



Queering Tropical Heritage: Flora and Fauna Reliefs in Karmawibhangga, Borobudur Temple, Indonesia

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Abstract

Heritage inquiries into the Karmawibhangga reliefs of Borobudur Temple have not effectively revealed the degree to which flora and fauna serve as part of the network of interconnected stories depicted in the carvings of this Buddhist archaeological site in Indonesia. An exploration of the flora and fauna shown in the 160 panels of the Karmawibhangga reliefs moves beyond the accepted elucidation of the panels as mere depictions of the tenets of karma. Using approaches from intra- and extra-textuality, and tropical queer ecology to examine the flora and fauna motifs as social and environmental texts reveals the larger story within the Karmawibhangga panels. This ecological presence serves as a significant indicator of temporal, natural, and symbolically significant aspects of tropical heritage.

Keywords: queer ecology, tropical heritage, Borobudur, Karmawibhangga

Introduction

Borobudur, known for its breathtaking landscapes, ancient temples, and vibrant culture, is a site of historical and ecological significance. As we explore the rich tropical environment of this geographical area, we can gain a distinct viewpoint by queering its many flora and fauna species from a non-normative perspective. Through adopting a queer perspective in our interpretation of the flora and fauna depicted in the Karmawibhangga¹ panels of Borobudur Temple, it becomes possible to unveil concealed narratives, question established conventions, and enjoy the intricate manifestations of nature.

Borobudur Temple is part of a grand tropical heritage and is the largest Buddhist temple monument in the world. It is located in the Borobudur District, Central Java, Indonesia. This temple is estimated to have been built in the 8th century (around 760 to 825 AD) by the King of Ancient Mataram during the heyday of the Sailendra dynasty. As a monument that summarises historical evidence, Borobudur Temple was listed as a world heritage site by UNESCO in 1991 (Susilo & Suroso, 2014). Borobudur Temple is a religious edifice characterised by a rectangular configuration, encompassing a total expanse of 123 square metres. The architectural configuration consists of 1460 carved panels depicting stories. From the base upwards, these panels consist of: Karmawibhangga, 160 story panels; Lalitavistara,² 120 story panels; Gandawyuha,³ 460 story panels; and Jataka-Avadana,⁴ 720 story panels (Marzuki, 1989; Balai Konservasi Peninggalan Borobudur, 1991; Puspitasari et al., 2010).

These story panels of Borobudur Temple represent the environmental, social, and cultural conditions of the ancient Javanese who lived at that time. Although the theme of the narratives of the carved reliefs is not an original story from the ancient Javanese community, the depiction of the proportions of the human body, the species of flora and fauna, and the shape of depicted buildings have distinctive Javanese characteristics (Kempers, 1976; Suroto & Pranowo, 2001). Previous studies of the flora and fauna species found in the Lalitavistara panels of Borobudur Temple showed that most of the plant and animal species are indigenous to Indonesia, and a small

¹ Karmawibhangga reliefs are depicted at the hidden base of the Borobudur Temple, consisting of 160 panels. *Karma* means "action" or "deeds", *vibhanga* is a "wave" or "flow", so the Karmawibhangga signifies the flow of human life on Earth, as well as in the hereafter, and it is believed that the Karmawibhangga is one of the many sermons of Buddha which deals with the Law of Cause and Effect, the Karmic Law (Santiko, 2016).

² Story relief of Borobudur Temple telling of the Buddha's life journey, from the birth of the Buddha (Prince Siddhartha Gautama), to enlightenment, and ending with a depiction of the Buddha delivering his teachings in the Deer Park, Benares, India.

³ Story relief of Borobudur Temple, the last chapter of the Avatamsaka Sutra about Sudhana, the youth who travelled tirelessly in his quest for the ultimate knowledge of actual truth or enlightenment.

⁴ Story relief of Borobudur Temple, telling about the previous lives of Bodhisattvas (future Buddhas) in the past who underwent repeated rebirths in their various forms to help humans attain the path of Buddhahood.

number are distributed in both Indonesia and India (Fauziah et al., 2018; Achmadi et al., 2020; Rusdianto et al., 2020; Metusala et al., 2020; Ashari et al., 2021; Mujiono, 2021). We surmise that there may have been Javanese acculturations expressed in the story of Gautama Buddha in the reliefs, in part to facilitate dissemination of Buddhist teachings among the ancient Javanese community of that time.

The Karmawibhangga reliefs, which are widely recognised for their aesthetic importance, are located within the basal architectural framework of Borobudur Temple (Levi, 1931). There exists a collective sum of 160 panels, of which a mere four relief panels, on the southeastern front, are accessible and observable by tourists. Among the series are specific panels displaying biological adornments or ornamentation in the form of flora and fauna. The precise identity and intended use of these adornments remains undisclosed, and there is a lack of taxonomic identification of the species, or clarification of the significance of the flora and fauna within the narrative structure of the panels. We maintain that a comprehensive reading and understanding of the flora and fauna will reveal a deeper symbolic meaning beyond a solely decorative function, contribute to the accumulated studies of the Karmawibhangga relief, and set these studies in a broader context.

