



Unifying Gothic Architectural Elements and Local Wisdom Ornaments of The Sentani In The Design of The Paroki Sang Penebus Catholic Church Building In Jayapura District

Novisca M Anditiaman^{1*} and Asep Yudi Permana² 

¹ Student of The Master of Architecture Study Program, Universitas Pendidikan Indonesia, Bandung 40154, Indonesia

² Master of Architecture Study Program, Universitas Pendidikan Indonesia, Bandung 40154, Indonesia
noviscam24@upi.edu

Abstract. Indonesia is an archipelagic country with diverse cultural and architectural riches. Each tribe has its local wisdom, which are reflected in various aspects of life, including architecture. Jayapura Regency, which is located at the eastern tip of Indonesia and is home to Sentani Tribe, which is famous for its rich local wisdom, provides a challenge in producing a Catholic Church building design with the concept of combining Gothic architectural elements and tribal local wisdom ornaments so that it has the potential to produce unique, beautiful and contextual Catholic church architecture. The research purpose is to analyze the integration of Gothic architectural elements with local wisdom ornaments of the Sentani tribe in the design of the Paroki Sang Penebus Catholic Church Building in Jayapura Regency and to identify the meaning and symbolic value contained in this architectural combination. The method is qualitative with a descriptive approach and thematic analysis. The design of the Catholic Church building is based on several main concepts, namely functional, aesthetic, harmonious combination, and cultural identity. The results of the design of the Catholic Church building in Jayapura Regency show a harmonious integration between elements of Gothic architecture and the local wisdom of the Sentani Tribe. This can be seen from several aspects such as shape, ornamentation, and detail, as well as the meaning and symbolism contained in the resulting design. The combination of Gothic architecture and local wisdom of the Sentani tribe in the Paroki Sang Penebus Catholic Church building contains deep meaning and symbolic value.

Keywords: Catholic Church, Gothic Architecture, Qualitative Method, Local Wisdom of the Sentani Tribe.

1 Introduction

Ecclesiastical architecture is based on the art and science of designing and constructing church buildings, with a focus not only on aesthetics but also on creating functional spaces conducive to worship. Church architectural styles have evolved throughout history [1], and some of the most well-known styles include Basilica, Romanesque, Gothic, Baroque, and Modern. There are traditional styles, including those from Indonesia [2], as well as styles that combine European and traditional concepts [3][4].

Gothic architecture [2] emerged in France in the 12th century and developed rapidly throughout Europe, greatly influencing developments in the Middle Ages [5]. This style is an evolution of Roman architecture [6] with an emphasis on vertical lines, lighting, and light construction. The development of Gothic architecture [7] is marked by the strengthening of existing religious influences [8]. Gothic architecture represents one of the sacred architectures [9][10].

Functionally and aesthetically, Gothic architecture [11] has a lighter structure with the use of pointed arches and rib vaults, good acoustics using high interior [12][13] spaces with stone walls and curved ceilings, and better lighting with the use of large windows such as stained glass. which is beautiful and tells Bible stories that help Catholics to learn about the faith and illuminates interior spaces [14] with colorful light and contains religious concepts [13][15].

Gothic architecture [13][16][17] was chosen by the Catholic Church because it has a strong symbolic meaning, is considered a symbol of God's glory, creates a spiritual atmosphere [18], and reflects the values of the Church. The entry of Gothic architecture into Indonesia [19] shows that this style is still relevant and can be adapted to the local cultural context of Indonesia [20], an archipelagic country with diverse cultural and architectural riches [21].

Jayapura Regency, which is located at the eastern tip of Indonesia and is home to various tribes and cultures, including the Sentani Tribe, which is famous for its rich local wisdom, provides a challenge in producing a Catholic Church [1] building design with the concept of combining Gothic architectural elements and tribal local wisdom ornaments so that it has the potential to produce unique [22], beautiful and contextual Catholic church architecture. Where, Gothic architecture [22][23] offers a sturdy structure and majestic aesthetics, while local tribal wisdom ornaments can provide a touch of local culture and identity [23].

