

From Stone to Cloth: Symbolic Interpretations of Kidal Temple Statues in Contemporary Batik Motifs

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Abstract

Malang's ancient temple statues embody deep symbolic meanings that reflect the region's spiritual, historical, and cultural identity. However, in contemporary society, these artifacts often remain static relics with limited engagement from younger generations, creating a disconnect between cultural heritage and modern life. This research addresses the question of how the symbolic essence of temple statues can be preserved and reintroduced in forms relevant to today's creative industries. The study aims to visually reconstruct and reinterpret the symbolic values of Kidal Temple statues into contemporary batik motifs, transforming them into living cultural expressions that can be worn, circulated, and appreciated in everyday contexts. The objectives are twofold: to develop batik designs that authentically represent the visual and symbolic richness of the statues, and to propose a model of cultural preservation through design innovation that bridges heritage and contemporary creative practices. The research adopts the design thinking method due to its iterative and human-centered approach, encompassing five stages: empathy, define, ideation, prototyping, and testing. Cultural insights are gathered through field observation and expert interviews, translated into visual elements, explored through motif development, and refined through feedback from artisans and users. The outcomes include a series of batik patterns that reinterpret Kidal Temple symbolism, contributing to heritage preservation, reinforcing local identity, and offering practical strategies for integrating cultural narratives into the creative economy.

Keywords: batik motifs; contemporary batik; design thinking; kidal statue; symbolic interpretation.

INTRODUCTION

Malang, as one of the centers of ancient civilization in East Java, holds extraordinary cultural richness, particularly in the form of statues and reliefs from historic temples such as Singosari Temple, Jago Temple, and Kidal Temple [1]. Kidal temple, located in Malang, East Java, is a 13th-century Hindu temple built during the Singhasari Kingdom to honor King

Anusapati. This elegant structure, made from andesite stone, stands as a remarkable example of East Javanese temple architecture with its slender proportions and layered form that seems to ascend toward the sky [2]. The temple's ornaments and statues carry deep symbolic meaning, making it not only a sacred site but also a visual narrative of spirituality and cultural identity. Among the most significant features of Kidal temple are the detailed reliefs

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and statues carved into its walls. These include kala heads symbolizing protection from evil, floral and vegetal motifs representing fertility and the cycle of life, and depictions of mythological creatures. The most celebrated relief is the Garuda story, illustrating Garuda's heroic act of freeing his mother from slavery. This tale, etched into stone, represents devotion, courage, and liberation values that remain relevant across generations [3].

These ornaments and statues offer rich potential to be reinterpreted as batik patterns, bridging the permanence of stone with the fluidity of cloth. The Garuda relief, with its strong lines and dynamic movement, could inspire bold central motifs symbolizing strength and freedom. The floral carvings, with their rhythmic repetition and organic curves, naturally lend themselves to continuous batik patterns that convey fertility, harmony, and growth. The kala heads, with their dramatic faces and protective meaning, could be abstracted into border motifs that frame fabric with cultural symbolism.

However, the visual and symbolic richness of Kidal Statues has not been optimally utilized in a contemporary context, particularly in creative industries like batik. Yet, the motifs found on temple statues and reliefs possess profound aesthetic and philosophical value, which can be adapted into unique and meaningful batik motifs. By translating these reliefs into batik, artisans can create designs that preserve historical narratives while appealing to modern aesthetics. This transformation would not only revitalize cultural heritage but also strengthen Malang's identity as a center of art and history, ensuring that the symbolic richness of Candi Kidal continues to inspire through wearable art.

The problem faced is the lack of exploration and utilization of visual elements from temple statues as a source of inspiration in batik creation. Most batik motifs currently in circulation are still dominated by common motifs and do not reflect Malang's local identity [4]. This results in the rich potential of local culture being under-explored, and local communities are not yet fully aware of the economic and cultural value of their ancestral

heritage. The importance of further developing this innovation lies in efforts to preserve culture through creative and applied approaches. By reconstructing the visual and symbolic meaning of temple statues into batik motifs, it is hoped that a cultural product will be created that is not only aesthetic but also educational. This aligns with previous research showing that incorporating local cultural elements into batik designs can increase the product's added value and competitiveness in the market.

