



Symbolism of domestic pig (*sus scrofa domesticus*) in karmawibhangga reliefs: Ethnozoological relevance for character education



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ABSTRACT

The domestic pig (*Sus scrofa domesticus*) is depicted in the Karmawibhangga reliefs of Borobudur Temple, Central Java. Despite its visual presence, scientific studies discussing its symbolic meaning from ethnozoological and character education perspectives remain limited. As a representation of culture and spirituality, the depiction of the pig carries profound philosophical significance. This study aims to examine its symbolic meaning and identify character education values within these narrative panels. Using a descriptive qualitative approach and ethnographic methods, this research involves visual documentation, literature reviews, and interviews with archaeology and zoology experts. Observations were conducted at the Borobudur Museum and Cultural Heritage site, supported by morphological analysis from relevant literature. Results indicate that pigs appear in panels 9 and 74. Morphometric analysis reveals high anatomical accuracy, with body proportion similarity reaching 92.24%. These findings confirm that the pig is not merely a decorative element but a narrative supporting component conveying character education values, including: religiosity, tolerance, discipline, curiosity, appreciation of achievement, friendliness and communicative attitude, love of peace, environmental awareness, and responsibility.

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INTRODUCTION

Indonesia is a nation characterized by a rich diversity of ethnic groups, religions, and cultural traditions (Afia et al., 2018). Among these, Buddhism has a particularly close historical and cultural connection with Indonesian society. One of the most tangible manifestations of the influence of Buddhist teachings in Indonesia is the Borobudur Temple (Hayati et al., 2023). This



monument is a Buddhist temple built during the Syailendra dynasty around the 9th century (Santiko, 2016). Borobudur Temple is located in Borobudur District, Magelang, Central Java, Indonesia. This monument was constructed using andesite stone, and its structure is arranged with an interlocking stone joint system that can be assembled and dismantled (knock-down) without the use of adhesive materials (Puspitasari, 2021). Its uniqueness lies in both the construction technique and its meaning as a model of the universe, which consists of three realms, namely *Kamadhatu*, referring to the world that is still dominated by *kama tanha* or worldly desires, *Rupadhatu*, the realm that is bound by form and shape, and *Arupadhatu*, which represents the formless realm where reliefs are no longer present (Yatno, 2020).

Borobudur Temple has another distinctive feature in that it consists of 1,460 narrative relief panels encircling the monument in 11 tiers, along with an additional 1,212 decorative panels (Setyawan et al., 2017). The relief narratives are classified into the Karmawibhangga, Lalitavistara, Jataka Avadana, and Gandavyuha reliefs (Laurent et al., 2024). The stories depicted in these reliefs are adaptations of Indian Buddhist religious texts that were interpreted by the artists in accordance with the cultural and natural setting of ancient Java, so that they are not only religious in value but also reflect the life of the society (Nabila, 2024). The relief that most extensively portrays the life of the community is the Karmawibhangga relief.

Karmawibhangga is derived from the word “*karma*”, which means action or deed, and “*vibhanga*”, which means flow or sequence. Every action that is performed will generate consequences that influence a person’s life and rebirth, whether in a favorable or unfavorable condition (Santiko, 2016). The Karmawibhangga relief consists of 160 panels that reflect moral values concerning karma as embedded in Buddhist teachings and the cultural worldview of ancient Javanese society (Setyawan, 2022). This relief is located at the lowest level of the temple base, or *Kamadhatu*, and is covered by a corridor structure (Pradita & Nugroho, 2020). Nevertheless, the southeastern corner of the temple base structure is left open so that visitors can view several Karmawibhangga panels. This relief holds extraordinary potential that has not yet been fully explored, particularly the faunal carvings that are rich in meaning. The position of the Karmawibhangga relief at the base of Borobudur Temple and its coverage by the corridor structure are shown in Figure 1.