2 Research Method

The method used in this research is a design method using a qualitative approach with a descriptive and analytical approach. If a design method is a method that involves several phases carried out in the design process, this method is needed to help designers develop design ideas [24].

The development pattern is by carrying out several stages of analysis accompanied by literature studies that support the theory.

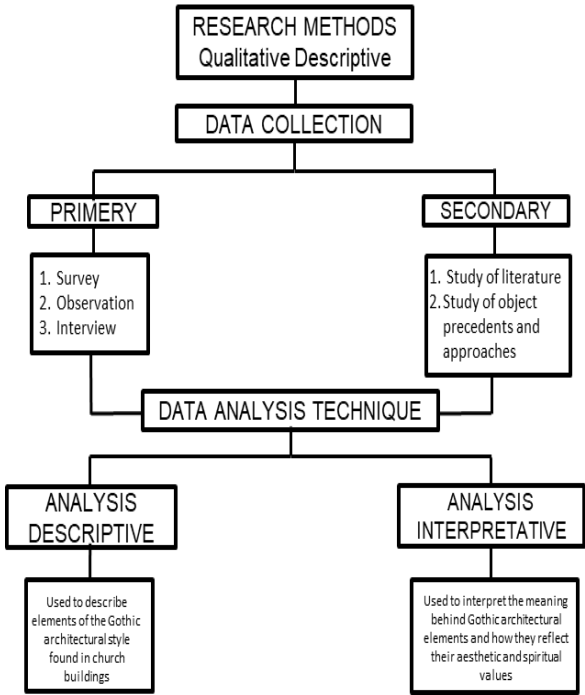


Fig. 1. Research Method.

The analysis and concept formulation are carried out as shown in the flow below (see Fig. 2) [25].

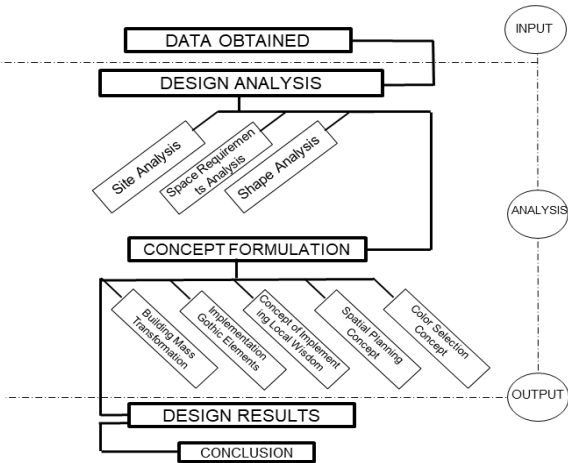


Fig. 2. Analysis Method.

3 Result and Discussion

3.1 Design Analysis

Site Analysis. The Paroki Sang Penebus Catholic Church in Sentani, Jayapura Regency, Papua, Indonesia. The north side is directly connected to the highway, the west side is connected to commercial and residential buildings, the south side is connected to the highway and residential areas, and the east side is connected to residents' homes (see Fig. 3).



Fig. 3. Environmental conditions around the site.

Space Requirements Analysis. The space requirements analysis will explain the space requirements between activities and users which are carried out following the needs and sequence of activities in the Paroki Sang Penebus Catholic Church in Sentani by applying a combination of Gothic architectural style with the local wisdom of the Sentani tribe. 3 rooms have their respective functions, namely: the ground floor is used as a multipurpose room, the second floor is used as a sacred prayer room and the balcony floor is used as an alternative space for the congregation during worship.

The Paroki Sang Penebus Catholic Church in Sentani is designed for a capacity of 1000 people on the second floor and a capacity of 500 people on the balcony.

Table 1. Second-floor space requirements.

ROOM NAME	NUMBER OF SPACES	SPACE SIZE (m2)
Warehouse	1	28,75
Adoration	1	72,04
Priest's home	1	123,30
R collective	1	24,61
R sound system	1	14,47
Wash equipment	1	7,40
R church	1	912,94
R confession	1	24,90
R sacristy	1	24,79
	Total	1233,20
	Circulation 30%	369,96
	Total Area	1603,16

Table 2. Balcony space requirements.

