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## REFRAMING THE RED ROCK ART IN WEST MALAYSIA USING A FIVE-LEVEL MOTIF CATEGORISATION MODEL

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**Abstract.** This paper presents an overview of the red rock art in Kinta Valley, West Malaysia, highlighting 11 documented sites as of 2022. Although these sites represent the main cluster of red rock art, they remain largely understudied. This study addresses the inconsistencies in rock art documentation methods across Malaysia and introduces a five-level motif categorisation model for a more systematic approach. The analysis reveals two distinct sub-traditions within the red rock art corpus, offering new insights into regional variation and contributing to broader interpretations of pre-Historic visual culture in West Malaysia.

### Introduction

Rock art research in West Malaysia has long been under-studied within Malaysian archaeology. Although more than 60 rock art sites have been identified in West Malaysia, the majority feature black monochrome drawings, while red rock art remains exceptionally rare. In addition, research progress has been slow due to inconsistent documentation practices and the absence of a standardised recording system. Many earlier studies have focused on broad motif categories, lacked methodological transparency or provided minimal contextual information, limiting the ability for cross-site comparison and interpretation.

For clarity of terminology, it is important to note that all the rock art motifs discussed in this paper are pictograms, meaning they were created through additive processes on rock surfaces using pigments such as paint or charcoal. However, the term ‘pictogram’ is not commonly used in the Malaysian rock art context, where ‘rock art’ remains the preferred term in both academic and public discourse. As such, the broader term ‘rock art’ is retained here for consistency with local practice. Additionally, ‘motif’ refers to the design or subject depicted, independent of pigment colour. The terms ‘red motif’ or ‘black motif’ simply refer to the colour of the pigment used, while ‘red rock art site’ denotes any site where red pigment is present among the recorded motifs, without implying that red is the dominant colour.

From 1959 until 2019, only two red rock art sites were known in West Malaysia, Gua Cerita in Kedah (Ong 1994) and Gua Tambun in Perak (Matthews 1959, 1960; Faulstich 1984; Tan and Chia 2010). Unfortunately, Gua Cerita was painted over with modern paint during an attempt to conserve the cave, leaving

Gua Tambun the only surviving red rock art site. Due to the lack of additional red rock art sites, earlier studies were limited to comparative studies with rock art sites in neighbouring countries such as Thailand (Knuth 1962) or further in Australia (Faulstich 1990). Research stagnated for over a decade, ever since Tan (2010) conducted a systematic documentation and chemical analysis of rock art pigments at Gua Tambun, resulting in a limited understanding of this rock art tradition. Despite not having an affirmative date at the moment, scholars generally agree that the rock art of Gua Tambun fits into a larger sphere of Southeast Asian pre-Historic hunter-gatherer rock art tradition (Taçon et al. 2014).

In contrast, black rock art in Malaysia often includes depictions of modern objects such as firearms, sailboats, cars and bicycles, placing them within a historical timeframe of approximately 100–300 years ago (Saidin and Taçon 2011; Saw and Goh 2021). Since there has not been any chronometric dating conducted on rock art in West Malaysia, its age estimation relies on stylistic and iconographic analysis. Black rock art is also observed to fade more rapidly; comparative photographs taken 30 to 40 years apart reveal significant deterioration, suggesting these motifs may not be thousands of years old but more likely only a few hundred years old. It is generally assumed that Malaysian rock art comprises two broad traditions: the pre-Historic red tradition and the historically recent black tradition (Tan 2014; Saw and Goh 2022).

While recent years have seen increased documentation and publication of black rock art across various regions, including Perlis, Perak, Kelantan and Pahang (Ahmad 2006; Jusoh 2011; Omar et al. 2015; Ramli et al. 2020), red rock art has not received comparable