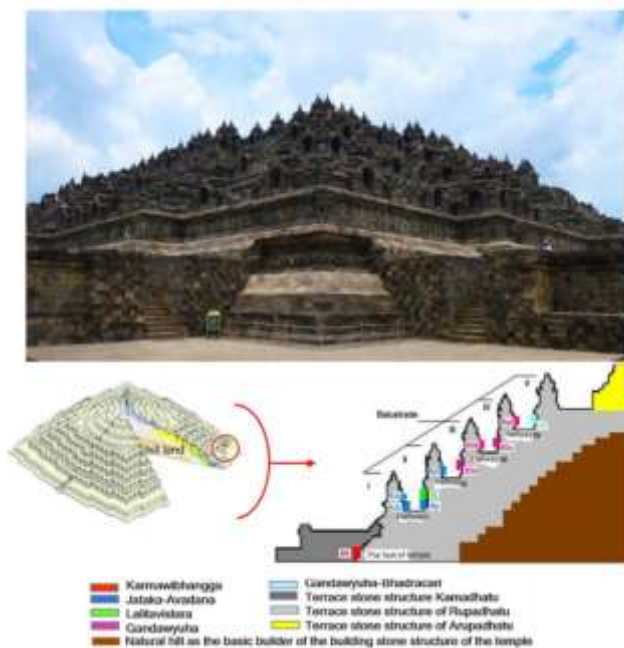


Figure 1. Location of the Karmawibhangga Relief at Borobudur Temple (Rusdianto et al., 2024)

One of the potentials that can be explored in the Karmawibhangga Relief is the depiction of fauna, including the relief of the domestic pig (*Sus scrofa domesticus*). Pigs are animals used in traditional rituals or offerings of gratitude, as well as in death ceremonies and other rites, as a form of respect for guardian spirits and ancestors (Nikmatila et al., 2023; Tjoa et al., 2025). The depiction of the domestic pig (*Sus scrofa domesticus*) in the Karmawibhangga relief is not merely ornamental but also carries symbolic meaning that reflects the relationship between humans, nature, and moral values. However, the symbolism of the domestic pig (*Sus scrofa domesticus*) in this relief has not yet been explored in depth, even though it contains important messages related to the law of karma or its consequences, which are relevant to character formation.

Character education can be defined as a systematic effort to instill moral and ethical principles that serve as the foundation for human behavior and interactions with the surrounding environment (Lickona, 2019). At its core, character education aims to shape a nation that is resilient, competitive, noble in character, moral, tolerant, cooperative, imbued with a patriotic spirit, dynamically developing, and oriented toward science and technology, all of which are inspired by faith and devotion to Almighty God in accordance with the values of Pancasila (Choli, 2020). Therefore, the Ministry of National Education Kemendiknas (2011) has identified 18 character values that need to be instilled in students, which are derived from religion, Pancasila, and the National Education Goals. These eighteen values are: 1) religiosity, 2) honesty, 3) tolerance, 4) discipline, 5) hard work, 6) creativity, 7) independence, 8) democracy, 9) curiosity, 10) national spirit, 11) love for the homeland, 12) appreciation of achievement, 13) friendliness and communicative attitude, 14) love of peace, 15) fondness for reading, 16) environmental awareness, 17) social care, and 18) responsibility. However, in practice, the implementation of character education is often still general in nature and has not fully integrated local wisdom and cultural perspectives. A new approach is needed that is more contextual and relevant to the life of the community.

Studies of the reliefs at Borobudur Temple have examined their ecological and cultural aspects; however, ethnozoological studies at the Borobudur Temple remain limited. Previous research by Metusala et al. (2020) successfully identified 63 plant species in the Lalitavistara relief narratives, indicating that ancient Javanese society was aware of biodiversity. Another study revealed the depiction of 25 species of vertebrate fauna (Suripto & Pranowo, 2001). In addition, research by Ashari et al. (2021) identified 22 bird species portrayed in the Lalitavistara reliefs, emphasizing the role of birds in supporting the narrative of the Buddha's life journey. Subsequent research also succeeded in analyzing the visualization of rice plants in the Karmawibhangga Relief, panel number 65 (Anggorojati et al., 2023). These studies provide an understanding of how ancient Javanese society reflected the natural environment and cultural values. However, most of these studies are primarily descriptive and inventory-based, and have not extensively examined the character values embedded in the representation of fauna. Therefore, an important research gap remains, namely, to explore how the reliefs of Borobudur Temple, particularly through faunal representations, can reflect character values and local wisdom that are relevant to contemporary character education.