ROOM NAME	NUMBER OF SPACES	SPACE SIZE (m2)
Warehouse		16,96
R multimedia		16,95
Balcony		330,37
	Total	364,28
	Circulation 30%	109,28
	Total Area	473,57

Shape Analysis. The form used is adjusted to the theme used, namely aesthetic and spiritual. Apart from that, it will display aesthetic formations and contain spiritual value [26][27]. The following is an analysis of the form of implementation of the elements and the characteristics of the application of the Gothic architectural style [28][29][30].

1. Plan and structure

- Latin cross plan, separating the liturgical hall and the choir hall.
- Bone frame structure, the roof of the church uses a bone frame structure, allowing the interior to be tall and airy, giving a solemn and spacious impression.
- The tall, slender Gothic church tower rises into the sky, symbolizing closeness to God.

2. Curved shape

- Arched windows, arched windows are a characteristic feature of Gothic architecture. This curved shape allows natural light to enter the church, creating a solemn and inspiring atmosphere.
- Arched ceilings and curved ceilings in Gothic churches give the impression of a spacious and majestic space.

- Arched doors, arched doors in Gothic churches give a majestic and monumental impression.
- 3. Vertical elements
 - Columns, tall and slender columns support the bone frame structure, giving the impression of a tall and majestic space.
 - The Pinnacle, a spire structure that soars into the sky, gives a majestic and monumental impression.
- 4. Ornaments and decoration
 - The Rib vault, a curved ceiling structure with a rib pattern, gives the impression of a complex and beautiful space.
 - Stained glass, colorful stained glass tells Bible stories. The light entering through the stained glass gives a solemn and inspiring impression.
 - Carved, intricate carvings decorate various architectural elements of the church, such as doors and windows. This carving gives the impression of extraordinary detail and beauty.

Apart from form analysis based on elements and characteristics of the Gothic architectural style, there is also form analysis inspired by the local wisdom of the Sentani tribe, among others:

1. Lake Sentasi community house

The people of Lake Sentani, Jayapura, have unique and interesting characteristics. These stilt houses are usually built on water, using wood and other natural materials.
2. The shape of the men's Sentani hat is cone-shaped and tall

Sentani hats (knock nok) play an important role in expressing individual and group identity. Sentani hats often contain elements that connect the wearer to the spirit world and the spirits of their ancestors.
3. Khomboyeu traditional house

Khomboyeu's architectural features and symbolic objects reflect the cosmology of the Sentani people and their deep connection to their ancestral heritage. Khomboyeu's tall structure symbolizes the connection between the earthly and the spiritual. The main pillar, known as Yabuk, is the heart of Khomboyeu.
4. Sentani bamboo tifa (Wachu)

The Sentani bamboo and wooden tifa is a musical instrument that is believed to attract the attention of ancestral spirits with its sound and vibrations, bridging daily and spiritual life. The Tifa is decorated with carvings and paintings that symbolize ancestors, the universe, and Sentani cultural values.
5. Rowing Sentani (Hewa)

Paddle Sentani symbolizes the deep connection of the Sentani people with water. Intricate carvings and paintings on paddles depict ancestral figures, aquatic creatures, and natural elements, and may represent the paddle user's clan, lineage, or personal accomplishments.
6. Sentani bow and arrow

The Sentani bow and arrow are a visible symbol of the hunting skills of the Sentani people and their deep connection with nature. The shape of the Sentani bow reflects the graceful movement of the bird and the tension of the drawn bow, symbolizing

strength, precision, and harmony with nature. The straight shaft and pointed tip of the arrow symbolize concentration, speed, and the ability to penetrate the target.

7. Sentani stone ax (Tomaco stone)

The Sentani stone ax is a real symbol of the tool-making skills and ingenuity of the Sentani people. The Sentani stone ax is a reminder of the Sentani people's deep ties to the land and respect for nature.

