as follows:

- Yellow Building, Red Roof: Golden Teak Museum in Thewarat Kunchorn Temple, Ban Ekanak Museum
- White, Green Building, Red Roof: Thewarat Thammasapa Building in Thewarat Kunchorn Temple
- White, Gray Building, Red Roof: Thewarat Thammasathit Building in Thewarat Kunchorn Temple, Thewanaruemit Building in Thewarat Kunchorn Temple, MorWorKor. Chalerm Phra Kiat Building in Thewarat Kunchorn Temple
- Repainted Buildings, Red, White, Red Roof: Monastic Cells in Suan Plu temple

Decorations found in all buildings are as follows:

Vent Fretwork, Stair Balustrade, Railing, Cooling Fin, Balcony Grille, Fin Eaves, Shore, Stairs, Gable, Door Frame, Window Panel, Splasher

The Gingerbread pattern found is classified into 6 designs.

- Artificial Flowers: Ban Ekanak Museum, Golden Teak Museum in Thewarat Kunchorn Temple, Thewarat Thammasathit Building in Thewarat Kunchorn Temple, MorWorKor. Chalerm Phra Kiat Building in Thewarat Kunchorn Temple
- Cloverleaf: Golden Teak Museum in Thewarat Kunchorn Temple
- Cross: Golden Teak Museum in Thewarat Kunchorn Temple

Current Utilization of the Gingerbread Houses

- Museum: Golden Teak Museum in Thewarat Kunchorn Temple, Thewarat Thammasapa in Thewarat Kunchorn Temple
- Office Buildings, Government Offices (No Museum): Monastic Cells in Suan Plu Temple, Ban Ekanak Museum

Awarded Gingerbread Houses

- Award for Outstanding Building Conservation from Association of Siamese Architects under the Royal Patronage: Monastic Cells in Suan Plu Temple
- Award for Outstanding Building Art and Architecture Conservation 2012, Type: Institute Building and Public Building from Association of Siamese Architects under the Royal Patronage: Ban Ekanak Museum

Building Contractor or Architect

- Thai Citizens: Monastic Cells in Suan Plu Temple, Golden Teak Museum in Thewarat Kunchorn Temple, Ban Ekanak Museum

Time Periods of Construction of Gingerbread Houses

- The Reign of King Rama V: Monastic Cells in Suan Plu Temple, Golden Teak Museum in Thewarat Kunchorn Temple
- The Reign of King Rama VI: Ban Ekanak Museum

Discussion

Position of Building Popularly Decorated with Gingerbread Fretwork

The architectural design of the Gingerbread pattern appearing in the area of Bangkok Metropolis is classified into groups in the previous topics. Regardless of financial status and decorations, the buildings and positions decorated with the Gingerbread pattern are not much different. The designs are adjusted to suit the utilization and weather, and owners have also participated in the design of the houses, and the building contractor have constructed the houses, responding to the owners' needs. These designs cannot be treated as a unique pattern. For example, the porch can be airy or brick-and-mortar, so the Gingerbread patterns are obviously different.

To ensure the convenience of the study in terms of understanding the characteristics and explanations on the positions often found to be decorated with the Gingerbread patterns in various parts of the accommodation buildings, the architectural elements are divided into the following parts.

Gable and Porch: The Gingerbread pattern is decorated in the area of the gable in different positions; however, the long-lathed wood with a pointed tip is placed in the middle of the gable end. (The structural part covers the tiles of the gable and the purlin, used with a building with a gable only). In the position of the lathed wood with a pointed tip of some of the Gingerbread houses, butterfly-pattern fretwork is popularly decorated on the left and right. The bottom of both gable ends is decorated with the short-lathed wood. The differences of the gables depend on owners and building contractors. However, the common characteristics are that the Gingerbread pattern is not decorated on the entire spaces of the gables, as some buildings also have fretwork installed on the gables, creating visual dimension. That is to say, there are double-layered designs, and if the gables are constructed with the faith of Buddhists, Christians and Muslims, the donors' names and the construction years are often written, clearly indicating the construction years. The reason for writing the gable and the porch in the same topic is that the positions of the Gingerbread patterns decorated on both the gable and the porch link with each other. When building owners want to build houses with porches, the parts needed are gables, as the gables are in the same positions as the porches extending from the large parts of the houses. These positions display the splendor of the Gingerbread pattern, compared to other positions. For the history, background and value of the construction of houses with porches, Prince Damrong Rajanubhab wrote to Prince Naris to give an explanation on this matter, saying that during the reign of King Rama IV, in the year of the goat, B.E. 2402 (1859), Somdet Chao Phraya Borom Maha Si Suriyawongse and Krom Muen Witsanunat were assigned to inspect the work in the town.

Eaves: The structural part covers the tip to hide a rough rafter. The rafter is near the inner of the eaves. If some accommodation buildings are not entirely decorated, but if the position of the eaves is popularly and mostly decorated, and if fretworks with a pointed tip are arranged around these eaves, the eaves will look like rain water flowing down from the roof, charming the houses significantly.