Considering this research gap, this study introduces novelty by adopting an ethnozoological perspective to examine the Karmawibhangga reliefs at Borobudur Temple and explore the character values embedded in the depiction of fauna as representations of local wisdom (Farhaeni & Martini, 2023; Riyanto, 2017). Ethnozoology is a branch of science that examines the cultural context, symbolism, utilization, and belief systems related to interactions between humans and animals (Berlin, 2019; Pilatus et al., 2017). Ethnozoology is highly important in the process of understanding the role of communities in conserving biological resources, as it can provide insights into conservation practices based on local wisdom (Sinthumule, 2023). The identification process

of the domestic pig (*Sus scrofa domestica*) relief was conducted using a morphological approach to determine its species, genus, and family levels (Rusdianto et al., 2024). This study aims to examine the symbolic meaning of the domestic pig (*Sus scrofa domestica*) in the Karmawibhangga relief and to identify the character values contained in the sequence of narrative panels. The results of this study are expected to enrich the understanding of Borobudur's cultural heritage while also serving as a source of inspiration for learning.

RESEARCH METHODS

Research Design

The study was conducted from September to December 2025 at the Borobudur Temple Site located in Borobudur Regency, Central Java. This research employed a descriptive qualitative approach with an ethnographic design to explore the in-depth meanings of the Karmawibhangga reliefs at Borobudur Temple, particularly the representation of the domestic pig (*Sus scrofa domestica*) in relation to character education. According to Creswell & Creswell (2018). A descriptive qualitative approach enables researchers to describe phenomena in detail and comprehensively through visual documentation, literature reviews, and interviews with experts in archaeology and zoology. The ethnographic design was applied to understand the cultural and philosophical context embedded in the reliefs; thus, the character values contained in the karmic teachings illustrated through the depiction of the domestic pig (*Sus scrofa domestica*) could be revealed. The tools and materials used included stationery, interview instruments, observation sheets, the Iamagometer application, a voice recorder, and a camera. In addition, tracing lines were created based on the depiction of the pig in the relief. This process required Adobe Photoshop CC 2019 to generate and clarify the lines by following the contours of the pig's body, head, legs, and tail, as carved in the relief. The resulting basic line drawings were then further processed using CorelDRAW Graphics Suite 2019 for refinement through smoothing procedures, such as adjusting line thickness.

Population and Samples

The research population comprised all Karmawibhangga relief panels, totaling 160 panels that depict various types of fauna. From this population, the sample was purposively selected by choosing panels that explicitly include representations of the domestic pig (*Sus scrofa domestica*) as the main object of the study. Based on these criteria, two panels were selected, namely the Karmawibhangga relief panels number 9 and 74. The observations were carried out by documenting the narrative context and the visual forms presented in each relief.

Instruments

The Karmawibhangga reliefs are part of the Borobudur Temple and are currently covered with limited access. Therefore, the analysis could not be conducted through direct physical observation in the field, but instead relied on photographic documentation and the narrative context presented in the literature, particularly the book written by Ānandajoti (2020) titled Karmavibhaṅga, as well as on the symbolic interpretations that previous researchers have carried out. To support this analysis, research instruments were prepared, consisting of: 1) a relief observation sheet used to record detailed features from the photographic documentation; 2) a species identification sheet containing morphometric and morphological aspects; and 3) an interview guideline designed to obtain in-depth information from expert informants in the fields of archaeology and zoology. The instrument frameworks for observing the reliefs and the living domestic pigs are shown in Table 1 and Table 2.

Table 1. Observation instrument framework for identifying the domestic pig in the Karmawibhangga reliefs at Borobudur Temple

Observed Aspects	Criteria
Relief panel data	Panel number and position
Physical description of the domestic pig	Body shape and proportions, and visible body parts
Narrative context	Scenes and interactions depicting the pig with humans or other animals
Symbolic meaning	Symbolic interpretation of the pig in the Buddhist context
Additional information	Artistic information, condition of the relief, or supporting field interpretations

Table 2. Observation Instrument Framework for Identifying the Living Domestic Pig

Observed Aspects	Criteria
Biological aspects	Species identification, physical characteristics of the pig, and morphometric measurements for comparison with the pig depicted in the relief
Behavior	Activities or habits of the pig, and its social interactions with humans
Environmental conditions	Habitat of the pig in its environment

Procedures

The stages of this study were systematically arranged into two main phases. The first phase was exploration and identification, which involved tracing the documentation of the Karmawibhangga reliefs at Borobudur Temple that display representations of the domestic pig (*Sus scrofa domestica*). From these photographs, detailed visual observations were conducted regarding the form, position, and contextual appearance of the domestic pig (*Sus scrofa domestica*) in the relief panels. The inventory covered morphological and morphometric aspects, as well as the narrative context of each panel. The second phase was the analysis of symbolic meaning and character values, which included interpreting fauna through ethnozoological approaches, cultural semiotics, and local wisdom, and their association with moral teachings in Buddhism.