Previous research that became the forerunner of this prototype includes research conducted by the proposing team in 2023 entitled *Branding Strategy Through the Creation of Batik Motifs of the Jago Temple Relief in Malang: A Study on Pandanarum Batik* which aims to create a typical Malang batik motif with high philosophical value. In addition, the development of batik motifs from the Jago Temple relief has also been carried out to empower the local community through the Community Service Grant Program with funding from the Ministry of Education, Culture, Science and Technology entitled in 2023 entitled *Increasing Productivity and Governance of Pandan Arum Batik MSMEs, Malang Regency in the Development of Environmentally Conscious Ecotik (Ecoprint Batik)*. In this community service activity, it resulted in the development of five typical Jago Temple batik motifs and empowered 10 village women in batik production [5].

The main objective of developing this prototype is to reconstruct the visual and symbolic meaning of temple statues in Malang especially Kidal temple into batik motifs that can be applied to contemporary textile products. This is expected to create batik products with aesthetic, educational, and economic value, while strengthening Malang's local cultural identity.

The objectives of developing this prototype include identifying and documenting visual and symbolic elements from temple statues in Malang that have the potential to be developed into batik motifs, designing batik motifs based on these elements using a contemporary aesthetic approach without losing their original cultural values, Testing the designed batik

motifs in textile products such as hand-drawn batik cloth and stamped batik, and Involving the local community, particularly batik artisans and creative communities, in the production and dissemination of the resulting batik products.

The specifications of the prototype to be developed include batik motifs inspired by visual elements of temple statues, such as ornaments, symbols, and distinctive geometric shapes in Kidal Temple and application of motifs to various types of batik fabric using hand-drawn and stamped batik techniques. The output of this research is the creation of a prototype batik motif based on the visual and symbolic elements of temple statues in Malang especially Kidal temple, as well as textile products incorporating these motifs. The expected outcome is increased public awareness of local cultural values and increased economic capacity through the production and marketing of innovative batik products. This project is also expected to serve as a model for other regions in developing cultural products based on local heritage.

Socially, this project can empower local communities, particularly women, through batik training and involvement in the production process. This can improve their skills and income, and strengthen their role in cultural preservation. Economically, the development of unique and culturally valuable batik motifs can increase the competitiveness of Malang batik products in local and international markets. This can open new market opportunities and increase income for batik industry players in Malang.

From a scientific perspective, this research contributes to the development of visual communication design, textile crafts, cultural anthropology, and heritage studies through an interdisciplinary approach. This project can also serve as a reference for future research examining the integration of cultural heritage and the creative industry.

2. RESEARCH METHOD

The research employed design thinking as a flexible and human-centered framework to translate the symbolic depth of Kidal temple statues into meaningful batik motifs. Design

thinking is superior because it offers a human-centered, iterative approach that integrates cultural insight, creative exploration, and user feedback. Unlike linear or purely analytical methods, it enables continuous refinement of symbolic meanings into contemporary batik designs, ensuring cultural authenticity, usability, and relevance to modern creative industries. Each stage of the process not only guided the creative journey but also ensured that cultural authenticity and contemporary innovation could coexist harmoniously [6].



Picture 1. Design Thinking Process

The journey began with empathizing, where researchers immersed themselves in the historical and cultural richness of Kidal temple. This step involved careful observation of temple reliefs and statues, alongside conversations with local communities, artisans, and cultural experts. By understanding the values embodied in these sacred sculptures, such as spirituality, resilience, protection, and harmony the team could grasp the cultural weight carried by the visual forms. Empathy here was not just about seeing statues as objects but about recognizing them as vessels of collective memory and identity.

From these insights, the define phase took shape by framing a clear design challenge: how to reinterpret stone-carved symbols into batik motifs that are aesthetically compelling for contemporary use while preserving their original meaning. The definition process required distilling the essence of the statues, their forms, gestures, and ornaments into core symbolic narratives. For example, the serene expressions of guardian figures suggested motifs of balance and protection, while intricate floral carvings spoke of fertility and continuity. These definitions created a foundation for the design direction, ensuring that the visual reinterpretation remained faithful to cultural roots.