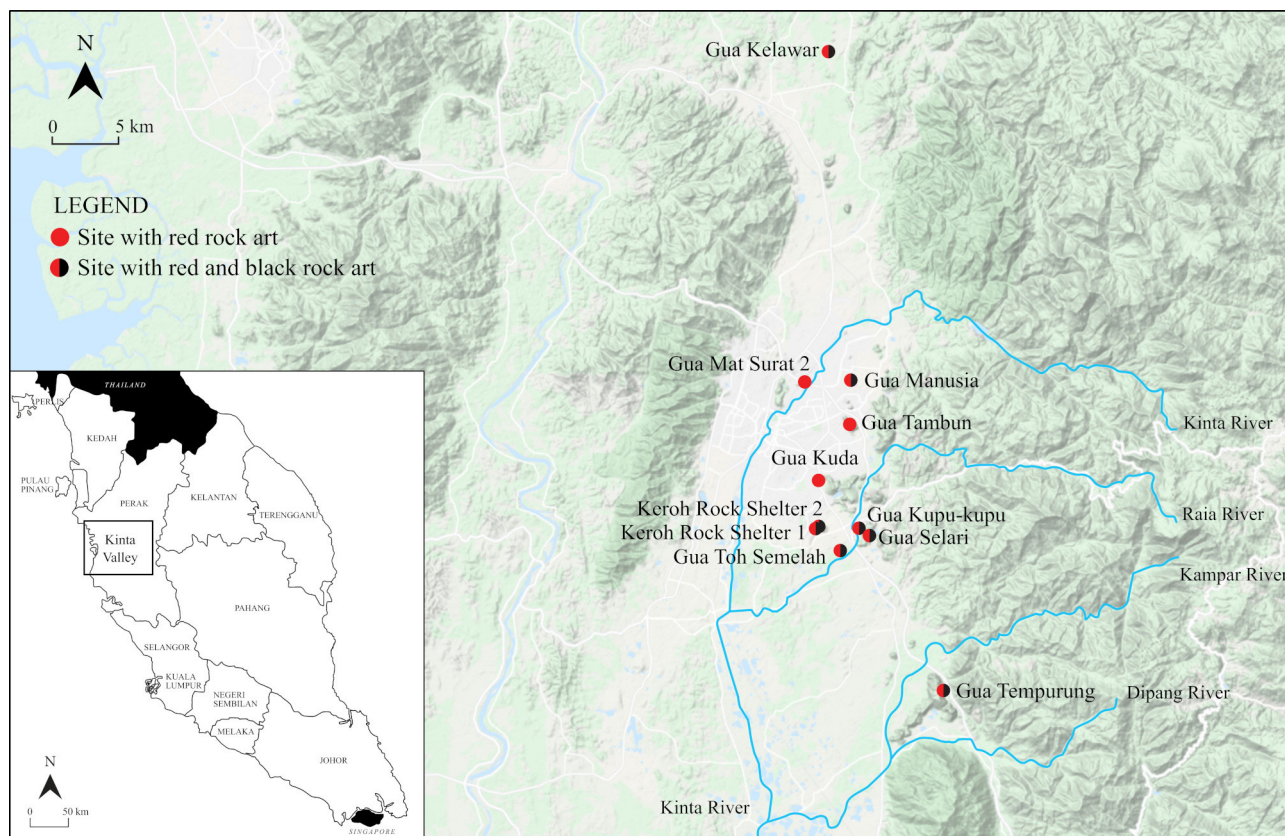


Figure 1. Distribution of red rock art sites in Kinta Valley. All images are by the author.

scholarly attention. However, between late 2019 and June 2021, a collaborative effort between Universiti Sains Malaysia's researchers and local communities in Perak led to the discovery of eight additional red rock art sites in the Kinta Valley, namely Gua Kelawar, Gua Mat Surat 2, Keroh Rockshelter 1, Keroh Rockshelter 2, Gua Toh Semelah, Gua Kupu-kupu, Gua Selari and Gua Tempurung (Saw and Goh 2021). In early 2022, two more sites, Gua Kuda and Gua Manusia, were discovered (Fig. 1). The presence of these 11 red rock art sites in the Kinta valley forms a uniquely dense and culturally significant cluster.

This study focuses specifically on the red rock art of Kinta Valley, which currently represents the primary concentration of such sites in West Malaysia. While one red rock art site has also been identified in Perlis, its bichrome characteristics place it outside the scope of this study (Saw and Goh 2024). This paper presents the first comprehensive synthesis of these sites using a standardised categorisation approach to identify motif patterns, improve recording consistency and contribute to the understanding of pre-Historic visual culture in West Malaysia.

### Kinta Valley

Kinta Valley is an alluvial plain in central Perak, shaped by the Kinta River and geographically bounded by the Main Range to the east and the Kledang Range to the west. The valley stretches about 58 km north-south and 45 km east-west, covering an area of

approximately 1960 square kilometres with a total of 45 limestone outcrops (Wong 2009).

Archaeological excavations have been conducted in the Kinta Valley since the late 19th century and extended into the 21st century (Wray 1897; Sieveking 1956; Matthews 1960; Taha and Jaafar 1990; Jusoh 2011). These investigations demonstrate that the valley was extensively inhabited since the Hoabinhian period (~13,000 to ~5000 years ago in the Malaysian context) (see Wray 1897, 1905; Sieveking 1956; Matthews 1960; Faulstich 1985; Taha and Jaafar 1990). Of the 11 sites discussed in this paper, only two sites, Gua Tambun (Matthews 1960) and Gua Kelawar (Taha and Jaafar 1990), have been excavated. To date, no direct chronometric dating has been conducted on any of the rock art, making it impossible to establish a direct association between the rock art and the human occupation layers. However, evidence of human activity provides a broad temporal framework for the possible creation period of the rock art. This situation is consistent with much of mainland Southeast Asia, where no rock art has yet been scientifically dated at the time of writing.

Many caves and rockshelters in the Kinta Valley were also utilised during the Japanese Occupation (1941–1945) and the Emergency Period (1948–1960) as hideouts for villagers, soldiers and Indigenous communities from dangers and threats (Khoo and Lubis 2005). For example, Gua Tempurung was a tin mining site in the 1930s and a hideout for the locals and communists during and after World War II (Min-

eral and Geoscience Department Malaysia 2016). For caves and rockshelters that are more easily accessible to the public, many of them have been developed into tourist attractions for their scenic landscape, whereas many caves were also converted into cave temples by the Hindu and Buddhist devotees. Unfortunately, the valley's archaeological heritage faces increasing threats, with quarrying and development activities having destroyed numerous sites.

### Background of rock art interpretation in West Malaysia

Since rock art was first reported in West Malaysia in the late 19th century by Daly (1879), until much of the 20th century, rock art research remained brief and largely subjective. Rock art was typically treated as a supplementary note within larger archaeological research, with minimal descriptions of motifs or associated materials. For instance, in Collings' (1937) excavation at Bukit Chuping, Perlis, rock art was mentioned in only two brief sentences of a 26-page report. By 1959, West Malaysia was still regarded as a region lacking significant rock art culture, as written by Matthews (1959: 22): '*Peninsular Malaya and Indochina seemed to be bare of stone age art*'. This section outlines how recording and interpretation approaches shifted through time and highlights why a structured framework is needed to standardise and advance rock art research in West Malaysia.