The Karmawibhangga relief is a comprehensive record of the artistic, cultural, and societal dimensions of ancient Javanese society, with meticulous preservation of its authenticity. This relief serves as a vehicle for imparting lessons on the fundamental concept of *karma*, which encompasses the interplay between actions and their subsequent outcomes (*karma vibhanga*, cause and effect). Krom (1920), Fontein (1989), and Santiko and Nugrahani (2012) have conducted examinations and analyses of the Karmawibhangga panels. However, in the context of decorative sculptures, there are also elaborate renderings of tropical flora and fauna, buildings, and tools that are closely associated with human activities, yet the specific applications and interpretations of these components continue to be ambiguous and are not widely comprehended. It is thought that the ornamental placement within each panel may serve an aesthetic, symbolic, technological, or as-yet-undisclosed function. The examination of faunal ornamentation in Borobudur Temple has been conducted by Krom (1920), Suropto & Pranowo (2001), and Febrianto and Idris (2016) with these researchers providing a concise overview of the existence of these ornaments. However, the purpose of the flora and fauna ornaments illustrated in the Karmawibhangga reliefs remains unresolved (Halim & Herwindo, 2017). More recently, a series of investigations conducted by Achmadi et al. (2020), Rusdianto et al. (2020), and Ashari et al. (2021) of several panels of the Lalitavistara story panels, have brought to light that the faunal ornaments portrayed in relief have symbolic significance rather than being just decorative elements. This suggests that the Karmawibhangga ornamental panels are likewise of symbolic significance.

The comprehensive range of fauna and flora adornments portrayed in every panel of Karmawibhangga's story are not consistently revealed. Therefore, the present study investigates the classification of faunal and floral species and their portrayal inside selected individual panels in the story of Karmawibhangga.⁵ Analytical methods from queer taxonomy and ecology, archaeology, and heritage, are used in this study to reveal tropical flora and fauna species and the roles they play in the context of a fuller story of the panels. Such a practice of queer heritage provides a new perspective on how to reveal the story of the carved panels of Borobudur Temple. The disclosure of tropical flora and fauna species in Borobudur undoubtedly adds to the value of the art and its attractiveness for connoisseurs and researchers of the temple; yet furthermore, the results of this identification can be used in a contemporary approach to explain intersectionality, heterosexuality, fluidity, and binary elements of cause and effect in the Karmawibhangga story narrative so that the normative framework in the story can be deconstructed by approaching the topic from diverse perspectives.

Materials and Queer Methods

The Karmawibhangga panels are below ground level and embedded at the base of the Borobudur Temple (Figure 1). Therefore, the analysis of nature depicted in these panels is dependent on the documentary images held by the Borobudur Conservation Office (BKB). Comprehensive queer methodologies were undertaken on a total of 160 panels in order to investigate the depiction of flora and fauna in the Karmawibhangga reliefs. The reliefs are read sequentially in a *pradaksina*⁶ style (Harto, 2014).

Queer methodology emphasises theories from deconstruction (Derrida, 1993), intersectionality (Crenshaw, 2014), and performativity (Butler, 2006), to research, analyse and challenge traditional norms, assumptions, and categories related to gender, sexuality, and identity. It emerged as part of the broader LGBTQ+ movement and is used primarily in fields such as gender studies, queer theory, cultural studies, sociology, and anthropology. In this study of heritage-archaeology, we use some key aspects of queer methodology, including: deconstruction of norms, notions of intersectionality; fluidity, and complexity; critique of heteronormativity; ideas from interdisciplinarity and reflexivity; and the challenging of binary oppositions such as male/female, day/night, rich/poor, masculine/feminine, weak/strong, and dominant/dominated, superior/inferior.

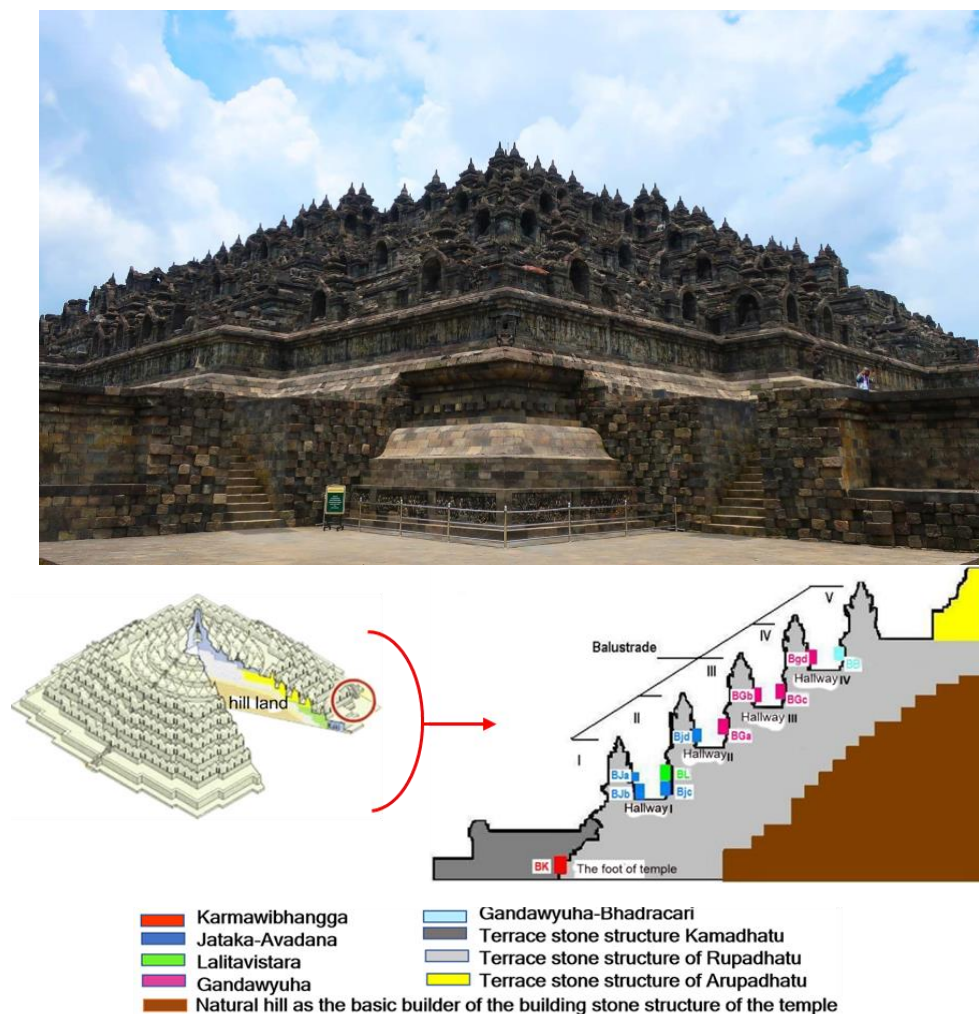
The comparative identification results are encompassed in the evaluation of the congruence between the morphology, behaviour, and habitat of the identified flora and