Data Analysis

The data analysis technique employed in this study was descriptive qualitative, referring to the model proposed by Creswell and Creswell (2018) which consists of five stages: 1) organization of visual data from the literature related to the Karmawibhangga reliefs, 2) comprehensive examination of the pig and its narrative context, 3) classification of symbolic meanings, 4) coding and thematic categorization based on the ethnozoological approach, and 5) presentation of descriptions through symbolic interpretation.




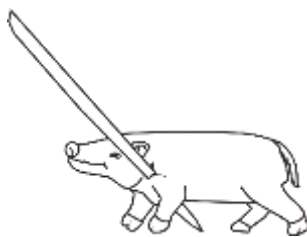
RESULTS

Visual Identification Results

Based on the results of exploration and interviews, two relief panels depicting the domestic pig (*Sus scrofa domestica*) were identified. These reliefs are located on the eastern and western sides of Borobudur Temple, and the distribution of the panels is presented in Table 3. Based on Table 3, it is shown that panel number 9 depicts a complete narrative sequence, which includes: a) the depiction of a domestic pig (*Sus scrofa domestica*) being herded by two human figures. The pig is portrayed in a living condition and does not display any acts of violence. The depiction of the pig in the relief includes its mouth, eyes, ears, body, tail, and all four legs, with body

proportions that are shown to be smaller than those of the human figures guiding it. The representation of the pig in the panel shows an expression and posture with a relatively positive emotional tone, indicated by the tail position that appears to hang in a relaxed manner; b) the depiction of a figure who is seen releasing fish into a pond; c) the depiction of chickens that are allowed to roam freely in the surrounding environment. These various activities are related to the acts of releasing and caring for living beings. Meanwhile, d) visualizes a nobleman or prince sitting with his queen and child, accompanied by other nobles who are seated facing him. The visual composition in this panel scene indicates a connection between good human actions toward animals and the attainment of favorable karma. Thus, the representation of the pig in the panel reinforces the interpretation that its presence forms part of the sequence of human activities in everyday life.

Table 3. Presence of the Pig in the Karmawibhanga Reliefs at Borobudur Temple

Panel Location	Relief Description	Sketch
Panel at the temple base covered by the corridor structure, eastern side, panel number 9	 <p>a) Pig in the relief; b) A figure releasing fish into a pond; c) Chickens roaming freely; d) A nobleman or prince sitting with his queen and child, accompanied by other nobles.</p> <p>Source: (Ānandajoti, 2020)</p>	
Panel at the temple base covered by the corridor structure, western side, panel number 74	 <p>a) Pig in the relief; b) A teacher and a figure conversing with his partner; c) A woman turning away from a brahmana and approaching her husband; d) A group of people idling under a tree.</p> <p>Source: (Ānandajoti, 2020)</p>	

The second image shows the scene in panel number 74, located on the western side of Borobudur Temple, which narratively visualizes several scenes, including: a) the depiction of a domestic pig (*Sus scrofa domestica*) in the relief. In this relief, the domestic pig (*Sus scrofa domestica*) is portrayed as experiencing an act of violence in the form of being stabbed with a spear or an iron-tipped pole by a man positioned below the teacher. The pig in this panel is depicted with a body posture that indicates a threatened condition, in line with behavioral characteristics of pigs under negative emotional states, such as a rigid body as a sign of alertness and a gaze directed toward the source of threat; b) a figure who is interacting affectionately with his partner is located on the right side. In this scene, a wise teacher is shown sitting and ready to

teach; however, in front of him, some individuals are preoccupied with conversing with their wives, thereby neglecting the Dharma teachings that are about to be delivered; c) A woman is shown turning away from the Brahmana and choosing to approach her husband. This attitude signifies a rejection of guidance and a tendency to prioritize worldly attachment. Meanwhile, d) on the left side of the panel, a group of people is depicted idling under a tree, symbolizing a futile life without efforts to attain wisdom. Overall, the sequence of scenes in panel number 74 emphasizes a moral message that an unwillingness to ask questions, a reluctance to receive teachings, or a refusal to listen to the guidance of the wise can lead to a misguided life and distance oneself from wisdom. In the perspective of Buddhist ethics, the fundamental mental states that underlie unwholesome behavior are greed, hatred, and mental delusion (Grossman, 2015). The overall composition of this panel illustrates that the pig serves as a symbol of the tangible consequences of unwholesome behavior arising from mental delusion, namely, acts of violence carried out without compassion.