Evans (1927) provided one of the earliest detailed records of the rock art of Gua Badak, Perak. As an ethnographer, he interviewed an Indigenous elder who offered interpretations of the motifs. While the elder was not the artist, both he and Evans read the motifs as scenes rather than as isolated figures. For instance, a stick figure carrying a line across its shoulders, drawn beside a four-legged animal with a curved-up tail, was interpreted as '*Man carrying coconuts on a pole with his berok monkey following him*' (Evans 1927: 106). Such emic perspectives are extremely rare in West Malaysia today, as Indigenous communities have long been detached from the rock art tradition due to historical displacements, wars and development pressures.

The discovery of Gua Tambun in 1959 was one of the most significant rock art discoveries in the region. The site features hundreds of red, orange and purple motifs across a 100-metre rockshelter. Excavations and ground survey unearthed Hoabinhian stone tools (Matthews 1960) and pottery sherds (Faulstich 1984). The combination of the artefacts uncovered, the motifs depicted and the state of preservation, researchers suggest that the rock art dates at least to the Neolithic period. Motifs were categorised into 'human figures', 'animal', 'five-fingered dropping designs' and 'abstract designs' (Matthews 1959, 1960).

Other attempts at categorisation varied widely. Ariffin (1985), in documenting Gua Luas, Pahang, categorised all motifs as line art designs, which he referred to as 'stroke drawings'. These were further

divided into 'straight lines', 'zigzag lines', 'dotted lines', 'combination of lines' and 'symbolic lines'. The latter included shapes resembling animals, the sun, clouds, hills, roads and abstract designs. Taha and Jaafar (1990), while recording Gua Kelawar in Perak, created five categories: 'human figures', 'animal figures', 'figures of the universe', 'abstract figures' and 'boat figures'.

To illustrate the complication of rock art interpretation during this period, take for example a circle with radiating lines that was called a 'figure of the universe' by Taha and Jaafar (1990), would have been 'symbolic lines' in Ariffin's (1985) system, and an 'abstract design of a pointed star' under Matthews' (1959) approach. This inconsistency reveals how, during this period, motifs were loosely grouped with little methodological coherence.

A more systematic approach began to emerge in the 21st century in the documentation of rock art in West Malaysia (Tan 2010; Saidin and Taçon 2011; Saw and Goh 2021, 2022). These studies adopted a more quantitative method, counting motifs and classifying them by shape, colour and superimposition. Tan (2010) advanced this further by categorising Gua Tambun motifs into six broad categories, namely 'anthropomorphic', 'botanic', 'geometric', 'zoomorphic', 'abstract' and 'indeterminate'. This is followed by a second level of attribute-based categorisation, defined by elevation, size and drawing method. Elements with shared attributes were then grouped into 88 types. While detailed, this complex typology proved difficult to replicate elsewhere.

Despite this shift towards quantification, no standardised system for categorising motifs has been established, and each researcher continues to use a different categorisation model. At the same time, many other publications still suffer from inconsistencies in terminology and descriptive standards. For example, a circular motif with radiating lines has been described as a 'sun' in one study, a 'pig flea' in another; a rectangular motif with gridlines is a 'geometric design' in one study and a 'calendar system' elsewhere, none providing justification or contextual evidence (see Taha and Jaafar 1990; Jusoh 2011; Omar et al. 2015; Ramli 2019; Ramli et al. 2020). While it is true that there is no universal system for rock art recording and that approaches adopted by researchers vary greatly (Brady et al. 2017; Loendorf 2001), the lack of consistency within Malaysian rock art research has hindered the ability to synthesise data across studies and has limited the development of a broader comparative framework. As a result, the same rock art site often needs to be redocumented to accommodate different research projects.

Equally striking is the lack of cross-disciplinary engagement between archaeology and anthropology after the mid-20th century. While Evans (1927) and Williams-Hunt (1952) recorded Indigenous use of charcoal on rock surfaces, later anthropological