3.2 Concept Formulating

Building Mass Transformation. The mass of the building was inspired by people's houses on Lake Sentani (see Fig. 4).

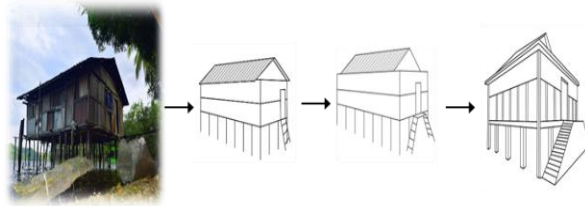


Fig. 4. Transformation of the basic shape of the houses of the Lake Sentani community.

The arch on the front view of the Catholic church design is a transformation of shape inspired by the traditional hat of the Sentani tribe or Nock-nock (see Fig. 5).

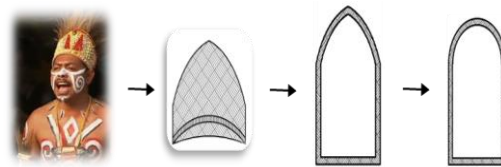


Fig. 5. Transformation of the basic shape of the traditional Sentani hat.

The tower in the Catholic church design is a shape transformation inspired by the Khomboyeu traditional house (see Fig. 6).

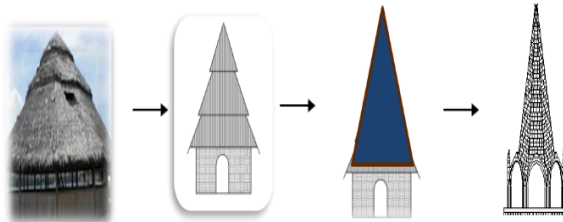


Fig. 6. Transformation of the basic form of the Khomboyeu traditional house.

The non-structural form in the front view of the Catholic church design is a form transformation inspired by the Sentani or Wachu bamboo tifa (see Fig. 7).

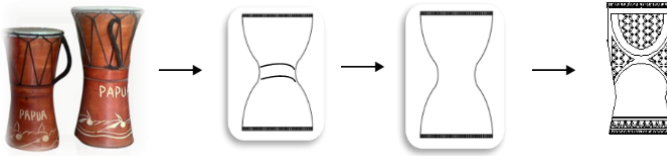


Fig. 7. Transformation of the basic shape of Sentani bamboo tifa.

The form of exterior decorative ornaments in the design of Catholic churches is a form transformation inspired by the Sentani or Hewa paddle (see Fig. 8).

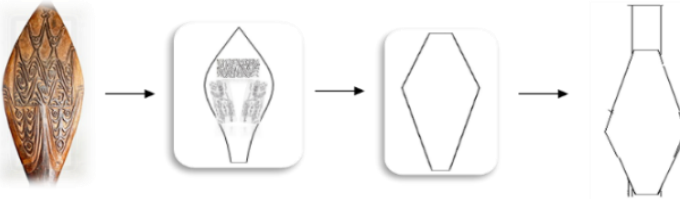


Fig. 8. Transformation of the basic shape of the Sentani paddle.

The shape of the ornaments on the tower walls in the design of the Catholic church is a form transformation inspired by the bows and arrows of the Sentani tribe (see Fig. 9).

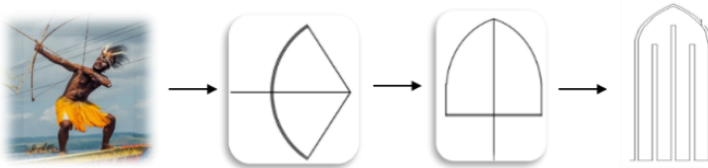


Fig. 9. Transformation of the basic shape of the Sentani bow and arrow.

The shape of the side of the door in the design of a Catholic church is a shape transformation inspired by the Sentani or Tomako stone axe (see Fig. 10).