⁵ We have carried out an investigation of panels 0-65, 0-105 and 0-118. In this article we present panel 0-15.

⁶ The practice of reading a relief panel by walking around the object in a clockwise direction.

fauna species across many taxonomic categories, such as mammals, birds, molluscs, and plants.⁷ The faunal characteristics were subjected to comparative analysis with relevant literatures that include Gunawan et al. (2008), Phillipps and Phillipps (2016), MacKinnon and Philips (1993), and Eaton et al. (2016). A comparison of the characteristics of the flora was matched with Plants of the World Online (POWO, 2023).

Figure 1. The position of Karmawibhangga relief and other reliefs in Borobudur Temple



The current investigation utilises an iconographic methodology to analyse representations of flora and fauna. The aforementioned approach is commonly known as the *wimba*⁸ method. The incorporation of diverse narrative techniques is crucial for

⁷ Other panels reveal more taxonomic categories, including amphibians, fish and reptiles. In this paper (for the purposes of brevity) we are only able to discuss the one panel.

⁸ Part of the image. See details in Harto (2014).

effectively conveying messages through the depiction of fauna together with specific accompanying flora. The primary purpose of these prominent visual representations is to effectively convey essential details pertaining to the geographical setting, temporal framework, and the animal or plant's relative placement or significance within the depicted scene.

The analysis of the relief is a discourse that incorporates both social and environmental dimensions in interpretive critical reflexivity that is consistent with Mundayat's (2021) paradigm. Moreover, this research also entails the application of intra-textuality, a method that pertains to the analysis of contextual connections inside the panel (Sharrock & Morales, 2000), as well as the additional utilization of extra-textuality, which includes the analysis of the contextual correlation between the significance of a carved text within the panel and the significance of the text derived from external sources (Langlands, 2018). The identification findings are compared with the results of previously published story analyses (Krom, 1920; Fontein, 1989; Santiko & Nugrahani, 2012). Finally, the use of a queer methodology adapted from Giesecking (2013) and Brim and Ghaziani (2016) is used to posit queerness through the analysis of a representative panel (panel O-105).

Research Results

This study presents empirical findings indicating that the unearthed Karmawibhangga reliefs embodies a wider spectrum of thematic content which surpasses the mere depiction of karmic cause and effect relationships. The reliefs can be read like literary works that encompass elements of documentation, scientific knowledge pertaining to tropical flora and fauna, and sociological concerns, along with the integration of critical perspectives on matters of social significance.

Our analysis concentrates on the representative panel number O-105. Of the reliefs depicting the Karmawibhangga story, this panel shows the most remarkable diversity of tropical flora and fauna species compared to other panels (Table 1). All identified fauna species live in tropical areas and their distribution is indigenous to Indonesia. These findings reinforce the fact that the fauna carved in the Karmawibhangga reliefs are native Indonesian species which lived on the island of Java around the site where the Borobudur Temple was built. The same applies to species of flora, all of which are native to Indonesia. Some flora species remain extant today in the vicinity of Borobudur Archaeological Park, including Jackfruit (*Artocarpus heterophyllus*), Manggo (*Mangifera indica*), and Tropical almond (*Terminalia catappa*) (Metusala et al., 2023).

Table 1. Biodiversity of flora and fauna carved on panel O-105 of the Karmawibhangga relief at Borobudur Temple

Panel	Fauna	Flora
O-105	<ol style="list-style-type: none"> 1. Sunbirds (Nectaridae) 2. Javan tiger (<i>Panthera tigris</i>) 3. Binturong (<i>Arctictis binturong</i>) 4. Palm civet (<i>Paradoxurus hermaphroditus</i>) 5. Muntjac (<i>Muntiacus muntjak</i>) 6. Lesser mouse-deer (<i>Tragulus javanicus</i>) 7. Long-tailed macaque (<i>Macaca fascicularis</i>) 8. Snails (Gastropods) 	<ol style="list-style-type: none"> 1. Mango (<i>Mangifera indica</i>) 2. Jackfruit (<i>Artocarpus heterophyllus</i>) 3. Sugarcane (<i>Saccharum officinarum</i>) 4. Giant taro (<i>Alocasia macrorrhizos</i>) 5. Tropical almond (<i>Terminalia catappa</i>) 6. Banana (<i>Musa paradisiaca</i>)

We expand on the panel's people, vegetation, fauna, and structures to tell the relief's story from a fresh angle, that of queer ecology. Queer ecology challenges established dichotomies that have influenced our perception of the natural world and human culture by employing a distinct "queer perspective." By incorporating disciplines such as queer theory, science studies, and ecofeminism, the field of queer ecology questions the dominant narrative that upholds heteronormativity in both the natural and human spheres. This entails acknowledging the innate variety of life, encompassing phenomena such as same-sex animal pairings and intersexuality in plants. Queer ecologies challenge the notion of human superiority by highlighting the connection and inherent worth of all beings, irrespective of their species, identity, gender or sexual orientation. It ultimately promotes a new vision of ecological practices, arguing for sustainable living that reduces harm to both the environment and oppressed populations. This will create opportunities for a future where both the natural world and human society flourish, transcending the limitations imposed by inflexible dichotomies (Mortimer-Sandilands & Erickson, 2010; Haraway, 2016; Cole & Sze, 2022; McGarry, 2022; Plumwood, 2023).