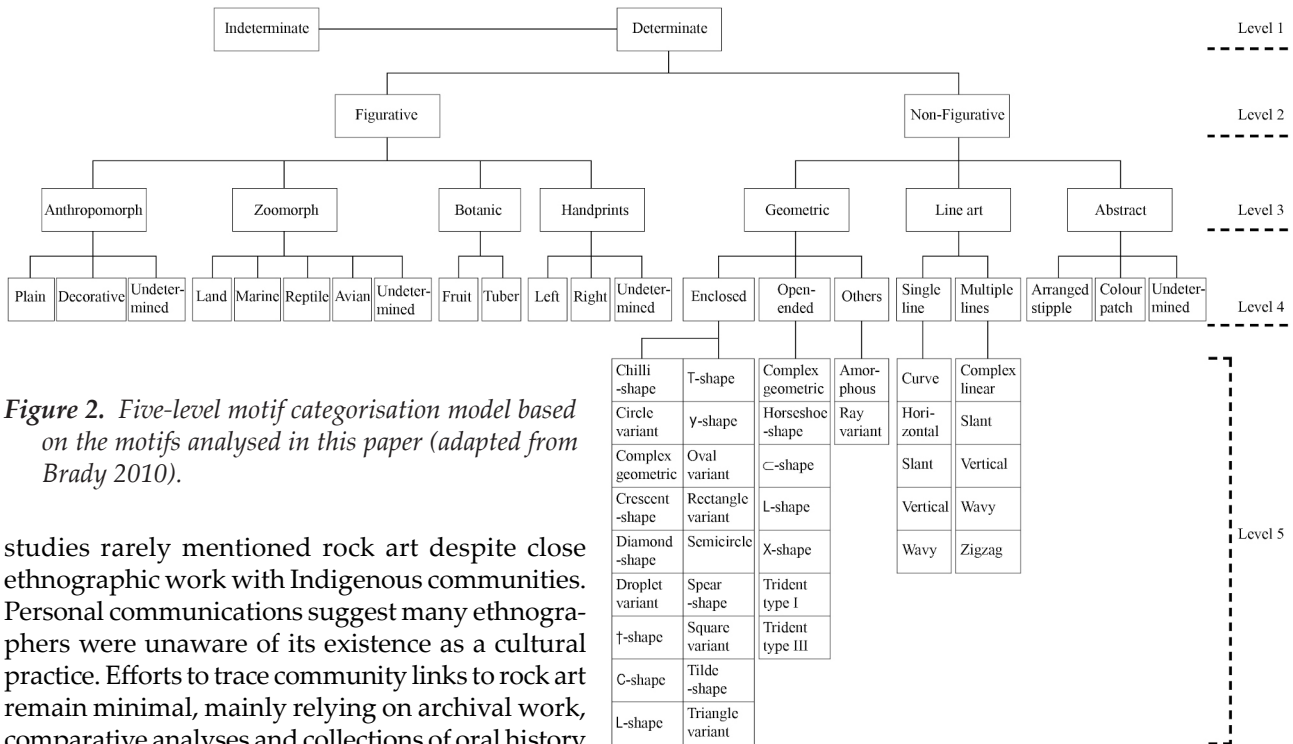


Figure 2. Five-level motif categorisation model based on the motifs analysed in this paper (adapted from Brady 2010).

studies rarely mentioned rock art despite close ethnographic work with Indigenous communities. Personal communications suggest many ethnographers were unaware of its existence as a cultural practice. Efforts to trace community links to rock art remain minimal, mainly relying on archival work, comparative analyses and collections of oral history during the limited time spent with the Indigenous communities (Isa 2014; Saw et al. 2020). Isa’s (2014) ethnoarchaeological study of the Lanoh Negrito community revealed that the community had long been detached from their ancestral lands and had no living memory of rock art, though similarities were observed between their weaving patterns and specific motifs. Saw et al. (2020) compared motifs to the designs on Negrito myth bamboos, where motifs categorised as anthropomorph may in fact represent a long-tailed monkey known locally as *aii*. Similarly, motifs classified as geometric may be tribal symbols representing body parts, whereas ‘line art’ such as zigzag lines may represent thunder (Skeat and Blagden 1906). Such comparisons highlight the importance of further dialogue between archaeological classification and Indigenous knowledge systems to address interpretive gaps.

**Five-level motif categorisation model**

Such inconsistencies and gaps in recording and interpretation highlight the urgent need for a more consistent and transparent framework. To address these needs, the present study introduces a five-level motif categorisation model adapted from Brady (2010). Brady originally used this model to systematically categorise the rock art of the Torres Straits Islands, northeastern Australia, producing a quantifiable database for multivariate statistical analysis on the patterning of rock art. In this study, this model has been adapted to suit the context of West Malaysia better, to create a more systematic and transparent approach for motif documentation.

This study acknowledges that any categorisa-

tion model developed from an etic perspective is inherently subjective without direct input from the artists themselves. For example, what researchers today categorise as ‘geometric’ motifs may have carried representational meanings that are no longer accessible. In Malaysia, no oral histories or living memory of rock art practice have been retained, and contemporary communities often do not associate these motifs with their cultural heritage (Saw et al. 2018). At the same time, the number of reported sites continues to grow rapidly, from around 20 in 2010 (Tan 2010) to more than 60 in 2020 (Saw et al. 2020). This growth underscores the urgent need to standardise recording methods to enable cross-site comparison.

Indeed, other challenges further complicate the subjectivity. For instance, faded motifs or exfoliated surfaces may fragment a once-cohesive figure into multiple motifs, forcing researchers to record them as separate motifs unless their connection is obvious. Such dilemmas highlight both the imprecision of Indigenous intent and archaeological categorisation. Archaeology and anthropology are, by nature, interpretive disciplines. This model does not claim to resolve these issues, but rather to provide a transparent and revisable framework that can be refined as more rock art and ethnographic data become available.

At this stage, the value of a structured classification system lies not in reconstructing the cognitive world of the artists but in offering a consistent analytical tool to organise visual data for comparative study. While this framework cannot eliminate subjectivity entirely, it can reduce it by offering clear definitions that are easily understood by local communities. This inclusivity empowers community members to participate in rock art surveys and contribute to the expansion of Malaysia’s rock art database. A standardised approach also encourages re-

searchers to examine the motifs in greater detail, with stronger emphasis on iconographic details. The aim is not to impose fixed or rigid motif categories (since categorisation is inherently subjective and researchers cannot claim to represent the original communities), but to reframe interpretation as an open, evolving process. This creates space for multiple perspectives and ensures the framework can be continuously refined.

The five-level motif categorisation model for West Malaysia is presented in Figure 2. At the first level, motifs are categorised as either determinate or indeterminate. Determinate motifs are those with an apparent shape, whereas indeterminate motifs are too faded to allow further classification. At Level 2, determinate motifs are divided into figurative or non-figurative motifs. Figurative motifs refer to designs that resemble natural forms as perceived by a contemporary human mind and can be further classified at Level 3 as *Anthropomorph*, *Zoomorph*, *Botanic Shape* or *Handprint*. Non-figurative motifs, on the other hand, do not resemble natural objects and are further classified as *Geometric*, *Line Art* or *Abstract*.

At Level 4, each motif is assigned a more specific category, such as *Plain Anthropomorph*, *Decorative Anthropomorph*, *Land Animal*, *Marine Animal*, *Reptile*, *Avian*, *Fruit*, *Tuber*, *Left Handprint*, *Right Handprint*, *Enclosed Geometric*, *Open-ended Geometric*, *Single Line*, *Multiple Lines*, *Colour Patch* or *Arranged Stipple*. It is worth noting that the names of these categories are capitalised and italicised to indicate that they are labels used for documentation, rather than interpretations of the original artists' intent.