Morphometric Measurement Results of the Domestic Pig (*Sus scrofa domestica*)

The comparison of the proportions of the pig's body parts as depicted in the Karmawibhangga reliefs with those of actual domestic pigs refers to the study by Sumardani et al. (2017), which used the Bali pig (*Sus scrofa domestica*) as the measurement reference. This measurement indicates a significant similarity in scale. The results of the size ratio calculations are presented in Table 4. After the ratios of the pig's body dimensions were determined, the overall level of proportional conformity could be calculated. Based on the analysis, the similarity in body proportion between the pig depicted in the Karmawibhangga reliefs and the actual pig reaches 92,24%. This finding is further supported by the data presented in Table 5.

Table 4. Comparison of Body Part Proportions of the Pig in the Karmawibhangga Reliefs with Actual Measurements, referring to Zelditch et al. (2012)

Body Part	Length		Body Measurement Reference	Total Size		Relief Ratio	Actual Ratio
	Relief	Actual		Relief	Actual		
Head	9,8 cm	13 cm	Head – Total Body Length	28,8 cm	52 cm	1 : 2,94	1 : 4
Tail	7 cm	18 cm	Tail – Trunk Length	19 cm	39 cm	1 : 2,71	1 : 2,17
Trunk	19 cm	39 cm	Trunk – Total Body Length	28,8 cm	52 cm	1 : 1,52	1 : 1,33
Humerus	5,3 cm	7,6 cm	Humerus – Anterior Limb	9,8 cm	15.3 cm	1 : 1,8	1 : 2,0
Femur	4,0 cm	7,5cm	Femur – Posterior Limb	8,2 cm	16.5cm	1 : 2,0	1 : 2,2

Table 5. Percentage of Proportional Similarity between Body Parts of the Pig in the Karmawibhangga Reliefs and the Actual Size of the Domestic Pig (*Sus scrofa domestica*), referring to Zelditch et al. (2012)

Body Part	Formula	Percentage of Similarity
Head	(100% - 9.01%)	90.9%
Ear	(100% - 9.18%)	90.82%
Trunk	(100% - 9.4%)	90.6%
Humerus	(100% - 5.5%)	94.5%
Femur	(100% - 4.6%)	94.4%
Average		92.24%

The percentage of similarity was calculated based on the difference in proportional values, namely the ratio of the length of each body part to the total body length, between those depicted in

the Karmawibhangga reliefs and those of the actual pig specimens. This calculation includes a comparison of the body length ratios of the pig visualized in the reliefs with the body length of the pig under real conditions. The formula used to calculate the percentage of similarity refers to (Dasore et al., 2022), namely: Percentage of similarity = $100\% - (\text{Difference between the proportions in the relief and the actual proportions})$.

Based on Table 5, the use of the formula aims to assess the extent to which the visualization of the pig in the Karmawibhangga reliefs is able to represent anatomical proportions that closely approximate its actual form. The average similarity value of 92.24% indicates that the depiction of the pig in the reliefs has a high level of accuracy when compared with the actual size of the pig, even though it was created within an artistic and symbolic context.

DISCUSSION

The domestic pig (*Sus scrofa domesticus*) depicted in the Karmawibhangga reliefs at Borobudur Temple constitutes an important subject in the fields of art history and archaeology, as its representation shows a high level of morphological accuracy (Prajoko et al., 2025). This level of accuracy indicates that the sculptors of that period did not rely solely on imagination, but also possessed a sound understanding of the physical characteristics of the animals they portrayed (Febrianto & Idris, 2016). Although stone as a medium imposes certain limitations, the body shape, snout, and proportions of the pig are portrayed with a high degree of detail. Quantitatively, morphometric analysis of five depicted parts of the pig in the reliefs, namely the head, tail, trunk, humerus, and femur, shows a high level of similarity to the proportions of living pigs. The average similarity score reaches 92,24%, with the humerus exhibiting the highest level of similarity (94,5%) and the trunk the lowest (90,6%). These findings indicate that the artists of the past not only considered aesthetic aspects but also paid attention to biological accuracy in depicting animals (Rusdianto et al., 2020).