With the problem clarified, the research moved into the ideate phase, opening space for creative exploration. Here, sketches, mood boards, and motif variations were developed, experimenting with lines, repetition, and stylization. Brainstorming sessions encouraged multiple ways of abstracting temple details, such as transforming stone relief textures into rhythmic batik patterns or reimagining ornamental crowns as flowing textile borders. This stage celebrated divergence, allowing many possibilities to emerge before narrowing them down into the most promising directions.

The next step, prototyping, translated ideas into tangible batik designs. Selected sketches were transferred onto cloth using traditional batik-making techniques, including canting and wax-resist dyeing. This hands-on process revealed how symbolic forms could shift when expressed in fabric what appeared rigid in stone became fluid on cloth, creating new layers of interpretation. Prototyping was not only a technical phase but also a cultural dialogue, bridging ancient iconography with the tactile language of batik.

Finally, the testing stage involved presenting the batik prototypes to artisans, cultural stakeholders, and potential wearers. Their feedback was invaluable in assessing both aesthetic appeal and cultural sensitivity. Some motifs were praised for their successful reinterpretation of temple symbolism, while others required refinement to avoid misrepresentation or visual clutter. Through iteration, the designs evolved into motifs that could function as both wearable art and a medium of storytelling, carrying forward the spirit of Malang's temple heritage into contemporary creative expression. In this way, design thinking provided not just a method but a cultural pathway transforming stone-carved wisdom into cloth-bound narratives that honor the past while engaging the present [7].

3. RESULT AND DISCUSSION

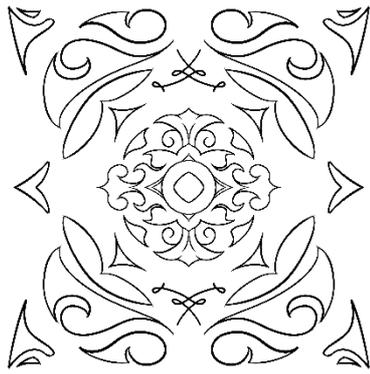
3.1 Prototyping

The prototyping stage in the represents the critical moment where conceptual ideas transition from abstract sketches into tangible, visual, and material outcomes [8]. It is at this stage that the cultural narratives encoded in stone reliefs and statues from Kidal temple were not only reimagined but also tested through fabric-based expressions. Prototyping allowed the researchers and artisans to experiment with line, form, and color, balancing historical authenticity with contemporary design sensibilities. The attached motif serves as one of the central prototypes developed during this phase, embodying both the symbolic resonance of temple ornamentation and the flexibility of batik as a living art form.



Picture 2. Medallion Relief on Kidal Temple

The process began with the translation of symbolic elements from temple statues into graphic components. Temple sculptures are rich with iconography, floral garlands, flowing draperies, cosmic patterns, and ornamental flourishes that carry meanings of balance, harmony, and spirituality [9]. For this particular prototype, the research team drew inspiration from the symmetrical placement of guardian figures and the intricate ornamentation often found on temple reliefs. The central medallion motif of the design reflects a reinterpretation of a temple's lotus-carved mandala, a symbol of purity and spiritual enlightenment. Its radiating form echoes the idea of cosmic order, with a diamond-shaped inner space that suggests a meeting point between the earthly and the divine [10].



Picture 3. Sketching Process

Around this core, the design expands with directional symmetry, resembling the four cardinal points, north, south, east, and west. This visual structure references the way temples in Malang were historically aligned with the cosmos, ensuring that sacred structures resonated with natural cycles and spiritual geography. By translating this orientation into a batik motif, the prototype pays homage to the philosophical concept of balance between human life and universal forces. Each directional element is carefully stylized with a combination of curvilinear and angular forms, merging the solidity of stone carvings with the flowing elegance required for fabric design.