At Level 5, non-figurative motifs may be further distinguished based on specific shapes and stylistic features, such as *Oval Variant*, *Triangle Variant*, *Tilde-shape*, *Wavy Lines*, *Complex Linear* and so forth. Figurative motifs are not subdivided further, as they often lack definitive anatomical attributes for finer categorisation (Matthews, 1960; Tan, 2010). In addition, while differences in block of colour, thickness, positions of hands, feet and head can be observed at the *Anthropomorph* motifs (Fig. 4), all human figures tend to be unique in representation, with no two motifs looking similar.

The counts are by no means accurate due to deterioration and ambiguity; standardising the method of calculation enables consistent comparison across sites, especially when dealing with a growing amount of data. A motif is considered a standalone motif if:

- It is spatially distinct from others;
- It is superimposed but clearly different in hue and designs (e.g. a black grid over a red human figure);
- A cluster appears to form a cohesive design based on hues and style.

### Red rock art sites of Kinta Valley

As of mid-2022, a total of 11 red rock art sites have been documented in the Kinta Valley. These sites are primarily concentrated in the central region of the

valley, with Gua Kelawar marking the northernmost point, Gua Tempurung the southernmost (Fig. 1). Gua Mat Surat 2, Gua Kuda, Gua Kupu-kupu and Gua Selari contain exclusively red motifs. In contrast, the remaining sites contain a mixture of black, yellow, white and red motifs. The black motifs were drawn using charcoal combined with other carbon-based materials, although chemical analysis is required to confirm the actual composition of the pigments. Nevertheless, they are obviously made in a later period than the red ones, as they are noticeably clearer, and some are superimposed over the red motifs.

This paper focuses on the discussion of red rock art; hence, black rock art is omitted from the analysis that follows. The rationale for focusing on red rock art in this paper is that scholars generally agreed that it is a distinct cultural tradition with greater time-depth compared to black rock art due to their highly faded conditions, superimpositions and similarity to other early hunter-gatherer rock art styles in Southeast Asia (Tan and Chia 2010; Tan 2010, 2014; Taçon et al. 2014; Saw and Goh 2022).

In many cases, red rock art makes up only a portion of the overall pictograms, with black rock art being more numerous or visually prominent. Where relevant, the total number of red versus black motifs is provided to give a clearer picture of pigment distribution across the sites. Red rock art also includes different hues of red, including orange, dark red and purple. The inclusion of purple rock art at the site of Gua Tambun is because it also uses haematite as its primary material (Tan 2010). The reddish hue of haematite could turn into purple, based on different processing methods such as heating (Ilmi et al. 2021). Each site will be discussed along with the name of the respective limestone hill (Malay term: *gunung*) in which it is located. Due to the accessibility of many of these cave sites, some of which are frequented by visitors, an agreement with the local communities has been made to exclude detailed cave maps to protect the rock art from potential disturbance by visitors.

#### *Gua Kelawar (GK)*

GK is a cave located in the northern part of Gunung Kelawar. The cave was excavated in the late 20th century, unearthing a large number of riverine shells, a small quantity of marine bivalves, animal remains, pottery sherds, Hoabinhian stone tools, bone implements, haematite chunks, an iron spearhead and a 19th-century Chinese porcelain sherd (Taha and Jaafar 1990). This shows that the site was inhabited since the Hoabinhian period up until the 19th century and was historically visited by the Indigenous communities until recent times. Taha and Jaafar (1990) noted the presence of rock art scattered in 14 locations within the cave, but they did not discover any red motifs. Three decades later, the site was resurveyed, and a total of 324 motifs were documented, of which only five were red (Saw and Goh 2021). All of them are located on the

same ceiling panel at the entrance of GK. However, they are heavily faded and are hardly visible without computer enhancement. Out of the five motifs, two of them are indeterminate motifs, whereas the remaining three are *Geometric* motifs which resemble long and thin oval shapes (i.e. *Oval Variant*).

#### *Gua Kuda (GKu)*

GKu is a cave located in the western part of Gunung Rapat. The motifs were found not within the cave itself but on the rock wall outside of the cave. All the motifs are red, comprising three *Line Art*, one *Abstract*, and two indeterminate motifs due to their heavily faded conditions. Two of the *Line Art* motifs comprise multiple vertical lines (i.e. *Multiple Lines*), while another is labelled *Complex Linear* because it has a horizontal line connecting the vertical lines. The *Abstract* motif is made up of a double-layered concentric circle, and a vertical line with two horizontal lines branching from one side.

#### *Gua Kupu-kupu (GKk)*

GKk is a cave located to the northwest of Gunung Lanno. The cave has two levels with 11 entrances, and no rock art has been reported within the cave (Geyer et al. 2005). Three red motifs were discovered outside the cave, near one of the entrances at the lower level. These comprise a heavily faded *Enclosed Geometric* motif with a triple-layered concentric circle, a *Vertical Lines* motif, and one indeterminate motif.

#### *Gua Manusia (GMa)*

GMa is located on the eastern side of Gunung Tambun. Approximately 130 black motifs are scattered throughout the cave, while 17 red motifs are confined to a single panel near the entrance. The red motifs comprised of *Geometric*, *Line Art*, *Abstract* and one indeterminate motif. They can be further categorised as five *Oval Variant* motifs, two *t-shape* motifs, one *C-shape* motif, one *Complex Geometric* motif, and one *Vertical Lines* motif consisting of two straight lines.