The carving of reliefs at Borobudur Temple follows an aesthetic canon known as *sad-angga*. This canon encompasses several principles, namely *rupabheda*, *sadrsya*, *pramana*, *wanikabanga*, *bhawa*, and *lawanya*. *Rupabheda* emphasizes the clarity of formal distinctions, so that the carved objects can be easily recognized by observers according to their specific characteristics. *Sadrsya* relates to visual conformity, in which the carved forms are aligned with the scene's ideas and intentions so they can be understood consistently. *Pramana* refers to the precision of measurement and proportion of the main objects in the carving process, while *wanikabanga* regulates the appropriate use and selection of colors in accordance with their symbolic meanings. Furthermore, *bhawa* denotes a principle that requires the artist to express the figures' emotions, thereby shaping the narrative flow and meaning. *Lawanya* represents the principle of beauty that must be perceptible to the observer (Setyawan, 2024).

The depiction of the domestic pig (*Sus scrofa domesticus*) in the Karmawibhangga Relief is also grounded in the *sad-angga* canon, particularly in the principle of *pramana*, which emphasizes the accuracy of size and proportion of the main objects in a work of art. This principle plays an important role in maintaining visual balance to clarify the narrative flow of the relief; thus, the portrayal of the pig can be understood as a combination of zoological knowledge and aesthetic, as well as narrative purposes (Rusdianto et al., 2024). The high level of conformity between the form of the pig in the relief and that of the actual domestic pig, at 92,24%, suggests that the relief sculptors (*shilpin*) recognized the pig by its morphological characteristics and the symbolic meanings attached to it. The application of the *pramana* principle is also related to *sadrsya*, namely the correspondence between visual form and the meaning intended to be conveyed by the relief sculptors (*shilpin*).

In panel number 9, the pig is depicted as being herded by two human figures and appears within two layers of narrative. According to Ānandajoti (2020), this scene represents the practice of releasing animals that are about to be slaughtered as a form of virtuous action, which is visualized through: a) the act of herding the pig, b) releasing fish into a pond, and c) allowing chickens to roam freely on the right side of the relief. The consequences of these actions are shown on the left side of the relief, in the form of d) a prince sitting with his queen and child, surrounded by nobles, symbolizing prosperity, longevity, and social honor. This narrative sequence also aligns with the tradition of releasing living beings (*fangsheng*) in East Asian Buddhism, which emphasizes compassion and the prohibition on killing as the foundation for gaining good karma (Buswell Jr & Lopez Jr, 2014). Meanwhile, Damai et al. (2020) interpret the same panel as a representation of a grand tradition associated with royal authority, marked by scenes of gift-giving in the form of livestock and food placed in large containers, which are linked to the practice of establishing *sima* lands. These two interpretations indicate that the narrative sequence of panel number 9 is multi-symbolic, in which the pig functions both as a symbol of virtue through the act of liberating living beings and as a symbol of offerings within the social and cultural practices of ancient Javanese society. This depiction is also in line with the views of archaeologists who state that in panel number 9, the pig represents one of the living beings that becomes an object of compassion and receives humane treatment.

The narrative depiction in panel number 74 presents several scenes. According to Ānandajoti (2020) in part a) the domestic pig (*Sus scrofa domesticus*) is visualized as experiencing an act of violence in the form of being stabbed with a spear or an iron-tipped pole by a man positioned below the teacher, with the pig's body showing a threatened condition marked by an alert posture and eyes directed toward the source of danger. This expression is consistent with behavioral characteristics of pigs under negative emotional states, namely a rigid body posture, heightened alertness with erect ears, and a gaze directly focused on the source of threat (Aubin-Houzelstein et al., 2023). This depiction is also consistent with the views of zoologists who state that when pigs feel threatened, they will focus their attention and responses on the stimulus directly in front of them. Furthermore, according to archaeologists, the pig in this panel symbolizes suffering as a consequence of unwise actions. Part b) shows a wise teacher seated, ready to teach; however, in front of him are individuals preoccupied with conversing with their wives, thereby neglecting the Dharma teachings about to be conveyed. On the other hand, part c) depicts a woman who turns away from the Brahmana and chooses to approach her husband, indicating a rejection of guidance and a prioritization of worldly attachment. Meanwhile, part d) represents the consequences received, as a group of people is shown idling under a tree, symbolizing a futile life and the failure to attain wisdom. Overall, the sequence of scenes in this panel reinforces the moral message that an attitude of reluctance to ask questions, rejection of teachings or the Dharma, and unwillingness to listen to the wise can lead to a misguided life and the loss of wisdom.