Color palette



Picture 4. Color Palette

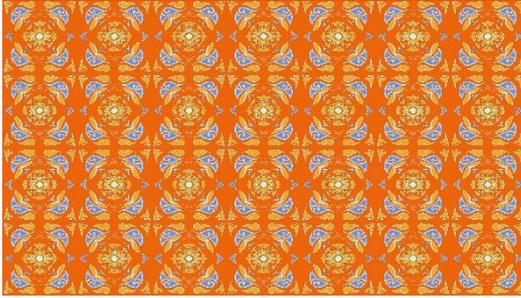
The color palette chosen for this prototype adds another dimension of meaning. The warm orange background is not accidental; it symbolizes energy, life, and a vibrant grounding of cultural identity [11]. Against this backdrop, golden-yellow motifs represent prosperity, spirituality, and continuity, directly echoing the stone's natural earthy tones but transforming them into radiant, luminous shades suitable for

fabric [12]. The inclusion of blue elements brings balance and contrast, invoking associations with water, sky, and calmness [13]. In traditional Javanese philosophy, the combination of warm and cool tones suggests harmony between opposing forces, fire and water, earth and sky, body and soul [14]. This chromatic interplay makes the prototype not only visually striking but also conceptually anchored in cultural symbolism.

From a technical perspective, the prototyping stage involved moving from digital visualization to manual testing using batik techniques. Initially, the motif was drawn and refined through vector-based digital sketches, allowing for precise symmetry and experimentation with color balance. Once the design was deemed conceptually sound, artisans translated the motif onto cloth using canting and wax-resist dyeing methods. This manual process was essential to understand how the crispness of digital lines transformed into organic textures on fabric. While temple statues convey permanence through stone, batik brings impermanence and fluidity, as the wax lines inevitably produce variations that enrich the design with uniqueness. This tension between precision and irregularity became one of the most meaningful aspects of the prototyping process.



Picture 5. Single Medallion Motif



Picture 6. Repetition Medallion Motif

Another key component of prototyping was the dialogue with artisans and cultural stakeholders from Paguyupan Batik Hasta Padma. When the motif was first applied to fabric, feedback was sought regarding the appropriateness of its symbolic interpretation. Local batik makers provided insights on the feasibility of repeating the pattern across larger cloths, while cultural experts reflected on whether the visual language respected the integrity of Malang's temple heritage. This iterative feedback loop resulted in several refinements: for instance, the thickness of the golden curves was adjusted to ensure better readability from a distance, and the alignment of blue accent shapes was slightly modified to enhance balance when the pattern repeats seamlessly across a textile field.

In terms of visual rhythm, the prototype showcases a dynamic interplay between centrality and expansion. The eye is first drawn to the center, then guided outward by the four bold, wing-like motifs oriented diagonally. These forms, echoing both vegetal curves and guardian figure silhouettes, create a sense of motion that contrasts with the static solidity of stone carvings. The repetition of smaller triangular elements at the edges further stabilizes the design, functioning almost like architectural brackets that frame the larger motif. This rhythm mirrors the architectural logic of temples, where central sanctums are surrounded by layered spaces that gradually open outward.

During prototyping, the researcher also explored how the motif functioned in different applications of batik. When tested on smaller accessories like in interior product such as pillow case, the motif stood out as a bold, symbolic centerpiece. On larger textiles, such as shirt, the

design's repetition created a mesmerizing tapestry of color and form, transforming symbolic temple elements into everyday wearable art. The scalability of the motif became an important success factor, showing how ancient symbolism could adapt to diverse contemporary contexts.



Picture 7. The Application Medallion Motif in pillow case



Picture 8. The Application Medallion Motif in Fashion

The prototyping process was not without challenges. One recurring difficulty was ensuring that the design remained legible and meaningful when translated into wax and dye. The fine curls and flourishes inspired by temple carvings risked becoming overly intricate or blurred on cloth. To address this, the team simplified certain ornamental details, focusing on bold, clear forms that retained symbolic power without sacrificing technical feasibility. This balance between detail and clarity mirrors the broader challenge of cultural reinterpretation: how to respect the complexity of heritage while making it accessible to new audiences.