#### *Gua Mat Surat 2 (GMS-2)*

GMS-2 is located on the southern side of Gunung Masoorat. All motifs are red and are concentrated on a single panel. These include four *Zoomorph*, two *Geometric* and two *Abstract* motifs. Interestingly, the motifs are positioned in an area that receives natural sunlight; none were found in the darker, deeper regions of the cave.

#### *Gua Selari (GS)*

GS is another cave located to the northwest of Gunung Lanno. It is the second largest cave on this limestone hill, comprising two levels and 16 entrances (Geyer et al. 2005). Only one red *Plain Anthropomorph* motif with outstretched limbs near one of the upper-level entrances was found.

#### *Gua Tambun (GT)*

GT is the largest and most extensively researched rock art site in West Malaysia, with a total of 640 motifs recorded (Faulstich 1984; Matthews 1959, 1960; Tan and Chia 2010; Tan 2010, 2014). Despite the term 'gua', which means cave in Malay, it is an open rockshelter that stretches along the northwest side of Gunung Panjang. The initial rock art inventory compiled by Tan (2010) was reclassified using the five-level categorisation model applied in this study. A total of 591 red motifs were identified, comprising 285 *Geometric*, 83 *Abstract*, 55 *Zoomorph*, 50 *Line Art*, 22 *Anthropomorph*, 18 *Botanic* and 78 indeterminate motifs. The remaining motifs, rendered in yellow or white using different materials, fall outside the scope of this analysis.

Archaeological excavation conducted in the 20th century unearthed 15 flake tools, two of hornfels schist, over 400 fragments of reptile and mammal bones, and riverine shells of *Brotia costula*, which were broken off at the apex, indicating human consumption (Matthews 1960). Surface surveys also recovered numerous stone implements, river stones and pebbles stained with haematite (Matthews 1960; Tan 2010). Based on these findings, the site was likely occupied since the Hoabinhian period. However, researchers generally take a cautious approach when dating the rock art, suggesting that it could date at least to the Neolithic period (~5000–2500 years ago in the Malaysian context), supported by the discovery of a cord-marked pottery sherd in the 1980s (Faulstich 1984; Tan and Chia 2010).

#### *Gua Tempurung (GTPR)*

GTPR is located on the southern side of Gunung Tempurung. It has the second-highest motif counts in West Malaysia, comprising 309 black and 129 red motifs. Apart from the eight indeterminate motifs, there are 59 *Abstract*, 39 *Geometric*, eight *Zoomorph*, six *Line Art*, four *Handprint*, two *Anthropomorph* and two *Botanic* motifs. Unlike most other sites, these motifs were placed deep inside a dark cave, nearly 300 m from the entrance.

#### *Gua Toh Semelah (GTS)*

Another site with motifs placed in the darker zones of a cave is GTS, situated on the western side of Gunung Toh Semelah. The cave was used as a Chinese temple between the late 19th and mid-20th centuries. Inscriptions in various languages, including Chinese, Arabic, Malay and other scripts, reflect its multilayered history of use (Saw and Goh 2022). There are 72 black and 15 red motifs. The black motifs are believed to have been created by the Semai or Temiar Indigenous communities between the early and mid-19th century (Saw and Goh 2022), but little is known about the authorship or the age of the red motifs. The red motifs consist of four *Line Art*, three *Anthropomorph*, two *Geometric*, two *Handprint*, two *Abstract* and one *Zoomorph* motifs. The remaining motifs were categorised as indeterminate due to fading or unclear features.

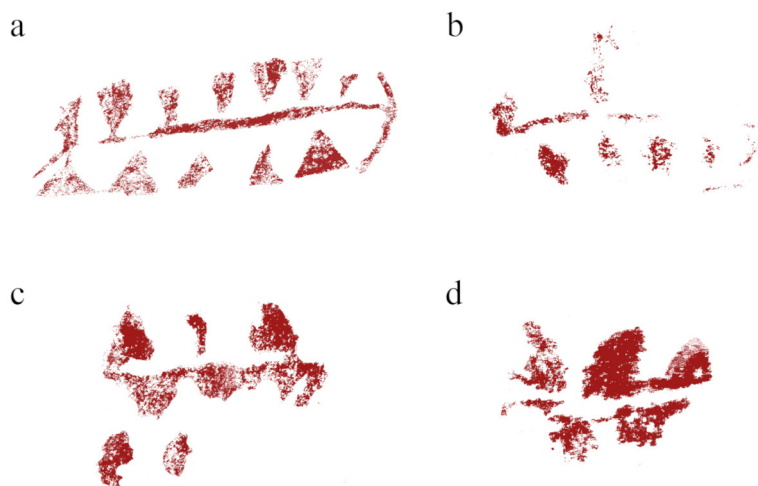


Figure 3. Complex Geometric motifs: a, b – GKR; c, d – GKR-2.

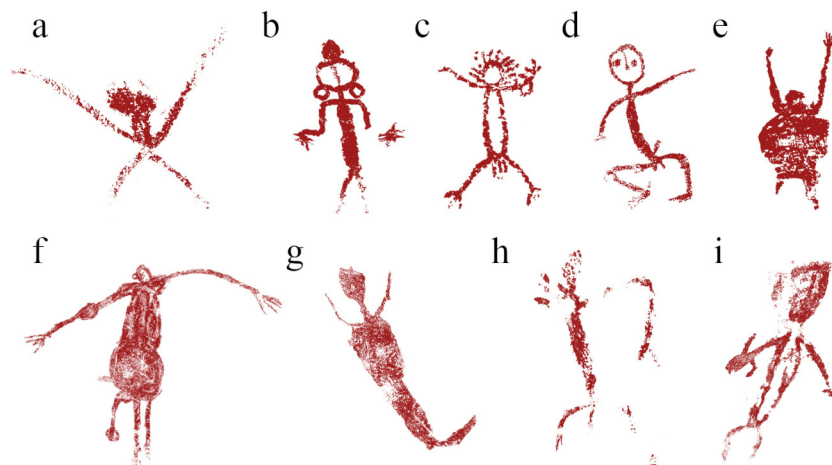


Figure 4. Anthropomorph motifs: a – GS; b, c, d, e – GT; f, g – GTPR; h, i – GTS.

