

RESEARCH ARTICLE

Open Access

Exploration of Fabric Motif Design Based on Gebyok Ornamentation of Sunan Drajat's Tomb Using Motifia

Khozinatus Sadah^{1*}, Widi Sarinastiti², Akhmad Alimudin³

^{1*,2,3} D3 Multimedia Technology and Broadcasting, Department of Creative Multimedia Technology, Politeknik Elektronika Negeri Surabaya, Surabaya City, East Java Province, Indonesia.

*Correspondence email:
zinsadah@pens.ac.id.

Received: 11 June 2026
Accepted: 25 July 2026
Published: 30 July 2026

Full list of author information is
available at the end of the article.

Abstract

The decorative ornaments on the gebyok (wooden wall) of Sunan Drajat's tomb pavilion represent the cultural transition from Hinduism to Islam on Java's northern coast, yet studies of these ornaments remain largely confined to aesthetic and symbolic interpretation rather than applicable textile design. This study explores ornaments on two gebyok panels, CA3 and CB5, into contemporary fabric motifs using Motifia, a web-based pattern design platform from Politeknik Elektronika Negeri Surabaya, through a Research through Design approach comprising visual documentation, character analysis, ornament tracing, motif selection, and exploration. Motifs were selected based on contour clarity, representativeness of each panel's dominant character, and suitability for repetition, then composed according to modularity, repetition, symmetry, and visual balance. The exploration yielded eight distinct compositions, four from CA3 (lotus and tendril ornament) and four from CB5 (mountain, tree-of-life, and stylised lion-head ornament), with CB5-based compositions retaining the site's visual identity more strongly since their motifs are more distinctive to Sunan Drajat's tomb than the widely recurring lotus motif on CA3. The findings extend the design value of tomb ornaments beyond documentation, offering a replicable process for translating tangible heritage into applicable, culturally grounded motifs.

Keywords: Motif Design Exploration; Sunan Drajat Tomb Decorative Ornaments; Motifia; Research through Design.

Abstrak

Ragam hias pada gebyok cungkup makam Sunan Drajat merepresentasikan nilai budaya peralihan Hindu ke Islam di pesisir utara Jawa, namun kajiannya masih didominasi pembahasan estetika dan simbolis, belum diterjemahkan menjadi desain motif kain aplikatif. Penelitian ini mengeksplorasi ragam hias pada dua panel gebyok, CA3 dan CB5, menjadi motif kain kontemporer menggunakan Motifia, platform desain pola berbasis web dari Politeknik Elektronika Negeri Surabaya, melalui pendekatan *Research through Design* yang terdiri atas dokumentasi visual, analisis karakter visual, tracing, seleksi, dan eksplorasi motif. Motif diseleksi berdasarkan kejelasan kontur, representativitas karakter visual dominan tiap panel, dan kesesuaian untuk diulang, kemudian disusun berdasarkan prinsip modularitas, pengulangan, simetri, dan keseimbangan visual. Hasil eksplorasi menghasilkan delapan komposisi motif yang *distinctive*, empat dari CA3 (motif lotus dan sulur) dan empat dari CB5 (motif pegunungan, pohon hayat, dan stilasi kepala singa), dengan komposisi CB5 dinilai berhasil mempertahankan identitas visual asli karena motifnya lebih khas bagi makam Sunan Drajat dibandingkan motif lotus pada CA3 yang lazim pada ragam hias Jawa lain. Temuan ini memperluas nilai ragam hias makam sebagai sumber inspirasi desain yang dapat direplikasi untuk menerjemahkan warisan budaya menjadi motif kain kontemporer yang aplikatif.

Kata Kunci: Eksplorasi Desain Motif; Ragam Hias Makam Sunan Drajat; Motifia; *Research through Design*; Desain Pola Digital.



1. Introduction

Sunan Drajat was one of the *wali* who played an important role in the spread of Islam along the northern coast of Java during the 14th to 15th centuries CE. This period was marked by a cultural transition from Hindu-Buddhist traditions to Islam (Mustopo, 2001). Sunan Drajat's religious propagation was closely associated with cultural acculturation, in which existing local traditions were not simply replaced but were adapted and reinterpreted through Islamic values. As a result, the cultural expressions that developed during this transitional period often combined Hindu-Buddhist visual elements with Islamic teachings. A similar pattern of acculturation can be found at other Islamic heritage sites on the north coast of Java, such as the ornaments of the Mantingan Mosque and Tomb in Jepara (Na'am, 2016) and the architecture of ancient mosques in other coastal Javanese areas (Ismudiyanto & Atmadi, 1987). The Sunan Drajat tomb complex itself takes the form of a seven-tiered terraced structure, with the tomb of Sunan Drajat located at the highest level (Nizam, 2018). Decorative ornaments are found in various parts of the complex, including the gateways (*gapura*), the tomb pavilion (*cungkup*), and several other architectural elements. These ornaments are not only visual decorations, but also cultural traces that reflect the negotiation between older symbolic systems and Islamic religious values in the transitional period of Javanese history.