From an ethnozoological perspective, the selection of the pig as a figure in these scenes is not coincidental. Ethnozoology views animals as biological entities that simultaneously carry cultural, social, and symbolic meanings in human life. In the pre-Islamic Javanese context, pigs were animals closely associated with daily life, whether as livestock, game animals, primary food sources, or creatures with ritual and social significance, which made this species a symbol that was easily recognized and effectively employed by relief sculptors (*shilpin*) to convey moral and cultural messages in an integrated manner (Grossman, 2015; Hoogervorst & Jákl, 2024; Pradita & Nugroho, 2020). In addition, pigs also held high ritual and symbolic value, particularly in the context of grand feasts, offerings, and ceremonial practices. Symbolically, as omnivorous animals that feed indiscriminately on a wide range of food sources, from plants to organic remains, pigs can also convey meanings associated with greed (Rusdianto et al., 2020)

Zoologically, the pig depicted in the Karmawibhangga reliefs can be identified as belonging to the family *Suidae* and the genus *Sus*, which has a wide distribution in the regions of India and the island of Java. Zooarchaeological and genetic studies indicate that *Sus scrofa* is the principal ancestor of *Sus scrofa domesticus* in Eurasia and East Asia, with domestication occurring through various pathways (Price & Hongo, 2020a). In the Southeast Asian context, human migration since the early Holocene has been accompanied by the movement and keeping of pigs, which subsequently adapted to local environments (Price & Hongo, 2020b). The absence of prominent tusks and the depiction of relatively docile behavior in the Karmawibhangga reliefs support the identification of the animal as a domestic pig rather than a wild boar (Dai et al., 2024). This is consistent with the tendency of Borobudur sculptors to portray fauna in a naturalistic manner and in close relation to the local community's agrarian and ritual environments. This view also aligns with that of archaeologists, who suggest that the pig carved on the Karmawibhangga Relief is most likely a domestic pig (*Sus scrofa domesticus*). This interpretation is based on the background of the scene, which depicts a settlement environment rather than a forested area, thereby indicating that the pig was already domesticated and even kept by humans. Furthermore, the absence of prominent tusks or elongated canine teeth further strengthens this interpretation, because in domestic pigs such features are generally not well developed, in contrast to wild boars that possess longer tusks as a means of self-defense. Thus, the morphological characteristics and the visual context presented in the relief support the classification of the pig as a domestic animal that has adapted to human life.

This interpretation is also consistent with the study by Suropto and Pranowo (2001) which states that when related to the narrative of the life journey of the Buddha, the pig referred to is the domestic pig (*Sus scrofa domesticus*) as a descendant of the wild boar (*Sus scrofa*). This view is further supported by Larson et al. (2007), who argued that past human migrations to Southeast Asia were accompanied by the movement of domesticated animals. Several breeds of domestic pigs in Indonesia are derived from *Sus scrofa*. Domestic pig populations in Indonesia include, among others, the Bali pig, Timor pig, Nias pig, Toba pig, Samosir pig, and Toraja pig (Rahajoe et al., 2025)

Relevance of Ethnozoology to Character Education

The Ministry of National Education has formulated eighteen character values, namely: 1) religiosity, 2) honesty, 3) tolerance, 4) discipline, 5) hard work, 6) creativity, 7) independence, 8) democracy, 9) curiosity, 10) national spirit, 11) love of the homeland, 12) appreciation of achievement, 13) friendliness and communicative attitude, 14) love of peace, 15) fondness for reading, 16) environmental awareness, 17) social care, and 18) responsibility. Although this framework of values has become a reference in education, it has not yet been fully integrated with local wisdom. Therefore, an approach that draws upon local wisdom is needed, namely, through the narratives of the Karmawibhangga Relief. This relief not only depicts Buddhist moral teachings but also presents character values rooted in the everyday life of ancient Javanese society, offering reflective relevance for contemporary learners.

The narratives in the Karmawibhangga Relief do not position the pig as the main figure that directly conveys moral teachings. In these reliefs, character values are not attributed to the animals, but rather to the human behaviors depicted in the sequence of scenes. The presence of the domestic pig (*Sus scrofa domesticus*) functions as a supporting narrative element that clarifies the realities of social life at that time. Thus, the pig and other animals serve to reinforce the contextual portrayal of worldly life and the consequences of human actions within the law of karma, rather than acting as the primary objects for teaching character values.