Another challenge lay in color testing. While digital prototypes allowed for controlled experimentation, the dyeing process introduced variables such as wax absorption, fabric type, and color layering. Several rounds of dye testing were required to achieve the vibrant orange and the balanced contrast between golden and blue hues. Interestingly, these variations added depth to the research, revealing how batik as a medium carries its own agency in shaping the final outcome. Unlike the fixed permanence of stone, batik embraces variation, reminding wearers that heritage is a living, adaptive force. Ultimately, the prototyping phase demonstrated the value of design thinking as an iterative, human-centered methodology. By moving back and forth between conceptual ideals and practical testing, the research team ensured that the motif was not only aesthetically striking but also culturally respectful and technically feasible. The attached prototype stands as a bridge between ancient temple symbolism and modern batik artistry, a visual testament to the idea that heritage can be continuously reinterpreted without losing its essence.

The final prototype encapsulates the spirit of the research: a cloth that carries stories from stone. It transforms the weight and permanence of Malang's temple statues into flowing, wearable narratives, allowing cultural symbols to move with people in their daily lives. Through this process, the stone no longer remains confined to sacred ruins; it breathes again in contemporary fabrics, reminding communities

of their shared past while inspiring future creativity.

Finally, the prototyping process was a dialogue between stone and cloth, between tradition and innovation, between artisans and researchers. It was an exploration of how symbolic forms can evolve when they shift from rigid permanence to textile fluidity. The attached motif, with its central medallion, cardinal orientation, and harmonious color palette, is both a product and a process: a living experiment in cultural storytelling through design. As a prototype, it is not the end but a beginning, opening pathways for further iterations that can expand the repertoire of contemporary batik while keeping the voice of Malang's temple heritage alive.

3.2 Symbolic Interpretation

This batik pattern reimagines the medallion motif of Kidal Temple as a living visual language, shifting its presence from carved stone into wearable cloth. At the center of the composition, the diamond-shaped medallion functions as a symbolic core, echoing the sacred center (mandala) found in Kidal Temple reliefs. It represents spiritual balance, inner awareness, and the connection between the human realm and the cosmic order—values deeply embedded in East Javanese Hindu-Buddhist philosophy. Radiating symmetrically toward the four cardinal directions, the surrounding motifs reflect the concept of *catur arah mata angin*, symbolizing harmony between the universe, nature, and humanity. This directional balance mirrors the temple's architectural logic, where orientation is not merely spatial but spiritual, guiding moral order and cosmic equilibrium. The flowing curves and vegetal forms soften the rigidity of stone reliefs, transforming sacred symbolism into an organic, contemporary visual expression suited to batik [9].

The interplay of warm gold tones and cool blue accents suggests a dialogue between earth and water, stability and movement, tradition and adaptation. Gold evokes divinity, prosperity, and sacred power, while blue symbolizes life, continuity, and spiritual depth. By translating the medallion motif into batik, this design humanizes heritage—allowing ancient symbolism to move with the body, circulate in

daily life, and remain culturally relevant. The pattern thus becomes not only decorative but narrative: a textile that carries memory, belief, and identity from stone to cloth [10].

3.3 Prototype Testing

The testing phase was conducted to evaluate the effectiveness of the developed batik patterns inspired by the medallion motif of Kidal Temple in terms of symbolic accuracy, visual appeal, and contemporary relevance. This phase involved qualitative feedback sessions with three key stakeholder groups: batik artisans, cultural heritage experts, and potential users from the creative industry and academic communities.

Cultural experts confirmed that the central medallion and four-directional symmetry successfully reflected the cosmological principles embedded in Kidal Temple reliefs, particularly the concepts of balance, spiritual centrality, and harmony between the human and cosmic realms. While the motifs were stylized, respondents noted that the essential symbolic structure remained recognizable and respectful to its historical origins.

Batik artisans evaluated the patterns based on technical feasibility and adaptability to traditional and semi-modern batik techniques. The flowing curves and modular composition were considered suitable for hand-drawn (*batik tulis*) and stamped (*batik cap*) processes, although minor adjustments in line thickness were recommended to improve dye control and production consistency.