Supporter: A gap or wood under a stud beam is called "Supporter". After the supporters are intermittently arranged, there will be a

gap. (A supporter is a part linking between a ceiling and a lower wall.) The space of the gap is often decorated with the Gingerbread pattern to be used as a vent to let air and light pass through. The space is mostly perforated, pretty long, and the width is 1-1.5 feet.

Wall: The Gingerbread pattern decorating walls made of wood board overlapped from the outside of a building, especially, the pattern at the bottom of a window. The reason for overlapping is to prevent animals and insects and rain water from flowing into the building or house. However, above the window, the Gingerbread pattern will have one layer only for ventilating air, and there is no wood wall inside.

Window: During the reigns of King Rama V -Rama VI, windows had the characteristics of double mullion panels, and the bottom parts were windows with the Gingerbread shutters decorated above the windows in curve or rectangular frames, used as an air and light vent.

Door: The Gingerbread pattern is popularly decorated above the doors, both accordion door and double mullion door. The Gingerbread pattern appearing above the doors has 2 designs, consisting of rectangular and semi-circle frames used as air and light vent. In addition, another type of the door rarely found is that the door is higher or lower than doors in general called "Squat Door"

Squat Door: The height of the door is at waist level or balcony level, often installed between the columns of the lower porch, used for preventing pets from entering.

Balustrade: Fretworks are arranged vertically on the balcony, or each fretwork is separated. The design is derived from the arrangement of two fretworks. The design appears in two parts, comprising the pattern on the edges of both fretworks and the pattern of the inner wood, and the torn pattern is famous.

Study Result and Discussion

The Gingerbread house is the name used for calling one type of buildings, influenced by the western architecture entering Thailand during the reign of King Rama IV. The Gingerbread houses are decorated with exquisite, magnificent and splendid fretwork, and the pattern looks like ginger. The word Gingerbread or Khanom Pang Khing is used for calling such pattern. The Gingerbread houses in Thailand are found in several locations, such as Vimanmek Mansion (Bangkok Metropolis), Baan Wong Buri (Phrae Province), Phra Thanesuan House, Sanam Chandra Palace (Nakhon Pathom Province), etc. Meanwhile, A group of buildings decorated with the Gingerbread pattern in Bangkok Metropolis comprise 1 to 3-storey buildings, constructed with wood or brick-and-mortar buildings, and the upper floor is built with wood, such as monastic cells in Suan Plu Temple, Phanthawakarn School Building, monastic cells, Golden Teak Museum in Thewarat Kunchorn Temple, Thewarat Kunchorn Building, Naruemit Building, Thewarat Thammathit Building, Mor.Wor.Kor. Chalerm Phra Kiat Building and Ban Ekanak Museum, etc.

The Gingerbread pattern is decorated in various parts of buildings vertically and horizontally, and the pattern also includes a pattern inside curve frame and gap fretwork.

The Patterns of the Wood are as follows

- **Floral Pattern:** Flowery and Leave Pattern with Kankhot Design as Main Component

- **Gap Pattern:** Most of the patterns are vertical caused by a perforated wood board, the left and right wood boards are similar. Additionally, the pattern is rather opaque, that is to say, the wood board is larger than the gap. Moreover, for the airy pattern caused by the gap, building contractors always design each pattern for different types of the gap, such as leaves, bird wings, heart, three petal flower, four petal flower, coil, etc.
- **Eave Pattern:** The Gingerbread pattern appears on the edges of various parts of buildings, consisting of eaves, splasher, cooling fin under an upper floor, window splasher and door splasher. Building contractors often design patterns that suits the space. The eave pattern is small in size, and the pattern is both vertical and horizontal on a wood board. The ends of the eaves have different characteristics, such as curved, pointed or notched. However, the eave pattern always has 2 characteristics. Most of the space is perforated to create designs, but some space uses a wood board as designs. The eaves have been designed on the wood board with little perforation, and the pattern is often in the center of the wood board. Meanwhile, the eaves will have perforation, and the famous perforation comprises the perforated designs of spawn, mosquito larva, heart, symbol, etc.

Positions of Buildings with Decoration

The decoration of buildings with the Gingerbread pattern appears in Suan Plu Temple, Thewarat Kunchorn and Ban Ekanak Museum

in Bangkok Metropolis. The decoration is often found in various parts of the buildings. The Gingerbread pattern focuses on the splendor of the buildings, and at the same time, the splendid pattern is useful, such as allowing light to enter rooms in the buildings, preventing sunlight and venting air, etc. The Gingerbread pattern is decorated in various parts of the buildings as follows:

1. **Air Vent:** The Gingerbread pattern is installed above a door in the form of both semi-circle and rectangle along the door panel of each gap.
2. **Supporter:** The Gingerbread pattern is probably installed along a wall in a part connected with a ceiling, both vertically and horizontally.
3. **Cooling Fin:** The Gingerbread pattern is decorated under an upper floor. If the cooling fin under the floor is significant, the colling fin will be larger, being seen clearly, and the Gingerbread pattern is always vertical.
4. **Eave Cooling Fin:** The Gingerbread pattern is in the area of the eaves, both vertically and slantingly. Meanwhile, the pattern of the cooling fin in this part is tiny, both vertically and horizontally, but it is mostly horizontal.
5. **Door Panel:** The Gingerbread pattern is decorated on an accordion door and a double-panel door, and the pattern is installed in the upper part of a building only.
6. **Cooling Fin under Ceiling:** The Gingerbread pattern is under the ceiling in the building of Ban Ekanak, and a horizontal pattern is famous [1-8].