According to our analysis, the symbols depicted in the panel have significant meaning and support each other. Therefore, in the following discussion we thoroughly explore the representative panel from queer ecology, iconography, archaeology, and heritage perspectives. We show how the Borobudur Temple panel O-105 depicts queer ecology and archaeology. This representative panel analysis enables research which expands understandings and can be used to study how other panels can be understood from queer analytical viewpoints in order to create a more holistic ecological understanding of the Karmawibhangga relief. Our investigation also indicates that identification of carved fauna specimens at the species classification level requires further analysis using morphological identification and contextual narratives and surroundings.

Discussion

Queering the Tropical Biodiversity Carved on Karmawibhangga

Queering nature entails challenging the traditional norms and presumptions associated with the natural world. In the Karmawibhangga relief, the tropical species have been categorised and studied according to a binary framework. However, nature doesn't conform to such rigid distinctions, and neither does queer experience. By adopting a queer perspective, we can acknowledge the fluidity, diversity, and non-conformity that exist in both human identities and the natural world.

The flora and fauna carving of the Karmawibhangga relief hold a rich tapestry of narratives that have often been overlooked. Numerous indigenous cultures and belief systems of Java and the broader Indonesian region have traditionally held animals in high regard, considering them sacred entities imbued with profound spiritual meaning. Nonetheless, the organisms represented in the Karmawibhangga reliefs have been subjected to the imposition of binary categorizations and hierarchies as a result of modern investigations, which therefore disrupted the indigenous comprehension of their respective functions within the ecosystem.

The process of queering the narratives pertaining to various species of fauna and flora include a critical examination and revaluation of these analytical narratives, with an emphasis on recognising and validating their complex and diverse identities (Crenshaw, 1989; Al-Faham, 2019). Similar to how queer persons defy conventional categorizations, the living beings depicted in the Karmawibhangga panels also question oversimplified generalizations. Recognising and accepting the intricacy of the phenomenon of life enables us to obtain a deeper understanding of the fundamental significance that every organism assumes in upholding the intricate equilibrium of the ecological system.

In the context of the fauna kingdom, it is crucial to recognise that non-binary activities and expressions are more widespread than commonly assumed. Research indicates that transvestism is widely displayed in nonhuman animals. Transvestism can manifest physically as animals resembling their opposite sex. Behavioural transvestism occurs when a nonhuman animal exhibits traits associated with the opposite sex of their species. For example, transvestism in a variety of insect species is reported by several entomologists. According to Owen (1988), female *Papilio phorcas* butterflies adopt 'male pattern' wings from male butterflies, allowing them to fly faster and escape prey (see also Roughgarden, 2004). In the kingdom of flora, most plants are intersex, fungi have multiple sexes, many species are trans-sex, and bacteria defy sexual distinctions. Therefore, the classification of two sexes and the

critique of trans sex based on a separation of nature and culture make little sense in the experience of the majority of living organisms. The Karmawibhangga panels showcase a diverse array of species partaking in activities that defy traditional gender standards. The representation of fauna reliefs in the Karmawibhangga stories emphasize the existence of particular fauna species that demonstrate cooperative conduct between males and females in the nurturing of progeny without rigid adherence to gender-defined roles. Through the recognition of these inclinations, we are able to build correlations with queer analyses and examine the limitations imposed by dualistic concepts of the realm of nature.

Similar to how queer experience connects with multiple dimensions of identity, the tropical ecosystems of Karmawibhangga and Borobudur are intricately interwoven. Biodiversity is dependent upon the holistic equilibrium of species, each with its own distinct ecological function. When the equilibrium of this balance is disturbed – typically as a result of human activity – the entire ecosystem might experience negative consequences. This phenomenon likewise reflects the challenges faced by queer communities, where various forms of prejudice and persecution are frequently intertwined. Reconceptualising our comprehension of these ecosystems entails acknowledging the intrinsic worth of all species, irrespective of their dimensions or perceptibility. Similar to how the personal narratives of individuals collectively shape the overarching queer narrative, the presence of each organism within the Karmawibhangga carved panels of Borobudur plays a vital role in maintaining and strengthening ecological well-being.

Panel O-105 goes beyond a simple representation of tropical plants and animals; indeed, it presents a compelling story when analysed from a queer ecological perspective. By exhibiting a variety of species alongside human activities, it challenges the strict divisions that frequently exclude nature from culture, heterosexuality from the natural environment, and humans from other animals. This aligns with the fundamental principles of queer ecology. By highlighting the shared presence and interconnectedness of humans and nature, as Plumwood (2023) emphasizes, the Karmawibhangga panel also dissolves binary distinctions. By excluding animal genders and behaviors, it avoids making assumptions based on heteronormativity and instead promotes a more holistic comprehension of the ecosystem (McGarry, 2022). Moreover, it challenges anthropocentrism by prominently showcasing diverse species, thus undercutting a human-centered perspective, and acknowledging the equal significance of every creature (Mortimer-Sandilands & Erickson, 2010).