Site	Figurative				Non-figurative			Total
	Anthropomorph	Zo-morph	Bo-tanic	Hand-print	Geo-metric	Line art	Ab-stract	
GK	0	0	0	0	3	0	0	3
GKu	0	0	0	0	0	3	1	4
GKk	0	0	0	0	1	1	0	2
GMa	0	0	0	0	10	1	5	16
GMS-2	0	4	0	0	2	0	2	8
GS	1	0	0	0	0	0	0	1
GT	22	55	18	0	285	50	83	513
GTPR	2	8	2	5	39	6	59	121
GTS	3	1	0	2	2	4	2	14
GKR	0	0	0	0	5	0	0	5
GKR-2	0	0	0	0	13	0	0	13
Total	28	68	20	7	360	65	152	700

Table 1. Level 2 and 3 motif categorisations of the determinate red motifs.

#### Keroh Rockshelter 1 (GKR) and Keroh Rockshelter 2 (GKR-2)

GKR and GKR-2 are in close proximity, located on the western side of Gunung Keroh. At GKR, there are 82 black and five red motifs, whereas at GKR-2, there are 174 black and 16 red motifs. Both sites consist of only *Geometric* motifs, along with a few indeterminate ones. Intriguingly, when further classified at Level 5, both sites display similar *Complex Geometric* motifs composed of a straight line and multiple triangles positioned at the top and bottom (Fig. 3). This distinctive design has not been identified elsewhere in West Malaysia.

#### Discussion

Overall, a total of 700 determinate red motifs were documented across 11 sites in Kinta Valley (Table 1). Non-figurative motifs account for 577 motifs (82.4%), while figurative motifs make up only 123 motifs (17.6%), showing a strong dominance of geometric style visual expressions. Among the figurative motifs, *Zo-morph* is the most prevalent, comprising 68 motifs (55.3%), while *Geometric* is the dominant category within the non-figurative groups, comprising 360 motifs (62.4%).

At Level 4, the five-level motif categorisation model allows for a more in-depth analysis of the motif choice by the artists (Table 2). Within the *Anthropomorph* category, motifs can be divided into *Plain Anthropomorph*—depicting only the head, neck, torso and limbs, and *Decorative Anthropomorph*—those with adornments such as headdresses, earrings, bracelets, girdles or held objects. These two types appear in equal proportions, suggesting there is no clear social status differentiation between them. This poses as a notable contrast to later-period black rock art, where a *Decorative Anthropomorph* is often portrayed in a dominant position surrounded by multiple *Plain Anthropomorph*. Consistent with the observations of Tan and Chia (2010), there is a significant variability among the *Anthropomorph* motifs at GS, GT, GTPR and GTS, with no two figures sharing identical features (Fig. 4).

Within the *Zoomorph* category, ecological distinctions can be clearly

identified through Level 4 sub-categories such as *Land*, *Marine*, *Reptile* and *Avian* motifs, differences that would be overlooked in broader classifications. Based on visual characteristics, the zoomorphic motifs appear to include deer, dugong, fish, flying lemur, lizard, snake and turtle. Tan (2010) proposed a diverse range of quadrupeds for GT, such as squirrel, tree shrew, Sunda pangolin, Malay weasel, otter, binturong, rat, tapir, wild boar, sun bear, gaur and southern serow. However, these interpretations remain speculative due to most figures being depicted as solid silhouettes and a lack of distinctive anatomical features (Fig. 5).

Nevertheless, the designs of zoomorphic figures vary considerably across sites, showing no apparent visual similarities. The only exception is the 'wild boar' motifs at GT and GTPR, which are characterised by distinctive features including a sharply pointed head, hooved legs, a bushy tail and a round, robust body (Figs 5f, 5j, 7). This strongly suggests cultural connections, potentially indicating the movement of artists between the two sites. It may also imply that the two sites were contemporaneous or at least occupied during similar cultural periods.

However, their similarities in motif and style present a puzzling contrast when considering the distinct geographical settings of both sites. GT is situated in an elevated, open rockshelter exposed to natural light and panoramic views, whereas GTPR is in a low-level, dark cave with restricted light and access. This stark difference raises important questions about the use of space in rock art production, suggesting that similar motifs may have served distinct functions depending on their locations. At GT, producing the motifs would have required scaffolding or other means to reach the high rock surface, while at GTPR, the artists had to venture far into the cave interior. Both placements are extremely rare in West Malaysia and reflect deliberate cultural choices, strongly indicating that placement itself played a key role in the cultural significance of these sites.

Although all sites are located near river systems, *Marine Animal* motifs appear only at GMS-2 and GT.