Studies on the decorative ornaments of the Sunan Drajat tomb complex are not new. Sadah *et al.* (2020), analyzed the potential of these ornaments as a visual identity for Lamongan batik. Nizam (2018) examined the ornaments of Sunan Drajat from the perspective of Islamic aesthetic expression during the transitional period in East Java, while Sadah (2018), in a master's thesis at Institut Teknologi Bandung, discussed the aesthetic meaning of the ornaments in the tomb complex in greater depth. More recently, Ramadhan and Handyaningrum (2021) studied technological-object motifs on the gateways of the Sunan Drajat tomb complex and compared their visual similarities with motifs found on the reliefs of Tegawangi Temple. A similar research tendency can also be observed in studies of decorative ornaments at other Islamic heritage sites on the northern coast of Java, such as the form and symbolic meaning of ornaments at the Sunan Giri Mosque (Pradana, 2020) and the interior ornaments of the Astana Sultan Hadlirin Mosque in Mantingan (Gunawan, 2015). These studies, like most previous studies on the Sunan Drajat tomb complex, have generally focused on documentation, aesthetic interpretation, and symbolic meaning. They have not yet developed the ornaments into applicable design outcomes, especially textile motif designs. An exception can be found in the study by Ismia *et al.* (2021), which developed batik motifs inspired by the ornaments of the Mantingan Mosque and Tomb. This study is important as a precedent because it demonstrates that ornaments from religious heritage buildings can be translated into applicable textile motifs. However, the process has not yet utilized a web-based digital pattern design platform, as applied in the present study.

Based on this mapping of previous studies, there has been no research that specifically explores the decorative ornaments of the Sunan Drajat tomb complex into new motif designs using a web-based pattern design platform that supports iterative motif exploration. Motifia is a web-based pattern design platform developed by lecturers at Politeknik Elektronika Negeri Surabaya. The term "Motifia" in the title of this study refers specifically to the name of the platform, not to a general term in motif design. The platform provides features that allow users to create motifs by using available regional motif assets, importing their own vector files, or manually drawing batik motifs using brush tools. These features make the motif exploration process more accessible, particularly for users who may not have advanced skills in conventional vector-based design software. The practicality of Motifia is one reason why this study uses the platform as a tool to explore the decorative ornaments of the Sunan Drajat tomb complex into contemporary fabric motifs. This approach is also in line with the development of various digital methods in batik motif design, ranging from character-based CAD systems (Asmal *et al.*, 2015), interdisciplinary collaboration through fractal batik (Hariadi *et al.*, 2007), to digital pattern construction training for younger generations (Ristya Rini, 2020).

This study is limited to the decorative ornaments found on the *gebyok* or wooden wall panels of the Sunan Drajat tomb pavilion. More specifically, the exploration focuses on two panels, coded CA3 and CB5. These two panels were selected because they provide contrasting visual characteristics and represent important ornamental tendencies within the tomb pavilion: one is more closely associated with floral and geometric forms, while the other contains more figurative and cosmological elements. By limiting the scope to these two panels, the study is able to examine the transformation process in a focused manner while still showing the visual diversity of the ornamentation. The exploration is expected to provide insight into the potential of heritage ornaments as a source of inspiration for contemporary fabric motif

development. In addition, the study contributes to the broader effort to preserve and reinterpret local cultural heritage by translating tangible architectural ornaments into applicable textile designs that can support the development of culturally grounded motifs, particularly in relation to the visual identity of Lamongan batik and contemporary fabric design.

2. Literature Review

2.1 Tomb Ornamentation as Cultural Heritage of the Transitional Period

Religious buildings along the northern coast of Java during the transition from Hindu-Buddhist culture to Islam commonly display decorative ornaments that combine floral elements, such as tendrils, lotus, and *patra*; stylised fauna, such as lion heads, *kala* heads, and birds; and cosmological elements, such as mountains and the tree of life. This combination represents the process of cultural acculturation that developed during the period (Na'am, 2016; Ismudiyanto & Atmadi, 1987). In Islamic visual traditions, the complete depiction of human and animal figures tends to be avoided. As a result, figurative forms are often transformed through stylisation into tendril-like or other ornamental shapes. This visual character distinguishes the ornamentation of transitional Islamic tombs from the more naturalistic ornaments of Hindu-Buddhist temples. Such distinctive characteristics make tomb ornamentation relevant for further development as a source of textile motif inspiration, as demonstrated in the development of batik motifs based on the ornaments of the Mantingan Mosque and Tomb by Ismia *et al.* (2021).

2.2 Principles of Pattern Design: Modularity, Repetition, Symmetry, and Visual Balance

Designing textile patterns involves arranging visual elements within a repeatable field. This study uses four basic principles of two-dimensional design as its analytical references: modularity, repetition, symmetry, and visual balance (Wong, 1993). Modularity refers to the way a motif unit is designed so that it can be duplicated without losing its formal coherence. Repetition concerns the consistent placement of modules within a field or tile, including spacing, direction, and arrangement. Symmetry relates to the balance of forms along particular axes, such as left-right or top-bottom mirroring. Visual balance concerns the distribution of visual weight, including size, colour, density, and the position of elements within the pattern field. These four principles are used as the framework for examining and evaluating the motif explorations discussed in Section 4.1.5.