The panel's tropical animal life vividly illustrates the notion of interdependence highlighted by queer ecology (Haraway, 2016), indicating how each species depends on and interacts with others for their survival in tightly woven ecosystems. This aligns

with the imperative to form alliances across divergences as many species cohabit and contribute to ecological equilibrium (Cole & Sze, 2022). The panel also suggests the possibility of a common life and the potential for kinship that extends beyond interactions centered solely on humans, hinting at the concept of multispecies kinship (Haraway, 2016; Chao & Enari, 2021). The interdependence of social and ecological systems is recognized in the concept of intersectionality (Plumwood, 2023). Examining the various aspects of such human-with-nature intertwinings helps enhance our comprehension of the story panel. By conducting this exploration, we can gain insights into the reciprocal relationship between social structures, human identities, and the ecosystem, leading to a more sophisticated understanding of the teachings of the Karmawibhangga panel and of the temple of Borobudur.

Panel O-105 urges us to transcend a superficial interpretation and adopt a queer ecological viewpoint that honors interdependence, questions inflexible dichotomies, and cultivates a feeling of kinship within a closely interwoven ecosystem. By doing so, it provides a more profound comprehension of our connection with tropical nature and motivates us to progress towards a fairer and more environmentally responsible future.

Representative Queerness in the Meditation Scene

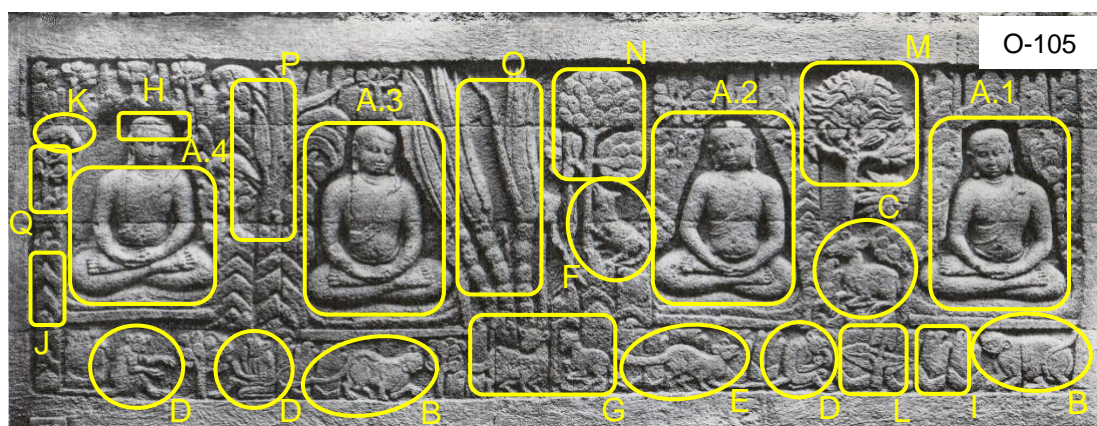
Panel O-105 (see Figure 3) presents the most diverse array of flora and fauna depicted in the Karmawibhangga reliefs of Borobudur Temple and thus is given primary attention in this study. Krom (1920), and Santiko and Nugrahani (2012), succinctly describe this panel as:

Four people meditating surrounded by Palm civets and Black giant squirrel. (Krom, 1920; Santiko & Nugrahani, 2012)

The panel shows four hermits meditating in nature. The identification of tropical species of fauna are revealed as: a pair of Javan tigers (Figure 2.B & B), a muntjac deer (Figure 2.C), several depictions of long-tailed macaques in various postures (Figure 2.D), the Asian palm civet (Figure 2.E), a binturong (Figure 2.F), the lesser mouse deer (Figure 2.G), snails/gastropods (Figure 2.H), and nectar eating sunbirds (Figure 2.K). Regarding the identification of the binturong (*Arctictis binturong*) (Figure 2.F), this is analysed through the morphology of the head and tail shape which indicates a binturong, rather than a black giant squirrel (*Ratufa bicolor*) as identified in previous research papers. It is noted that the binturong and black giant squirrel both live in tree canopies and in the tropical ecological conditions and landscapes as depicted in panel O-105.

Panel O-105 shows us how such a recording and understanding of tropical flora and wildlife furthermore teaches us about the interaction between humans and the environment. A queer ecological perspective can integrate the story's human scenes within their broader environmental dimensions, creating a tightly related ecosystem that deconstructs binary opposition between humans and nature. In this case, the depiction of some of these animals is a reminder that several species have suffered from human impact. The native Javan tiger (*Panthera tigris sondaica*) was assessed as extinct, the binturong is classified as vulnerable, the lesser mouse deer is threatened. Dismantling normative binary thinking is considered essential to ecological ways of being and environmental consciousness.

Figure 2. Panel O-105 Hermit Relief panel of the Karmawibhangga.



The panel shows, reading from right to left: four hermits (A1-A4) meditating surrounded by a pair of Javan tigers (B & B), a muntjac (C), three depictions of long-tailed macaques (D), a Common palm civet (E), a binturong (F), a pair of lesser mouse-deer (G), snails/gastropods (H), V symbol (I), Λ symbol (J), sunbirds (K), Giant taro (L), Mango (M), Jackfruit (N), Sugarcane (O), and Banana (P), and tropical almond (Q)

The geological and geographic conditions on the hermit relief panel show hilly and rocky scenes symbolised by an “Λ” shape (Figure 2.J). These are used as places for the ascetics to meditate, possibly in caves. There are also volcanoes, symbolised by fire eruptions around the hermitages. Additionally, there is water symbolised by a “V” shape (Figure 2.I) and a great diversity of tropical forests, such as those found in the geographical location of the Borobudur Temple site. The natural environment depicted in the reliefs shows a unified ecosystem in which complementary life exists.