Potential users responded positively to the color composition and symmetrical layout, perceiving the design as modern yet culturally rooted. The medallion-inspired motif was seen as distinctive and suitable for fashion and interior textile applications. Overall, the testing results indicate that the developed batik patterns effectively translate the symbolic essence of Kidal Temple medallions into contemporary batik designs, validating the design approach and supporting the potential for further refinement and wider application.

Table 1. Evaluation Results of Batik Pattern Development Inspired by the Kidal Temple Medallion

Evaluation Aspect	Indicator	Cultural Experts (n=3)	Batik Artisans (n=4)	Potential Users (n=10)	Mean Score
Symbolic Accuracy	Representation of Kidal Temple medallion symbolism	4.7	4.3	4.4	4.47
	Preservation of cosmological meaning (center & four directions)	4.8	4.5	4.6	4.63
Visual Quality	Aesthetic balance and symmetry	4.6	4.5	4.7	4.60
	Color harmony and cultural appropriateness	4.5	4.6	4.6	4.57
Technical Feasibility	Suitability for batik tulis and batik cap techniques	4.2	4.8	4.3	4.43
	Line clarity and production consistency	4.1	4.6	4.2	4.30
Contemporary Relevance	Appeal to modern users	4.4	4.3	4.7	4.47
	Potential application in fashion and interior textiles	4.3	4.5	4.6	4.47
Overall Evaluation	Integration of heritage and contemporary design	4.7	4.6	4.6	4.63

The evaluation results indicate a high level of acceptance across all respondent groups, with mean scores consistently above 4.3. The highest ratings were recorded for symbolic preservation and overall integration of heritage values into contemporary batik design, confirming the effectiveness of the “stone to cloth” transformation approach. Technical feasibility received slightly lower scores, particularly regarding line clarity, suggesting areas for refinement prior to large-scale production.

3.4 Research Limitation and Future Works

This study has several limitations. It focuses solely on the visual reinterpretation of symbolic elements from Kidal Temple statues, limiting the generalizability of the findings to other temples or cultural artifacts. The symbolic interpretations are based on qualitative analysis and expert input, which may involve subjectivity inherent in design-based research. In addition, the outcomes are restricted to batik motif development at the prototype level, without large-scale production, market testing, or quantitative evaluation of user acceptance and economic impact. The testing phase is limited to short-term feedback from experts and potential users, and does not assess long-term cultural sustainability or commercial viability. Future research may broaden the scope by including comparative studies of multiple temple sites and expanding the range of cultural symbols explored. The integration of quantitative methods, such as user perception surveys and market analysis, is recommended to strengthen empirical validation. Further development may also explore digital and interactive media, including augmented reality and digital batik platforms, to enhance engagement and accessibility, particularly for younger audiences. Collaboration with industry stakeholders and longitudinal studies would enable evaluation of large-scale implementation and the long-term cultural and economic impacts of heritage-based design innovation.

4. CONCLUSION

The research concludes that cultural heritage can be meaningfully revitalized through design thinking, enabling ancient symbols to find new life in contemporary creative practice. By

engaging temple statues not merely as historical artifacts but as living sources of symbolism, the study demonstrated how visual elements carved in stone like mandalas, floral ornaments, guardian figures, and cosmic alignments can be reinterpreted into motifs that resonate within the fluid medium of batik. This transformation required careful processes of empathy, definition, ideation, prototyping, and testing, ensuring that the reinterpretations were not superficial imitations but rather thoughtful translations that honor both form and meaning.

Through the prototyping process, the research highlighted how batik functions as more than a decorative art; it becomes a narrative textile capable of carrying forward cultural memory. The prototypes created such as the motif with its central mandala, directional symmetry, and harmonious color palette demonstrated the potential of batik to act as a bridge between permanence and impermanence. Stone, by nature, conveys solidity and timelessness, while cloth embodies adaptability and movement. By merging the two, this study created designs that allow the weight of heritage to be worn, touched, and circulated in daily life. Such a transformation contributes to keeping cultural identity alive not only in museums or archaeological sites but also in living, evolving practices of art and design.