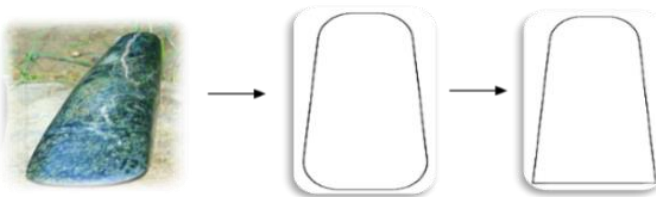


Fig. 10. Transformation of the basic shape of the Sentani stone axe.

Implementation of Gothic Elements. The design of the Paroki Sang Penebus Catholic Church in Sentani is based on the Gothic architectural approach and uses its distinctive elements. The design concept was carried out to achieve a design result that is aesthetic and contains spiritual values that can increase Catholics' interest in worship. Gothic architectural elements used are pointed arches, ribbed vaults, rose windows, doors, and stained glass windows (see Fig. 11 and 12).

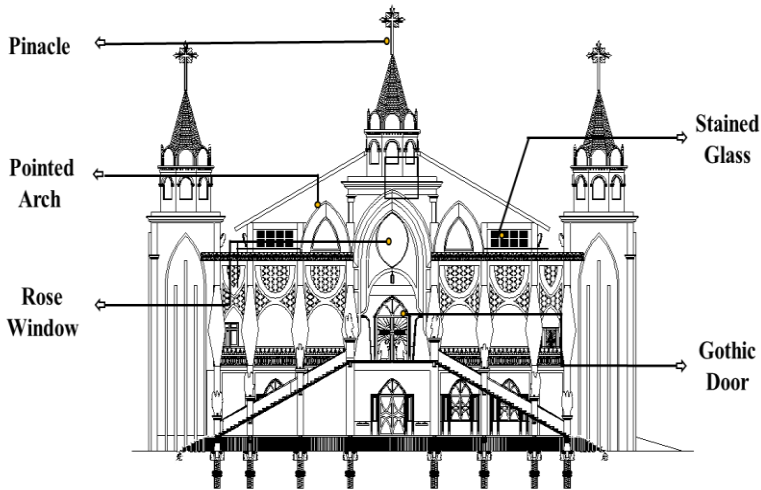


Fig. 11. Implementation of Gothic Architectural elements (a).



Fig. 12. Implementation of Gothic Architectural elements (b).

Concept of Implementing Local Wisdom. Sentani not only utilizes a Gothic architectural approach by applying its distinctive elements but also combines it with the local wisdom of the Sentani community to create spirituality. This increases the interest of Catholics in worship and becomes a symbol and symbol of the Papuan people, especially the Sentani people.

The design of this church refers to the local wisdom of the Sentani people and includes a variety of shapes inspired by unique objects from the Sentani people (see Fig. 13 and 14).

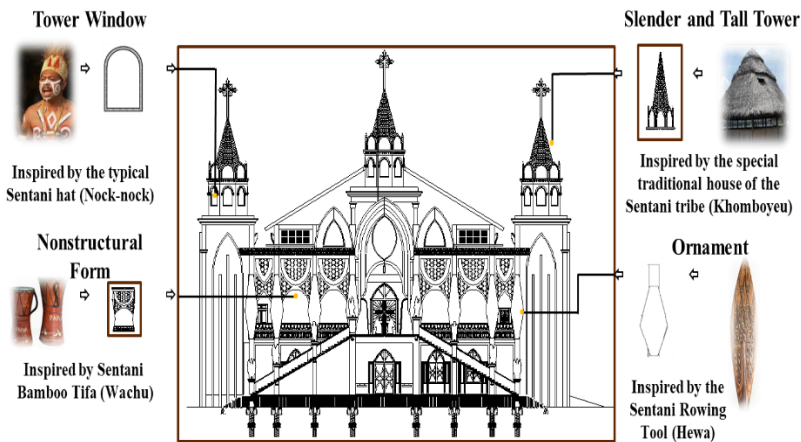


Fig. 13. Implementation of the Local Wisdom of the Sentani Tribe (a).