Understanding the O-105 panel is not as simple as reading it in a “pradaksina” tradition of circling in a clockwise direction. Added to this tradition, we also need to examine it vertically, both upwards and downwards. Such a reading is not only a complex task, but also reveals a complexity within the relief itself that goes beyond straightforward cause-and-effect interpretations. Such a reading suggests symbolic connections between humans and living things, reveals a way into queer deconstruction and

intersectionality praxis, and offers a critique of normative constructs. Drawing on Butler's technique of "Undoing Gender" (2004), our reading of the Karmawibhangga relief panel engages in "Undoing Normativity" by critically interrogating the dominant construction of the narrative.

Applying Judith Butler's technique of "Undoing Gender" to the Karmawibhangga Borobudur relief in an effort to challenge and dismantle normative expectations is a fascinating and complex endeavour. Although it shows potential, it requires thorough evaluation and awareness to negotiate the delicate equilibrium between perceptive analysis and misinterpretation. Butler's approach provides important tools. It enables us to question inflexible dichotomies in interpretations of the Karmawibhangga, such as the distinctions between good and evil, human and animal, or natural and supernatural (McGarry, 2022). This is in line with queer ecology's demand to dissolve these dichotomies in both the natural world and human society. Furthermore, Butler's work promotes the analysis of power dynamics by scrutinizing norms and constructs, which may uncover how ideologies and social structures are strengthened within analyses of the imagery and symbolism of the relief (Haraway, 2016). This aligns with the critique of anthropocentrism in queer ecology, and the shift to an emphasize on the interconnection and inherent value of all beings. Moreover, "Undoing Normativity" encourages us to explore beyond superficial significance, searching for alternate explanations, and even revealing subversive aspects within the relief.

However, while engaging with the Karmawibhangga from a theoretical perspective such as Butler's, it is crucial to exercise sensitivity and remain mindful of potential challenges. Applying Western critical theory and ideals without considering the specific cultural context and historical relevance of the relief might lead to misinterpretation and devaluing of its cultural meaning. Reducing the intricacies of the relief to a singular analytical perspective will fail to acknowledge its numerous characteristics and profound religious meanings. It is essential to adopt a more sophisticated strategy that takes into account various viewpoints and understandings. Ultimately, although critical analysis holds value, the use of such an analysis must refrain from showing disrespect towards the cultural and religious significance of the Karmawibhangga and its associated beliefs.

To summarize, the application of "Undoing Gender" to the Karmawibhangga relief offers an intriguing chance to examine normativity and its intricacies. Nevertheless, this task necessitates meticulous deliberation while upholding the cultural context of the relief and refraining from the perils of imposing Western frames of reference, which may lead to reductive analysis and oversimplification. Only by adopting a sophisticated and considerate approach, can we acquire vital knowledge about the intricate and

profound meaning of the Karmawibhangga, thus cultivating a more subtle comprehension of its cultural and ecological importance.

Panel O-105 shows that the hermits' ascetic practice is central to the panel. Yet it is difficult to understand its complexity and to ascertain when the practice of meditation is carried out. However, if we use a method of interpretation that pays attention to the relationships within the same relief text (intra-textual) vertically and horizontally, we can find time codes from the existing animal context. Each image within the panel also reveals its contextual significance and thus provides clues on how to read the relief through faunal behaviours.

Prior analyses by Krom (1920), and Santiko and Nugrahani (2012), offer initial interpretations, however, a further detailed examination uncovers a more subtle storyline inside the hermit panels of the Karmawibhangga of Borobudur Temple. The previous interpretations fail to consider contextual cues such as the placement of animals and their activity during the day and night, the neglect of which leads to a more rigid and conventional understanding. This study suggests a reading direction from right to left (or east to west) and takes into account the ascetics' vertical setting along with the symbolism of the animals portrayed. Significantly, two Javan tigers known for their nocturnal nature are present beneath the first and third hermits. This implies that their ascetic practice of self-discipline may commence during the nighttime hours. The hermits in the second and fourth positions have macaques beneath them, which are known for their daytime activity. This suggests that these hermits may be engaged in their practice both during the day and at night. The appearance of a pair of sunbirds near the final hermit on the left, which are typically active during the day, indicates that this hermit's practice reaches its peak during daylight hours.

The panels reveal a temporal pattern that starts at night, transitions to a day-night phase, and ultimately ends during the daytime. This provides a more comprehensive and complex explanation of the ascetics' behaviours. It surpasses the often-expected duration of two days, and instead suggests the potential for prolonged durations of meditation, which may also differ across individuals. Thus, a thorough analysis that takes into account contextual hints questions earlier understandings and uncovers a more intricate and flexible storyline within the hermit panels. This method diverges from prescriptive comprehension and celebrates the intrinsic fluidity of the relief, emphasizing the possibility for more profound investigations and analyses.

Pradaksina (the ritual of following the sun in circumnavigation of a sacred site) reveals that the hermitage is set amid steep jungle terrain with Javan tigers under the first and third hermits. Krom (1920) depicts a hermit as a powerful (masculine) human surviving in a wild natural setting. According to Butler (2004), non-deconstructive descriptions

have a tendency to normalize the masculinity/femininity dichotomy. Such an attitude will inscribe a gender binary and reinforce the idea that masculine males are superior to women. Traditionally men and women are viewed differently by society. Men in Java leave the house (a private location) during the day to find food. Women take care of home and family around the house and garden. Men work in Borobudur's bluestone carvers' environment, and women run the shops selling men's art. Men can wake up at night and leave the house, but women cannot.