The findings also emphasize the importance of collaboration between researchers, artisans, and cultural stakeholders. Feedback from batik makers and community representatives ensured that the motifs were technically feasible, aesthetically engaging, and culturally sensitive. This collaborative model reinforces the idea that heritage preservation must be participatory, grounded in dialogue and shared ownership. Furthermore, the study reveals that innovation and tradition are not opposites but companions; innovation provides pathways for tradition to remain relevant, while tradition provides depth and authenticity to innovation.

REFERENCES

1. Pramono, A., & Wijaya, I. B. (2023). Preserving Candi Kidal's relief to sustain a cultural heritage site using ATUMICS approach. *E3S Web of Conferences*, 388,

04004.
<https://doi.org/10.1051/e3sconf/202338804004>
2. Wijaya, I. B. A., Pramono, A., & Maulana, F. I. (2023). Digital prototyping of Candi Kidal relief on interior accessories. *E3S Web of Conferences*, 388, 04021. <https://doi.org/10.1051/e3sconf/202338804021>
 3. Wijaya, I. B. A., & Pramono, A. (2024, February 6). Development of digital prototype interior accessories products from Candi Kidal relief with ATUMICS method. *AIP Conference Proceedings*, 2710(1), 020010. <https://doi.org/10.1063/5.0144204>
 4. Candra, P., Widita, A., Maulida, F. H., Shanti, M., & Kusuma, Y. (2023). Rebranding of Malangan batik as a symbol of Malang's cultural identity through value chain analysis. *E3S Web of Conferences*, 426, 02129. <https://doi.org/10.1051/e3sconf/202342602129>
 5. Kusumawati, Y. A., Lasmy, L., Widita, A., & Qurma, A. A. (2025). Empowering Pandan Arum batik: The role of color guidebooks in design and sustainability. *SEEIJ (Social Economics and Ecology International Journal)*, 9(1), 47–57. <https://doi.org/10.21512/seeij.v9i1.12741>
 6. Rao, D. T., & Kalyani, C. (2022). Design thinking: A human-centered approach towards innovation—A conceptual framework. *International Journal of Marketing & Human Resource Management*, 12(2), 59–65. <https://doi.org/10.34218/IJMHRM.12.2.2021.006>
 7. Razzouk, R., & Shute, V. (2012). What is design thinking and why is it important? *Review of Educational Research*, 82(3), 330–348. <https://doi.org/10.3102/0034654312457429>
 8. Petrelli, D., Dulake, N., Marshall, M., Willox, M., Caparrelli, F., & Goldberg, R. (2014). Prototyping tangibles: Exploring form and interaction. In *TEI 2014: 8th International Conference on Tangible, Embedded and Embodied Interaction* (pp. 41–48). ACM. <https://doi.org/10.1145/2540930.2540966>
 9. Wirasanti, N. (2023). Ornamental art of Kalasan Temple in the perspective of art philosophy. *Mudra Jurnal Seni Budaya*, 38(4), 468–479. <https://doi.org/10.31091/mudra.v38i4.2337>
 10. Walcott, S. (2006). Mapping from a different direction: Mandala as sacred spatial visualization. *Journal of Cultural Geography*, 23(2), 71–88. <https://doi.org/10.1080/08873630609478223>
 11. Lavrenova, O. (2023). Color semantics of the cultural landscape. *Arts*, 12(3), 111. <https://doi.org/10.3390/arts12030111>
 12. Santosa, I., & Noorwatha, I. K. (2025). Symbolic and aesthetic fusion in Keraton Surakarta: Colonial influence and Javanese cultural resistance through architectural design adaptation. *Cogent Arts & Humanities*, 12, 2482456. <https://doi.org/10.1080/23311983.2025.2482456>
 13. Jaglarz, A. (2023). Perception of color in architecture and urban space. *Buildings*, 13(8), 2000. <https://doi.org/10.3390/buildings13082000>
 14. Ningrum, D., Brahmana, C., & Mulyadi. (2024). Basic colors in Javanese and Indonesian languages: Natural Semantic Metalanguage theory. *Humanus*, 23(1). <https://doi.org/10.24036/humanus.v23i1.126103>