2.3 Research through Design as a Design Research Approach

Research through Design (RtD) positions the design process and design artefacts not merely as illustrations of pre-existing findings, but as both the means and outcomes of research (Frayling, 1993). Zimmerman, Forlizzi, and Evenson (2007) explain that through RtD, designers can make scholarly contributions by creating prototypes or artefacts that respond to under-constrained problems, namely problems that do not have a single correct solution. Later, Zimmerman, Stolterman, and Forlizzi (2010) emphasise that the validity of RtD does not lie in the identical replication of design outcomes, but in the transparent documentation of the design process, allowing it to be traced and re-examined. This principle underlies the present study, in which each stage, from documentation, analysis, tracing, and motif selection to motif exploration, is recorded in detail so that the process can be followed and replicated by other researchers or practitioners.

2.4 Digital Pattern Design Platforms in Textile Motif Exploration

The use of software or digital platforms in batik motif design has developed through various approaches, including character-based CAD systems (Asmal *et al.*, 2015), interdisciplinary collaboration through fractal batik (Hariadi *et al.*, 2007), and digital pattern platforms designed to be accessible to non-expert users (Ristya Rini, 2020). Motifia can be viewed as part of this development because it provides features that emphasise ease of use, such as tile size options (S, M, L, and XL), size adjustment, opacity control, rotation, movement along the X and Y axes, and motif duplication. These features allow users to explore motif compositions more quickly and flexibly than when arranging motifs manually in conventional vector-based design software. Such accessibility has the potential to broaden public participation, including that of batik artisans, in the development of textile motifs based on cultural heritage.

3. Methodology

This study employed a *Research through Design* approach conducted in five stages: 1) visual

documentation, 2) analysis of the visual characteristics of the ornaments, 3) ornament tracing, 4) motif selection, and 5) motif exploration using the Motifia platform. This approach was selected because the research aimed not only to analyze existing decorative ornaments but also to translate them into applicable motif design outcomes. The operational details of each stage are presented in Table 1.

Table 1. Stages of the Research Method

No.	Research through Design Stage	Description
1	Visual documentation	Collection of images of the <i>gebyok</i> ornaments at Sunan Drajat's tomb through literature study and documentation from previous research (Sadah, 2018).
2	Analysis of ornament visual characteristics	Identification of visual elements, mapping of ornament orientation, and recognition of thematic characteristics in each panel.
3	Ornament tracing	Redrawing the ornaments into vector lines (SVG) using Adobe Illustrator, based on the relevant visual references.
4	Motif selection	Filtering motif details based on three explicit criteria: contour clarity, panel representativeness, and suitability for repetition, as explained in Section 3.2.
5	Motif exploration using Motifia	Designing motif compositions through motifia.id by applying the principles of modularity, repetition, symmetry, and visual balance, with the evaluation procedure described in Section 3.3.

Source: Author's data.

3.1 Panel Selection Criteria

Panels CA3 and CB5 were selected as samples from the *gebyok* walls of the tomb pavilion because they represent two of the most dominant categories of ornamentation found at the site. Panel CA3 represents a floral-geometric typology, with a framed lotus motif as its main element and a regularly repeated vertical plank background. In contrast, panel CB5 represents a figurative-cosmological typology, consisting of mountains, the tree of life, and a stylised lion head arranged against an open background without a geometric frame. The selection of these two visually contrasting panels was intended to ensure that the motif exploration reflected a broader range of *gebyok* ornament characteristics, rather than only one compositional type. It also allowed the study to examine the extent to which Motifia could accommodate both geometric motifs and more complex organic forms.

3.2 Motif Selection Criteria

Unlike conventional batik motifs, which generally follow established categories of main motifs and *isen-isen* or filler ornaments, carved ornaments on the *gebyok* do not explicitly contain such divisions. Therefore, motif details in the fourth research stage were selected based on three explicit criteria: 1) contour clarity, referring to motif details whose outlines were sufficiently clear to be traced into vector lines without losing their formal information; 2) representativeness, referring to motif details that most strongly represented the visual character of their source panels, such as lotus petals for CA3 or the wing silhouette (*lar*) and lion head for CB5; and 3) suitability for repetition or *pattern-friendly* form, referring to motif details that were compact enough to be repeated within a tile without becoming visually overcrowded or losing legibility. These criteria were applied sequentially to all traced details shown in Figures 5 and 6, resulting in the selected motifs presented in Figure 7 for CA3 and Figure 8 for CB5.

3.3 Evaluation of Motif Composition Success

The success of each motif composition produced in Motifia was assessed qualitatively by the researcher based on two indicators: 1) the consistency of the four pattern design principles—modularity, repetition, symmetry, and visual balance—in the resulting composition; and 2) the retention of the original visual identity, referring to the extent to which the explored motif still showed recognizable similarities to the source ornament after being restylised. The assessment was conducted through direct visual comparison between the exploration results and the traced ornaments shown in Figures 5–8. This evaluation was internal and qualitative in nature, and did not yet involve external assessment by batik artisans, design experts, or potential users.