Such a society fits Pierre Bourdieu's (2006) definition of masculine domination in the socio-cultural habitus. The normative construction of "male-female," "weak-strong," and "dominant-dominated", as intersecting with men and women's social roles, underpins discrimination. Krom (1920), Fontein (1989), and Santiko and Nugrahani (2012), read the Karmawibhanga panels simply and briefly from this normative perspective and thus do not engage in a more subtle study of causes and effects which is offered by queering this perspective. Such an intersectional approach challenges binary oppositions in the construction of social roles, and thus potentially deconstructs asymmetrical power relations (Crenshaw, 1989; Rooke, 2009; Al-Faham, 2019). Furthermore, despite dichotomies of day/night, wild/tame, high/low, male/female, and wet/dry, ascetic activity is a spiritual practice that reaches beyond and dissolves such binaries to include humans with natural elements in an ecosystem of complex interrelations.

The Javan tiger, Asian palm civet, and binturong are primarily nocturnal, most active at night. Conversely, the lesser mouse deer and muntjac deer are diurnal, active during the day. Traditionally, day and night are seen as binary opposites. However, the hermit panel shows an interrelationship of these contrasting elements. Nocturnal tigers hunt lesser mouse deer, also active at night, implying that these nocturnal animals not only symbolize nighttime but also represent desire. Similarly, macaque monkeys and lesser mouse deer, active during the day, satiate their hunger in daylight. Tigers display nocturnal sexual behavior to fulfill their reproductive instincts, mirroring the similar daytime behaviors of diurnal macaques. Integrating these animals into the framework of repressing hunger and sexual cravings for 48 hours or longer symbolically conveys the relief experienced by restraining carnal desires. Controlling lust also eliminates the distinction between day and night, as the ascetic devotes all their energy to meditation. This symbolically represents the dissolution of all binary oppositions into a singularity of self-control which transcends the traditional binary of day and night prevalent in many normative practices.

In the wild, hunting by tigers requires physical strength, which in human constructs is considered an aspect of masculinity. However, not only do male tigers hunt, but so do females who mature into hunting earlier than males. Both are solitary hunters. Thus,

in panel O-105, the scene of a pair of solitary tigers (male and female facing each other) is relevant. Nevertheless, there is a parallelism between notions of natural masculinity within culture, including Javanese culture, in which hunting activities and night activities are considered activities of men and show their masculinity, like (male) tigers. Alternatively, sunbirds (*Nectaridae*) and deer (*Cervidae*), which are weaker animals than tigers, hunt or collect food during the day and are culturally paralleled as Javanese women who work during the day. All parallelism between nature and culture has become a norm in human social understanding. However, the images in the panel offer an alternative understanding to this socio-cultural construction.

In the first instance, reading the image of the hermit(s) within the various contexts surrounding them, reveals a fusion of binary oppositions between male-female, masculine-feminine, weak-strong, and dominant-dominated because a hermit must restrain various kinds of desires that arise at any time. The hermit doesn't think about day and night because at both times, the ascetic is engaged in fasting. There is no thought about lunch, dinner, sex or other desires that might arise. The presence of a water symbol (V) under the first to fourth hermits (Figure 3.a-d) indicates the presence of available moisture to reduce dehydration during this fasting period. Restraining physical and mental desires is an effort to reach the *anatta*⁹ phase so that there is release from *pancakandha*¹⁰ (Mahâthera, 2005). Through this achievement, logic based on binary opposition is dissolved, and so too is everything that is intersected with this desire to discriminate, likewise, dissolved. The Karmawibhangga reliefs reveal how *pancakandha* is an action to move beyond discrimination based on binary oppositional thinking, including binaries between nature and culture.

This sacred condition of non-duality is intra-textually (Sharrock & Morales, 2000) revealed through the presence of clues in the solitary faunal figures of panel O-105, namely the binturong and the Asian palm civet which are positioned below and beside the second hermit. As solitary animals, they are not depicted in pairs or groups, as are tigers (which are depicted as a pair separated, but facing each other), macaque monkeys, mouse deer and nectar-sucking sunbirds. Furthermore, an extra-textual (Langlands, 2018) reading of aspects of these nature images alludes to sacred symbolism. The binturong emits a fragrant scent from their musk glands. Symbolically, sweet fragrance is associated with a clean or holy soul. The binturong is depicted climbing a jackfruit tree (*Artocarpus heterophyllus*) (scene on left of second hermit) which in the context of old Javanese society, influenced by the Hindu tradition, is considered a sacred tree. On the neighbouring island of Bali, Balinese Hindus reserve

⁹ *Anatta* (Pali: *anattā*) is the characteristic or trait of "no essence" or "no self" or "no spirit" or "no true entity" that exists in all existence.

¹⁰ *Pancakhandha* (Pali) comes from the words "panca" and "khandha". *Panca* means five and *khandha* means group. So *Panca Khandha* means the five aggregates of life.

jackfruit wood for making “merajan” (in the Javanese language), a place to make offerings for worship. The character of jackfruit wood is that it is strong, and resistant to termites and other wood destroying creatures. The yellow colour of the wood is a symbol of majesty, and the fragrant smell of jackfruit complements the symbolic aspect of the yellow colour. Therefore, overall, the existence of the jackfruit tree is a symbol of strength, majesty and fragrance, like the fragrant binturong climbing the tree, which also signifies climbing to a higher level of soul control. The solitary character of the binturong is furthermore symbolic in that it does not signify a dichotomy between men and women.