Panel number 9 reflects several character values derived from religious teachings and cultural traditions. The value of religiosity is manifested through the depiction of the release of living

beings, including the domestic pig (*Sus scrofa domesticus*), which represents virtuous practice and belief in the law of karma. The act of releasing living beings is understood as a moral deed that is believed to yield meritorious outcomes in the form of longevity, well-being, and a better life (Ānandajoti, 2020). Furthermore, the value of peace-loving is evident in the absence of scenes of violence toward animals, as the domestic pig (*Sus scrofa domesticus*) and other animals are treated kindly with the intention of being released. This representation emphasizes the principle of non-violence (*ahimsa*), which constitutes an important foundation of Buddhist morality and remains relevant in contemporary character education (Khanna, 2023; Wang, 2020). This is in line with the teachings of the Buddha, which emphasize tolerance grounded in a sense of moral shame toward negative actions, whether in the form of physical deeds, speech, or expressions. Such a sense of shame refers to awareness and restraint regarding the development of unwholesome and harmful qualities. The value of environmental care is also reflected in the way pigs and other animals are positioned as integral parts of the balance of nature, teaching wise and responsible attitudes in treating living beings and fostering awareness of the importance of harmony between humans and the environment (Munisah et al., 2025).

In contrast to panel number 9, panel number 74 instead presents an unfavorable scene, namely the stabbing of a domestic pig (*Sus scrofa domesticus*) in the presence of a wise teacher in the Karmawibhanga relief, which conveys a moral message in the form of a warning. This scene highlights the human mental attitude that rejects wisdom and the teachings of the Dharma (Ānandajoti, 2020). In the context of character education, the value of religiosity is presented negatively, namely through the rejection of spiritual guidance that should lead human beings toward liberation from suffering. This attitude also reflects a low level of tolerance, because the act of stabbing the pig in front of the teacher demonstrates an inability to respect the authority of wisdom. The scene in this panel also represents a weakness in the value of self-discipline, which is reflected in the characters' unwillingness to control their behavior and to adhere to the moral guidance taught by the wise teacher. The loss of the value of curiosity is likewise shown in an attitude of refusing to listen, ask questions, or learn, which ultimately leads to ignorance and deviation. The disregard for the wise teacher also reflects a limited capacity to appreciate achievement, particularly the spiritual and intellectual attainments the teacher has achieved. Furthermore, the scene depicting ignoring the teacher and choosing casual conversation, accompanied by the pig's stabbing, indicates a failure to build healthy, friendly, and communicative relationships within the learning process. The symbolic violence toward the pig also reflects the absence of the value of peace-loving, as such actions arise from a mind dominated by ignorance. From an environmental perspective, harsh treatment of animals signifies a low level of environmental awareness, which has the potential to disrupt the balance and harmony of nature (Praptiyono & Singamurti, 2025; Rendy Arifin, 2022).

The scene in panel number 74 reflects the failure of the figures to develop mental equanimity (*Upekkha*), as the aggressive actions depicted indicate an inability to control oneself and one's emotions. The presence of a wise teacher who is ignored further emphasizes the moral message that rejection of spiritual guidance not only damages social relationships but also hinders the development of wisdom and individual moral maturity. Thus, panel number 74 functions as a medium for character education by affirming that violations of Buddhist ethics bring both inner and social consequences, while at the same time reinforcing character education messages through depictions of behaviors that should be avoided (Satya, 2024).

CONCLUSION

The depiction of the domestic pig (*Sus scrofa domesticus*) in the Karmawibhanga Relief of Borobudur Temple carries symbolic meanings that can be understood through an ethnozoological approach. The representation of the domestic pig (*Sus scrofa domesticus*) functions as a visual



medium conveying the principle of cause and effect (*karma*) while also serving as a narrative support that teaches character education, encompassing the values of religiosity, tolerance, discipline, curiosity, appreciation of achievement, friendliness, communicative attitude, love of peace, environmental awareness, and responsibility. These findings indicate that the Karmawibhangga Relief not only represents a work of art and culture but also contains moral messages that are relevant for strengthening character education based on local wisdom. This study implies that ethnozoological research on temple reliefs can be utilized as a learning resource that integrates cultural values, history, and character education within the educational process. In the future, it is expected that similar studies can be further developed by examining the representation of other fauna in the reliefs of Borobudur as well as in other temples in Indonesia, thereby enriching the understanding of the relationship between humans, animals, and cultural values in past societies and their relevance to modern life.

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