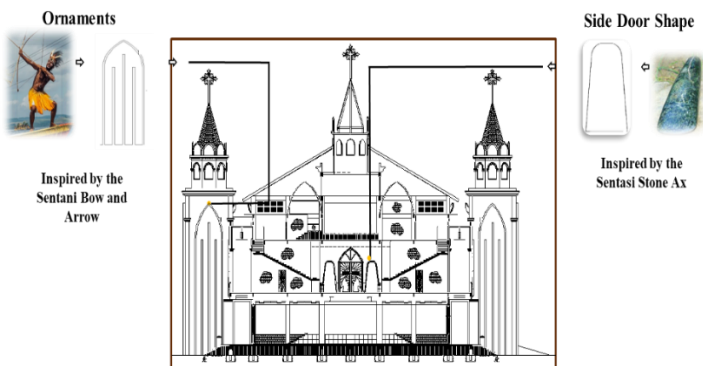


Fig. 14. Implementation of the Local Wisdom of the Sentani Tribe (b).

Spatial Planning Concept. The church is divided into three building masses because there are several different types of activities, both liturgical and non-liturgical (see Fig. 15). The first building mass is a multi-purpose building that is used as a place for church

activities or events. Furthermore, the main Mass building is the church building involved in liturgy such as the Mass and the Eucharist. The third mass is the balcony which is used as a place for excessive congregation.

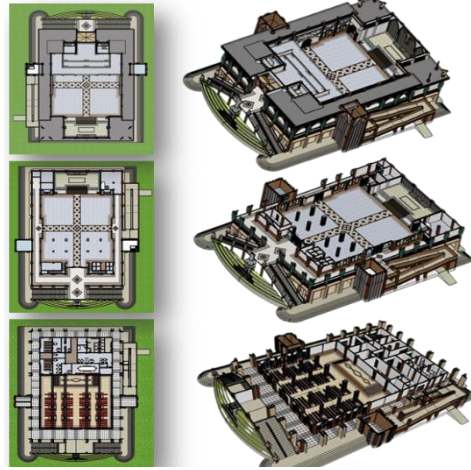


Fig. 15. Axonometry.

Color Selection Concept. The design of the Paroki Sang Penebus Catholic Church in Sentani uses general colors, namely brown and white. The color brown symbolizes equality and humility, determination to respect God's creation, living sustainably, and surrendering to God's will. For Catholics, the color brown is a reminder to live simply, be disciplined, and focus on spiritual matters. White symbolizes purity, purity, and joy. Its association with the bright colors typical of the Sentani people, such as red, yellow, and blue, reflects the joy and enthusiasm for life of the Sentani people and strengthens the cultural identity of the Paroki Sang Penebus Catholic Church in Sentani.

4 Conclusions

The results of this design have shown that the combination of Gothic architectural style elements and local cultural wisdom implemented in the Paroki Sang Penebus Catholic Church in Sentani, Jayapura Regency provides a deeper understanding of the important symbolic and functional meaning of the application of each arc element. pointed arches, rib vaults, rose windows, gothic doors stained glass windows and transformations of shapes and ornaments inspired by the local cultural wisdom of the Sentani Tribe. The results of this design have also shown that the application of the design concept of a combination of Gothic architectural style elements and the transformation of forms and ornaments from the local wisdom of the Sentani Tribe in the design of the Paroki Sang Penebus Catholic Church in Sentani, Jayapura Regency can increase the aesthetic value and optimal spiritual meaning which can be achieved. seen from the use of Gothic style

architectural elements themselves as well as through the concept of floor plan and structure design, curved shapes, vertical elements as well as transformations and ornaments inspired by the local wisdom of the Sentani tribe which are used to increase the sense of solemnity, splendor and connection with God for the people who occupies it.

Acknowledgments. Thank you to those who helped in the form of references that were used as references and provided an overview to the author. Thank you also to those who are willing to be resource persons who provide information regarding the local wisdom of the Sentani tribe which is the basis for completing this journal.