4. Results and Discussion

4.1 Results

4.1.1 Visual Documentation

The first stage of the study was visual documentation. At this stage, visual data on the decorative ornaments of the Sunan Drajat tomb complex were collected either through direct documentation or by referring to visual documentation from previous research, particularly Sadah (2018). The documentation focused on two *gebyok* panels in the tomb pavilion, coded CA3 and CB5, because both panels represent different visual characteristics of the ornamentation found at the site.



Figure 1. Decorative ornament of panel CA3
Source: Sadah (2018).

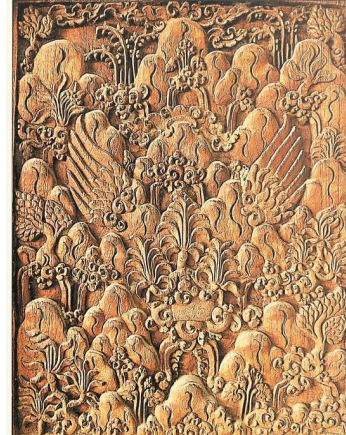


Figure 2. Decorative ornament of panel CB5
Source: Sadah (2018).

4.1.2 Analysis of Ornament Visual Characteristics

The visual character analysis was conducted to identify the main elements, orientation, and thematic tendencies of each panel. In panel CA3, the composition shows lotus motifs arranged in different directions. The lotus motifs on the right and left sides face opposite directions, while the lotus motifs in the centre and upper section are oriented upward. The *patra* and tendril motifs are arranged more freely to fill empty spaces in the composition. The identified visual elements include tendril filler motifs, framed lotus motifs as the main ornaments, *patra* or leaf ornaments, a vertical plank-like background, and border motifs or meanders derived from stylised plant curls (*uke*) oriented both upward and downward.



Figure 3. Visual Character Analysis of the Decorative Ornament on Panel CA3
Source: Sadah (2018), analyzed by the researcher.

Panel CB5 shows a different compositional structure. The ornaments are arranged in a facing orientation, with most elements directed upward and organized around a simplified landscape theme. The identified elements include the tree of life motif, both in facing and upward orientations; stylised mountains as the background; *trubus* motifs; *lar* motifs; *uke* motifs; meander motifs in the form of tendrils; and a stylised lion head or *kala*.

Compared with CA3, which is more floral and geometric, CB5 presents a more figurative and cosmological visual character.

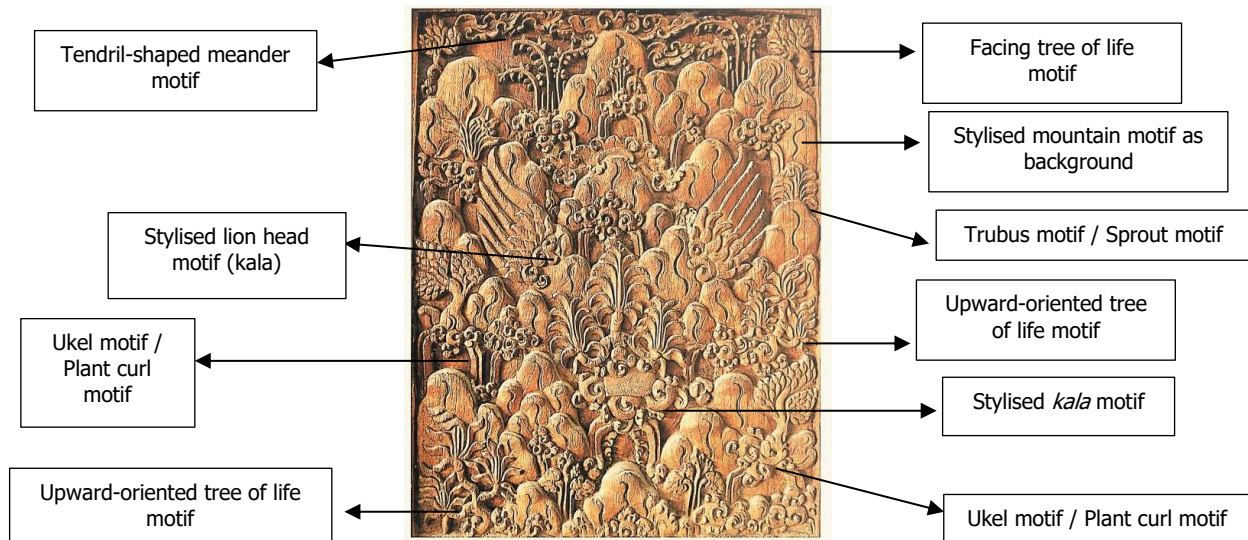


Figure 4. Visual Character Analysis of the Decorative Ornament on Panel CB5

Source: Sadah (2018), analyzed by the researcher.