Conclusion

Table 1: Overall Conclusion of the Gingerbread Houses

Characteristics	Gingerbread Monastic Cells Suan Plu Temple	Ban Ekanak Museum
House Drawing Plan	The drawing plan is in parallel, being a 2-storey wooden building, rectangular drawing plan.	Rectangular Drawing Plan
Outer Characteristics	2-Storey Wooden Building, Gable Extending Forward, Closed 2-Storey Wooden Building	Half European, Half Hip Roof Building, 2-Storey Building, Brick Lower Floor, Wood Upper Floor
Roof Characteristics	Gable and Hip Roof, Perforated Gable and Eaves ↓	Hip Roof
Door	Aluminum Sliding Door and Opening Panel	Opening Panel
Window	Opening Panel, Wood Shutter, Perforated Wood Vent and Lower Part of Window Called Gingerbread Pattern and Wood Panel	Opening Panel, Wood Shutter, Air Vent above Window, Decorated with Gingerbread Pattern
Structure	2-Storey Wood Building	2 ½-Storey Half Wood, Half Concrete Building
Building Color	Red and White Colors for Building Exterior	White Color for Building Exterior
Ceiling	No Ceiling Decoration	No Ceiling Decoration

Table 2: Overall Conclusion of Gingerbread Houses

Various Characteristics	Golden Teak Museum, Thewarat Kunchorn Temple	Thewarat Thammasapa Building, Thewarat Kunchorn Temple
House Drawing Plan	Several Connected Rectangular Drawing Plans	Rectangular Drawing Plans with Porch Extending Forward, Rectangular Pattern
External Characteristics	Thai Traditional House Decorated with Perforated Wood Called Gingerbread Pattern, Gable and Manilla Patterns, High Ceiling, High Roof	Thai Traditional House Decorated with Perforated Wood Called Gingerbread Pattern, Hip Roof
Roof Characteristics	Hip Roof Mixed with Manilla Roof Decorated with Perforated Wood on Gable and Perforated Eaves	Hip Roof Decorated with Eave Fin and Supporter
Door	Opening Panel, Sliding Door and Opening Door	Opening Panel and Accordion Door
Window	Opening Panel, Wood Shutter Decorated with Gingerbread Pattern above Window and Air Vent	Opening Panel, Wood Shutter
Structure	2-Storey Reinforced Concrete Building	2-Storey Brick-and-Mortar Building
Building Color	White for Building Exterior	White and Green Building Exterior
Ceiling	No Ceiling Decoration	No Ceiling Decoration

Table 3: Overall Conclusion of Gingerbread Houses

Various Characteristics	Thewarat Thammasathit Building, Thewarat Kunchorn Temple	Thewanaruemit Building, Thewarat Kunchorn Temple
House Drawing Plan	Rectangular Drawing Plan, Porch Extending Forward, Rectangular Pattern	Rectangular Drawing Plan
External Characteristics	Applied Thai Traditional House Decorated with Perforated Wood Called Gingerbread Pattern, Hip Roof, 3-Storey, High Ceiling, High Roof	Applied Thai Traditional House Decorated with Perforated Wood Called Gingerbread Pattern, Hip Roof, 2-Storey, High Ceiling, High Roof
Roof Characteristics	Hip Roof Decorated with Perforated Gable and Eaves	Manilla Roof with Perforated Wood Eaves
Door	Opening Wood Panel	Opening Wood Panel
Window	Opening Wood Panel and Hung Window Decorated with Gingerbread Pattern under Window	Opening Wood Panel and Hung Window Decorated with Gingerbread Pattern above Window
Structure	3-Storey Reinforced Concrete Building	2-Storey Reinforced Concrete Building
Building Color	White and Gray Building Exterior	White and Gray Building Exterior
Ceiling	No Ceiling Decoration	No Ceiling Decoration

Table 4: Overall Conclusion of Gingerbread Houses

Various Characteristics	MorWorKor. Chalerm Phra Kiat Building, Thewarat Kunchorn Temple
House Drawing Plan	Rectangular Drawing Plan
External Characteristics	Applied Thai Traditional House Decorated with Perforated Wood Called Gingerbread Pattern, Hip Roof, 2-Storey, High Ceiling, High Roof
Roof Characteristics	Hip Roof
Door	Opening Wood Panel Decorated with Perforated Wood above Door
Window	Opening Wood Panel, Shutter Decorated with Gingerbread Pattern above Window, Air Vent and Splasher
Structure	2-Storey Reinforced Concrete Building
Building Color	White and Gray Building Exterior
Ceiling	No Ceiling Decoration

Recognition

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