Disclosure of Interests. The author declares that there is no conflict of interest that could influence the results of this study. This research was not funded by any party that could affect objectivity, and the author has no personal or professional relationships with individuals or organizations that have an interest in the results of this study. This research was conducted with respect for the cultural heritage of the Sentani community, where interaction with local stakeholders is an important part to ensure that the use of traditional ornaments is in accordance with local cultural values. In the context of architecture and religion, this study aims to create harmony between Gothic architectural elements and local wisdom without siding with or dominating one element. The author confirms that this research was conducted with full integrity to respect both traditional values and modern architectural aesthetics.

References

1. S. Pramudito, G. O. I. Cahyandari, and M. I. Arifin: Identification of Architectural Ornaments of Santo Albertus Jetus Church Yogyakarta. *Local Wisdom J. Ilm. Kaji. Kearifan Lokal* **11**(2), 146–157, doi: 10.26905/lw.v11i2.2930 (2019)
2. Ramzy, N. S.: The Dual Language of Geometry in Gothic Architecture The Symboli. *J. Mediev. Art Archit.* **5**(2). 2–3, [Online]. Available: <https://digital.kenyon.edu/perejournal/vol5/iss2/7> (2015)
3. Suryanugraha, C. H.: *Rupa Dan Citra: Aneka Simbol Dalam Misa*. Sangkris, Bandung (2004)
4. Estika, N. D., Kurniati, F., Kusuma, H. E. and Widyawan, F. B.: Makna Kesakralan Gereja Katolik. *Jurnal Lingkung Binaan Indonesia* **6**(3), 195–202, doi: 10.32315/jlbi.6.3.195 (2017)
5. Mitrache, A.: Ornamental Art and Architectural Decoration. *Procedia - Soc. Behav. Sci.*, vol.51, pp. 567–572, doi: 10.1016/j.sbspro.2012.08.207 (2012)
6. Kavalier, E. M.: Renaissance gothic: Pictures of geometry and narratives of ornament. *Art Hist.* **29**(1), 1–46, doi: 10.1111/j.1467-8365.2006.00491.x. (2006)
7. Balik, D. and Allmer, A.: A critical review of ornament in contemporary architectural theory and practice. *A/Z ITU J. Fac. Archit.* **13**(1), 157–169, doi: 10.5505/ituja.2016.73745 (2016)
8. Mashuri: Proses Berarsitektur dalam Telaah Antropologi: Revolusi Gaya Arsitektur dalam Evolusi Kebudayaan. *J. Ruang* **2**(2), 53–58 (2010)
9. Molines, C. J. M. and Almerich-Chulia A.: Aesthetics and incidence of the rose window in the santos juanes church, Spain, *Civ. Eng. Archit.* **9**(1), 240–254, doi: 10.13189/cea.2021.090120 (2021)
10. Trapani: Cities' Identity Through Architecture and Arts. *Proceedings Of The 1st International Conference on Cities' Identity Through Architecture and Arts, Cairo, Egypt, 11–13 May 2017*, 1–23 (2016)