4.1.3 Ornament Tracing

After the visual character analysis, the ornaments were traced into vector forms. The tracing stage was carried out to simplify and separate the visual elements so that each part could be evaluated independently before being developed into motif modules. For panel CA3, the tracing results separate the panel background, frame, and main ornaments. This separation made it possible to assess each element based on its contour clarity, representativeness, and potential for repetition in a pattern composition.

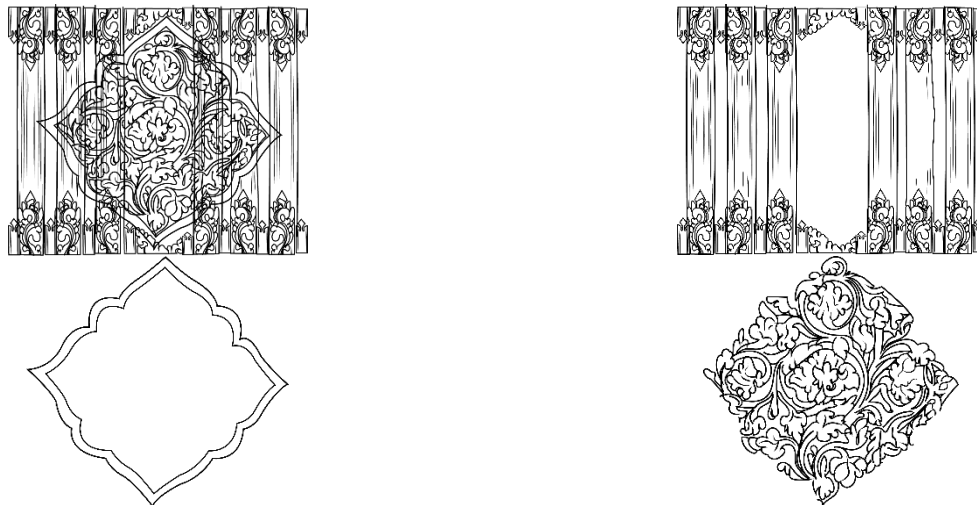


Figure 5. Tracing Results of the Decorative Ornament on Panel CA3

Source: Sadah (2018).

The tracing results of panel CB5 show stylised mountains, plant details, and a stylised lion head. Because the original composition of CB5 is visually denser and more organic than CA3, tracing helped clarify the visual boundaries between the background elements, plant forms, and figurative motifs. This stage was important to ensure that the selected motif details could later be converted into readable and repeatable design modules.



Figure 6. Tracing Results of the Decorative Ornament on Panel CB5

Source: Sadah (2018).

4.1.4 Motif Selection

Referring to the three criteria established in Section 3.2—contour clarity, panel representativeness, and suitability for repetition—several motif details were selected from the traced ornaments. The selection was not based merely on general aesthetic value, but on whether each element could function as a clear, representative, and repeatable motif module. From panel CA3, four motif details were selected: a stylised leaf or *patra*, a single *ukel* motif, a lotus bud, and a blooming lotus flower. These motifs were chosen because their contours remained clear after tracing, they represented the floral character of CA3, and their relatively compact forms allowed them to be repeated without making the pattern visually overcrowded. From panel CB5, four motif details were selected: the *lar* or wing motif, the cloud-like *trubus* motif, a simplified heart-shaped/tree-of-life motif, and the stylised lion head. These elements were selected because they are among the most distinctive and representative features of the dense mountain-tree-of-life composition in CB5. They also have sufficiently independent shapes to function as repeated modules in a textile pattern. The selected motifs from both panels were then prepared as vector files for further exploration in Motifia.



Figure 7. Selected Traced Motifs from the Decorative Ornament of Panel CA3

Source: Sadah (2018).



Figure 8. Selected Traced Motifs from the Decorative Ornament of Panel CB5

Source: Sadah (2018).

In total, eight vector files were used as the basis for motif exploration: four derived from panel CA3 and four derived from panel CB5.

4.1.5 Motif Exploration Using Motifia

The motif exploration stage was conducted using the Motifia platform. The workflow began by accessing

the Motifia website, selecting the batik menu, entering the editor page, starting a free design session, creating an account and logging in, uploading the motif files in SVG format, and then arranging the uploaded motifs into pattern compositions. This process is summarized in Figure 9.

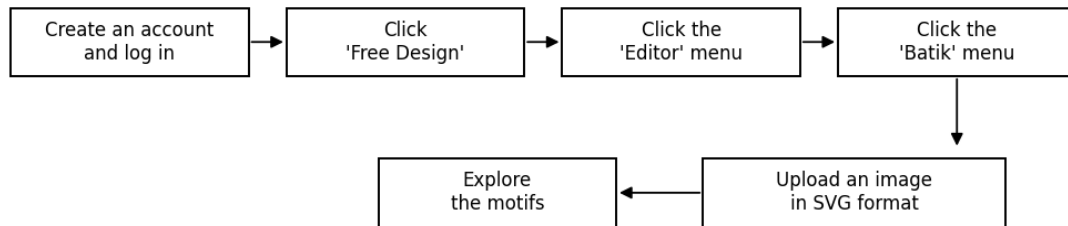


Figure 9. Stages of motif exploration using the Motifia website.