Similarly, the hermaphroditic gastropod deserves a close reading. In a simple analysis, the presence of the gastropod is understood as the action of the snail that protects the hermit’s head in a commitment towards asceticism. However, a further interpretation influenced by a queer perspective, reveals that the hermaphroditic gastropod on the head is a symbol of controlling desires through the attainment of the *anatta* (substance-less) position. In this state, our minds will be able to see everything in a non-binary manner, because everything in socially constructed according to binary opposition basically merges, and thus dissipates. This means that the snail on the head of the last ascetic (right image) is a symbol of the state of nonduality in which binary notions that distinguish between masculinity-femininity, male-female, day-night, strong-weak, and so on are eliminated. The morphology of the snail cannot be separated from the concept of emptiness in Buddhist teachings, which is also reflected in the tops of all the stupas of the Borobudur Temple, including its main stupa.

In Buddhist philosophy, *sunyata*¹¹ (in Sanskrit) or *suwung* (in Javanese) is the void that constitutes the highest reality. Sunyata is not seen as a denial of existence, but as the non-differentiation that is the source of all entities. This means that the fourth ascetic, whose head is covered by a hermaphroditic gastropod, represents the achievement of emptiness and the attainment of reasoning that no longer sees everything from the logic of differences, hierarchies, and binaries, which leads to discrimination.

The presence of a snail as a head covering of the left hermit – although not a full head covering of gastropods when the Buddha attained Buddhahood as revealed in the Lalitavistara story panel (Achmadi et al., 2020; Rusdianto et al., 2020; van Krom, 1920) – is the final image of the ascetic. Extra-textually, the hermaphroditic snail is a symbol of the unification of binaries and thus the dissipation of dichotomous logic based on oppositions.

¹¹ Emptiness, vacuity, voidness, or nothingness is an Indian philosophical concept.

On the far left of the panel next to the carving of the hermit, is an image depicting seedlings of the tropical almond tree (Figure 3.I). The tropical almond (*Terminalia catappa*) symbolizes protection, order, serenity, comfort, and harmony. These qualities are likewise sought and safeguarded through queer methodology (Giesecking, 2013). In contemporary times, tropical almonds continue to be planted around the Borobudur Temple (Metusala et al., 2023). If we look at it from below, the morphology of the tropical almond (*Terminalia catappa*) has a symmetrical crown and branches that grow outward horizontally. Read extra-textually, the trees and the way they are shaped by the direction of the wind resemble a "meru, stupa, or mountain peak". Mount Meru is the sacred mountain in Buddhist and Hindu cosmology. It represents the centre of the universe – physically, metaphysically, and spiritually. Thus, the lush tropical almond, through this resemblance to a meru, symbolises nonduality and union. This state also mirrors the emptiness of the tip of a hermaphroditic snail's shell, and it is in harmony with a queer reading of the Karmawibhangga's fauna and flora scenes.

At the end of the story in panel O-105, we find in the scene of a pair of long-tailed macaques (*Macaca fascicularis*) around another image of a tropical almond seedling. Extra-textually, following the method of Langlands (2018), the scene associated with macaques in the context of a hermit is closely related to the biological character of macaques, whose behaviour consists of jumping around, squeaking, and chattering. This monkey behaviour later became embodied in the term "monkey mind", which comes from the Chinese word "xīnyuán" or the Sino-Japanese word "shin'en" 心猿. Literally, this is a word that means "heart-mind-monkey". It is a Buddhist concept that describes a state of restlessness, disorder, and lack of control in a person's mind, which can be calmed with meditation or asceticism. The tropical almond as a symbol of protection is affective of controlling the "heart-mind monkey". The two macaques on either side of the tropical almond tree appear to be in an orderly position. Therefore, this is a symbolic representation that connotes how, with meditation, the heart and mind become focused and in harmony.

Conclusion

This study utilises a queer methodology to analyse a representative relief panel of the Karmawibhangga story. The findings reveal that the Borobudur temple not only showcases the artistic aspects of carving and design, but also presents a perspective that fundamentally challenges normativity. The Buddhist tradition within the ancient Javan civilization as represented by Borobudur Temple can be characterized as possessing a unique tropical perspective that reconfigures established norms of existence in the contemporary world. This perspective posits that plants, animals, and humans have inherent equality, hence discouraging the perception of humans as superior to animals and plants in a hierarchical manner.

Thus, the queer ecology viewpoint used in this investigation demonstrates a preliminary example in a broader strategy for challenging normative analysis in tropical heritage studies. The perspective of binary opposition or duality, which posits contrasting extremes that contribute to the formation of identity, has engendered a normative framework that perpetuates discrimination. This is due to its intersection with certain attributes that marginalize and disregard elements deemed to lack strength or power. The broader aim of this deconstructive approach is to enhance human capacity in navigating social, cultural and ecological contexts, reducing discriminatory behaviors towards marginalized peoples, fauna and flora. It focuses on understanding the multifaceted intersections of identities, such as nature-culture, gender, sex, power, time, in order to promote more equitable interactions.

The depiction of karma on Karmawibhangga relief panel, does not merely elucidate the principle of karma-vibhangga, or the law of cause and effect, the panel also demonstrates the movement towards the dissolution of cognitive dualities to reveal an approach aimed at perceiving flora, fauna, and humans as equitable actants. The study of the Karmawibhangga relief, which showcases tropical flora and fauna, employs not only a tropical queer ecological analysis but also intra-extra-textual and contextual interpretation methodologies. This approach has the capacity to address the interplay between biological taxonomy, biological traits, ecological context, and Buddhist literature.

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Contribution

All authors declare no competing interest, and have an equal contribution.

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