11. Jamila, B. A. A. and Brisibe, W. G.: Ecclesiastical Architecture in Nigeria: Exploring Unifying Elements in the Design of Worship Centers. *Int. J. Res. -GRANTHAALAYAH*. 10(10), 88–106, doi: 10.29121/granthaalayah.v10.i10.2022.4626 (2022)
12. Shafiq, J.: Architectural Elements in Islamic Ornamentation: New Vision in Contemporary Islamic Art,” *Art Des. Stud.*, vol. 21, no. August, pp. 11–21, [Online]. Available: <https://core.ac.uk/download/pdf/234685881.pdf>. (2014)
13. Kurnia, A. S.: Local wisdom as the embodiment of the latest architecture thought. *IOP Conf. Ser. Mater. Sci. Eng.*, **508**(1), 1–6, doi: 10.1088/1757-899X/508/1/012022 (2019)
14. Permana, A. Y., Nurrahman, H. and Permana, A. F. S.: Systematic assessment with ‘poe’ method in office buildings cases study on the redesign results of office interior after occupied and operated. *J. Appl. Eng. Sci.* 19(2), pp. 448–465, doi: 10.5937/jaes0-28072 (2021)
15. Harwood, B., May, B. and Sherman, C.: *Architecture and Interior Design Through the 18th Century: An Integrated History*. Illustrate. the University of Michigan: Prentice Hall (2002)
16. Garg, A.: Evolution of Architectural Ornamentation A comparison between ancient and modern era (1900–2020). *ResearchGate*, no. October, doi: 10.13140/RG.2.2.31763.09764 (2020)
17. Bork, R.: Dynamic Unfolding and the Conventions of Procedure: Geometric Proportioning Strategies in Gothic Architectural Design. *Archit. Hist.* 2(1), p. 14, doi: 10.5334/ah.bq. (2014)
18. Putri, P. A., Titisari, E. Y. and Wikantiyoso, R.: Structural System and Local Cultural Wisdom in The Traditional Architecture of Kenali Lampung Which is Currently Starting to be Rare. *Local Wisdom J. Ilm. Kaji. Kearifan Lokal* 14(1), 106–115, doi: 10.26905/lw.v14i2.6875 (2022)
19. Pesumay, A. J. : Local Wisdom in a New Paradigm: Applying System Theory to the Study of Local Culture in Indonesia. *IOP Conf. Ser. Earth Environ. Sci.*, vol. 175, no. 1, doi: 10.1088/1755-1315/175/1/012037 (2018)
20. Sudarwani, M.: The Local Wisdom Form of Sustainable Architecture in Penglipuran Village. *Int. J. Eng. Technol. Manag. Res.* 5(3), 59–66, doi: 10.29121/ijetmr.v5.i3.2018.177 (2020)
21. Sağlam, H. : Re-thinking the Concept of ‘Ornament’ in Architectural Design. *Procedia - Soc. Behav. Sci.*, vol. 122, pp. 126–133 , doi: 10.1016/j.sbspro.2014.01.1314 (2014)
22. Poor, P. N. and Javid, P.: Philosophy, Geometry, and Purpose in Islamic and Gothic Architecture as Two Religious-Based Styles. *Int. J. Archit. Environ. Eng.* **15**(2), 90–97 (2021)
23. Pramitasari, P. H. and Harjanto, S. T.: The Role of Local Wisdom Values for Achieving Healthy Housing Concept in Humid Tropical Climate. *Local Wisdom J. Ilm. Kaji. Kearifan Lokal* **14**(1), 73–83 , doi: 10.26905/lw.v14i2.6774 (2022)
24. Ratodi, M.: *Metode Perancangan Arsitektur*. Nulisbuku, Surabaya (2015)
25. Darmawan, E. and Rosita, M.: *Konsep Perancangan Arsitektur*. Erlangga, Jakarta (2016)
26. Atmadjaja, J. S. and Dewi, M. S.: *Estetika Bentuk*. 1st ed. Gunadrama, Jakarta (1999)
27. Susanti, I., Permana, A. Y., Pratiwi, W. D. and Widiastuti, I. : Territorial space: Structural changes in a religious tourism area (The case of Kampung Mahmud in Bandung, West Java, Indonesia). *IOP Conf. Ser. Earth Environ. Sci.*, vol. 447, no. 1, doi: 10.1088/1755-1315/447/1/012031 (2020)
28. Kristiadi, A.: Study of Theory, Method, Application of Gothic Church Architecture. *Arsitektura J. Ilm. Arsit. dan Lingkung. Binaan* 16(2), 165–174 (2018)
29. Poynter, E. J.: *Architecture Gothic and Renaissance*. CreateSpace Independent Publishing Platform, London (2018)

30. Hutama, K: Seni Ragam Hias Stained Glass pada Bangunan-Bangunan di Jakarta. Jurnal Dimensi Seni Rupa dan Desain. 2. 99-113. 10.25105/dim.v2i2.1266 (2016)

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