Motifia provides a relatively simple interface compared with conventional vector-based design software. When users begin arranging motifs, the workspace resembles a *seamless pattern* construction template in Adobe Illustrator. However, Motifia simplifies the process through built-in options for tile size, namely S, M, L, and XL, as well as tools for adjusting size, *opacity*, rotation, X–Y axis position, and motif duplication. After an uploaded SVG file is selected, the motif automatically appears inside the tile and can be arranged by adjusting its size, colour, position, orientation, and repetition. These features made the platform suitable for exploring the selected ornaments from panels CA3 and CB5 into several alternative textile motif compositions. The first exploration of panel CA3 produced two motif variants based on a repeated floral module. In Figure 10, the composition is built from one flower module that is duplicated repeatedly without major changes to its form. The main variation lies in colour application, namely a black-and-white variant and a red-green variant. The module is placed within an M-sized tile with consistent spacing between motifs, producing a regular and predictable repetition in both rows and columns. Because the rows are arranged in facing and parallel directions, the composition also creates a sense of left-right symmetry. The relatively even motif density across the field prevents the presence of dominant empty areas and supports visual balance, although the highly uniform repetition makes the composition appear more monotonous than the other variants.

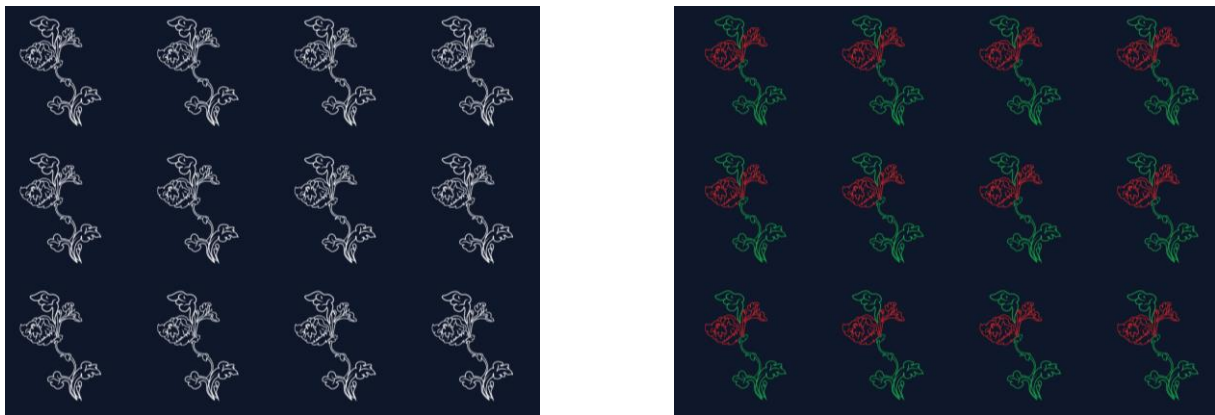


Figure 10. Motif exploration using Motifia based on panel CA3, variants 1–2.

Figure 11 presents a different exploration of panel CA3. Instead of using a single dominant floral form, the composition employs small stylised leaf or *patra* modules arranged densely to create a surface-like texture. This approach produces a subtler and more integrated repetition, making the motif resemble a textured fabric surface rather than a pattern of clearly separated floral units. In the second variant, blue *ukei* motifs are arranged diagonally with a consistent orientation, creating an implied diagonal symmetry. To maintain visual balance, the *opacity* of some modules is varied so that the densest areas do not become visually heavier than the surrounding background.



Figure 11. Motif exploration using Motifia based on panel CA3, variants 3–4.

The exploration of panel CB5 used a slightly different approach because the source ornament contains more distinctive figurative and cosmological elements. In Figure 12, two elements that are separate in the original ornament—the stylised lion head and the *lar* or wing motif—are combined into a composite module before being repeated as a unit. A larger tile size (L) was used so that the details of both elements remained legible even when arranged in a dense composition. In the second variant, the wing forms are mirrored on the left and right sides, creating a stronger sense of symmetry. The use of blue and white against a dark background was intended to maintain visual contrast and balance without allowing one element to dominate the composition.

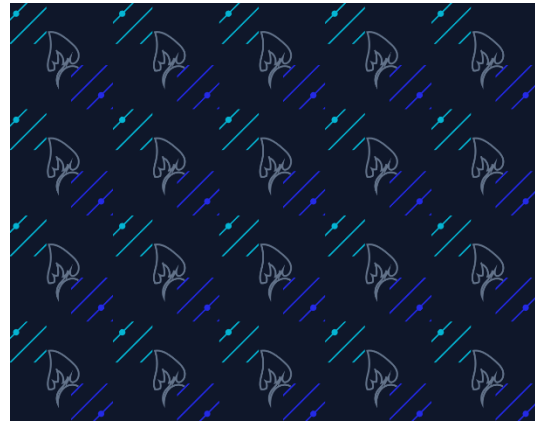


Figure 12. Motif exploration using Motifia based on panel CB5, variants 1–2.

The final exploration, shown in Figure 13, combines the tree-of-life motif with dot accents functioning as filler elements. This is noteworthy because, as discussed in the motif selection stage, the original carved ornaments do not explicitly distinguish between main motifs and *isen-isen* in the way conventional batik motifs often do. The first variant follows a regular grid arrangement, while the second repeats the *lar* motif in a diagonal orientation while maintaining a consistent direction throughout the field. As a result, the composition retains a sense of symmetry even though the motifs are arranged diagonally. In terms of colour, the first variant uses a purple-red combination, while the second uses blue tones. Both colour schemes were selected to balance the visual density of the motifs, even though the colours are relatively striking.



Figure 13. Motif exploration using Motifia based on panel CB5, variants 3–4.

4.2 Discussion

The results show that Motifia can support the translation of heritage-based ornamentation into contemporary textile motif compositions through a structured and iterative design process. Across the eight motif alternatives, the principles of modularity, repetition, symmetry, and visual balance were applied consistently, although each panel produced different visual tendencies. The CA3-based compositions are more regular, floral, and geometric, especially in the lotus- and *patra*-based patterns. These compositions are technically successful because the modules are clear, repeatable, and visually balanced. However, their visual identity is less specific to the Sunan Drajat tomb complex because lotus motifs are widely found in various Javanese ornamental traditions. In contrast, the CB5-based compositions retain the original identity of the site more strongly. The combination of the stylised lion head, *lar* motif, mountains, and tree of life creates a more distinctive visual character that is less commonly associated with generic Javanese ornamentation. This makes the CB5 explorations more effective in conveying the specific identity of the Sunan Drajat tomb ornamentation.

These findings are in line with the work of Ismia *et al.* (2021), who translated the ornaments of the Mantingan Mosque and Tomb into batik motifs, and with the more recent study by Arifiana *et al.* (2026), which developed contemporary batik scarf designs based on the architecture of the Great Mosque of Gresik through a practice-led research approach. Both studies indicate that transforming religious architectural ornaments into applicable textile motifs remains an active direction in design research. The difference in the present study lies in the use of a web-based pattern design platform, which allows motif arrangements to be tested, compared, and revised more quickly than through fully manual vector composition. For batik artisans and non-expert users, Motifia's interface—particularly its tile size options, colour adjustment, motif duplication, rotation, and axis-position controls—may reduce technical barriers in adapting cultural heritage ornaments into new fabric motifs. Nevertheless, this study has limitations. The exploration was limited to two *gebyok* panels out of the many ornamental panels in the Sunan Drajat tomb complex, and other ornaments from the gateways, additional pavilion panels, and other architectural parts have not yet been explored. The evaluation of motif success was also conducted qualitatively by the researcher and has not involved batik artisans, design experts, or potential users. Future research should therefore expand the visual sources and include external evaluation to assess the cultural readability, aesthetic acceptance, and applicability of the resulting motifs.

5. Conclusion and Recommendations

This study demonstrates that the decorative ornaments found on the *gebyok* of the Sunan Drajat tomb pavilion, particularly panels CA3 and CB5, can be transformed into contemporary fabric motif compositions through a *Research through Design* approach supported by the web-based pattern design platform Motifia. The process resulted in eight alternative motif compositions, with four designs derived from each panel. Among these alternatives, the compositions based on panel CB5, especially those combining the stylised lion head and the *lar* motif, as shown in Figures 12–13, were found to be the most effective in retaining the visual identity of the original ornamentation. These elements possess a distinctive character and are less commonly found in broader Javanese ornamental traditions outside the context of the Sunan Drajat tomb complex. As a result, their adaptation into fabric motifs allows the designs to remain closely connected to their cultural source. By contrast, the compositions derived from panel CA3, which are mainly based on lotus motifs, were successful in terms of modularity, repetition, symmetry, and visual balance. However, their visual distinctiveness is relatively lower, as lotus motifs are widely used in many other Javanese decorative traditions.

The findings confirm that traditional ornaments from cultural heritage sites can serve not only as visual references, but also as meaningful sources for developing textile motifs that strengthen local cultural identity. In this study, Motifia played an important role in facilitating the exploration process by providing accessible features for arranging, duplicating, rotating, resizing, and recolouring motif elements. These features enabled a more flexible and iterative design process, making the platform potentially useful for non-expert users, including batik artisans. The main contribution of this study lies in producing culturally grounded motif alternatives inspired by the Sunan Drajat tomb complex, while also offering explicit criteria for motif selection and evaluation that can be applied to other heritage-based design explorations.

Nevertheless, this study has several limitations. The exploration was limited to two *gebyok* panels, CA3 and CB5, and therefore does not yet represent the full richness of ornamentation found throughout the Sunan Drajat tomb complex. In addition, the evaluation of the resulting motifs was conducted qualitatively by the researcher and has not yet involved batik artisans, design experts, or potential users. Future studies are therefore encouraged to expand the object of exploration to other ornamental

elements, such as gateways and additional tomb pavilion panels, and to examine user or artisan responses through quantitative or mixed-method approaches. Such further research would strengthen the potential of digital design platforms in supporting both the preservation and contemporary commercialization of cultural heritage-based textile motifs.

References

- Arifiana, D., Nahari, I., Putri, S. A., & Indarti. (2026). Development of batik scarf design based on the architecture of the Great Mosque of Gresik as a representation of local cultural identity. *Gelar: Jurnal Seni Budaya*, 24(1), 64–75. <https://doi.org/10.33153/glr.v24i1.7955>
- Asmal, S., Subagyo, Wibisono, A., & Sudiarso, A. (2015). Pengembangan sistem CAD (*computer aided design*) motif batik berbasis karakter. In *Prosiding Seminar Nasional IENACO 2015* (pp. 218–225).
- Frayling, C. (1993). Research in art and design. *Royal College of Art Research Papers*, 1(1), 1–5.
- Gunawan. (2015). Ragam hias pada interior arsitektur Masjid Astana Sultan Hadlirin Mantingan, Kecamatan Tahunan Kabupaten Jepara. *Catharsis: Journal of Arts Education*, 4(1), 24–28. <https://journal.unnes.ac.id/sju/index.php/catharsis/article/view/6823>
- Hariadi, Y., Lukman, M., & Margried, N. (2007). Batik fractal: A case study in creative collaboration from various disciplines in Bandung. In *Proceedings of Generative Art X*. Milan, Italy.
- Ismia, U. N., Na'am, M. F., & Nazwan, A. P. (2021). Penciptaan motif batik sumber ide dari ornamen Masjid dan Makam Mantingan. *Fashion and Fashion Education Journal*, 10(1), 19–23. <https://doi.org/10.15294/ffej.v10i1.36173>
- Ismudiyanto, & Atmadi, P. (1987). *Demak, Kudus, and Jepara mosque: A study of architectural syncretism* [Research report, Laboratorium Sejarah Arsitektur, Universitas Gadjah Mada].
- Mustopo, M. H. (2001). *Kebudayaan Islam di Jawa Timur: Kajian beberapa unsur budaya masa peralihan*. Jendela.
- Na'am, M. F. (2016). *Pertemuan antara Hindu, Cina, dan Islam pada ornamen Masjid dan Makam Mantingan, Jepara* [Doctoral dissertation, Institut Seni Indonesia Yogyakarta].
- Nizam, A. (2018). *Ragam hias makam Sunan Drajat, ekspresi estetis Islam masa peralihan di Jawa Timur* [Doctoral dissertation research report, Institut Seni Indonesia Yogyakarta].
- Pradana, R. W. B. (2020). Bentuk dan makna simbolik ragam hias pada Masjid Sunan Giri. *RUANG: Jurnal Lingkungan Binaan (SPACE: Journal of the Built Environment)*, 7(1), 71–84. <https://doi.org/10.24843/JRS.2020.v07.i01.p07>
- Ramadhan, A. F., & Handyaningrum, W. (2021). Kajian motif benda teknologis pada gapura kompleks makam Sunan Drajat dan Candi Tegawangi. *Jurnal Muara Ilmu Sosial, Humaniora, dan Seni*, 5(1), 82–91. <https://doi.org/10.24912/jmishumsen.v5i1.10057.2021>
- Ristya Rini, D. (2020). Designing batik motif with digital pattern method. *KnE Social Sciences*, 4(12), 94–100. <https://doi.org/10.18502/kss.v4i12.7587>
- Sadah, K. (2018). *Makna estetika ragam hias kompleks makam Sunan Drajat* [Master's thesis, Institut Teknologi Bandung].
- Sadah, K., Al Farabi, M. M., & Sunandar, A. (2020). Analisis potensi ragam hias kompleks makam Sunan Drajat sebagai identitas batik Lamongan. *Gestalt: Jurnal Desain Komunikasi Visual*, 2(1), 75–86. <https://doi.org/10.33005/gestalt.v2i1.53>

Wong, W. (1993). *Principles of form and design*. Van Nostrand Reinhold.

Zimmerman, J., Forlizzi, J., & Evenson, S. (2007). Research through design as a method for interaction design research in HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 493–502). Association for Computing Machinery. <https://doi.org/10.1145/1240624.1240704>

Zimmerman, J., Stolterman, E., & Forlizzi, J. (2010). An analysis and critique of research through design: Towards a formalization of a research approach. In *Proceedings of the 8th ACM Conference on Designing Interactive Systems* (pp. 310–319). Association for Computing Machinery. <https://doi.org/10.1145/1858171.1858228>.

How Cites

Sadah, K., Sarinastiti, W., & Alimudin, A. (2026). Exploration of Fabric Motif Design Based on Gebyok Ornamentation of Sunan Drajat's Tomb Using Motifia. *Design Journal*, 4(2), 80-91. <https://doi.org/10.58477/dj.v4i2.483>.

Publisher's Note

Yayasan Pendidikan Mitra Mandiri Aceh (YPPMA) remains neutral with regard to jurisdictional claims in published maps and institutional affiliations. Submit your manuscript to YPMMA Journal and benefit from: <https://journal.ypmma.org/index.php/dj>.