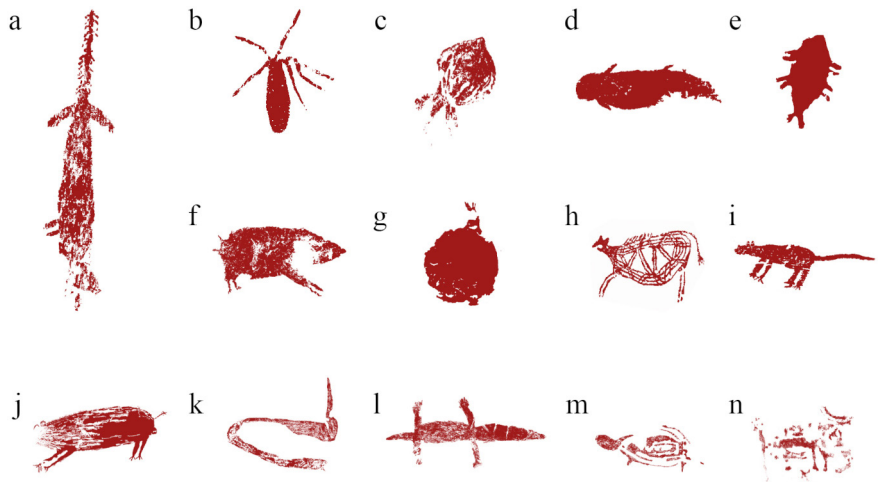


Figure 5. Zoomorph motifs: a, b, c – GMS-2; d, e, f, g, h, i – GT; j, k, l, m – GTPR; n – GTS.

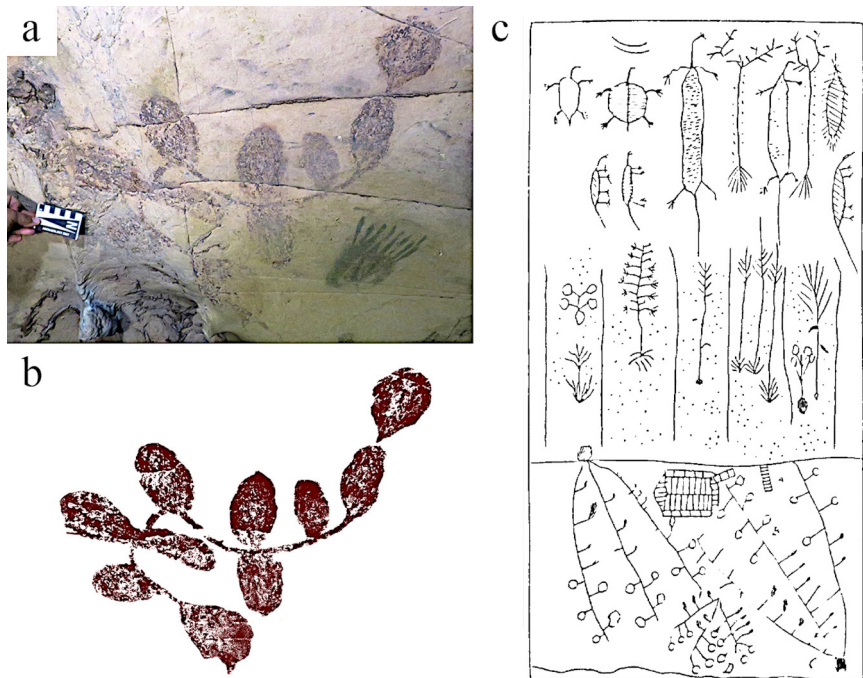


Figure 6. 'Tuber' motifs: a, b – rock art motif from GTPR. c – Senoi bamboo charm (adapted from Skeat and Blagden 1906: 487).

At GMS-2, these include depictions of a 'sawfish', 'stingray' and 'squid' (Saw and Goh 2021). Meanwhile, although reptiles and birds are extremely common in Malaysia's tropical rainforests, they are rarely represented in rock art. This unusual pattern in the representation of animal species invites further investigation into why specific fauna were emphasised while others were omitted. The selection may reflect symbolic associations, belief systems or hunting practices tied to particular cultural groups. Notably, the complete absence of domesticated animals such as buffalo, dogs or chickens reinforced the argument that these motifs represent a hunter-gatherer worldview, rather than that of an agricultural society (Taçon et al. 2014).

LEVEL 4	GK	GKu	GKk	GMa	GMS-2	GS	GT	GTPR	GTS	GKR	GKR-2	Total
Level 3: Anthropomorph												
Plain anthropomorph						1	10	1	2			14
Decorative anthropomorph							11	1	1			13
Undetermined anthropomorph							1					1
Level 3: Zoomorph												
Land animal					1		31	3	1			36
Marine animal					3		14					17
Reptile							4	3				7
Avian							1					1
Undetermined animal							5	2				7
Level 3: Botanic												
Fruit							18	1				19
Tuber								1				1
Level 3: Handprint												
Left handprint								1	1			2
Right handprint								3	1			4
Undetermined handprint								1				1
Level 3: Geometric												
Enclosed geometric	3		1	8	1		275	34	1	5	12	340
Open-ended geometric				2	1		3	3				9
Other geometric							7	2	1		1	11
Level 3: Line Art												
Single line							39	2	3			44
Multiple lines		3	1	1			11	4	1			21
Level 3: Abstract												
Arranged stipple							5					5
Colour patch					1		1		2			4
Undetermined abstract		1		5	1		77	59				143
Total motifs	3	4	2	16	8	1	513	121	14	5	13	

Table 2. Level 4 motif categorisation of the determinate red motifs.

Under the *Botanic* category, motifs can be further divided into *Fruit* and *Tuber*. Without such a structured classification system, both sites might simply be grouped under the broad label of *Botanic*, overlooking the unique occurrence of the *Tuber* motif at GTPR. This motif is made up of a cluster of solid-infilled round shapes, resembling the carving of tubers on the bamboo charms of the Senoi people, known as

'*tuang-tuangs*' (Fig. 6). These charms were traditionally engraved with magical designs and used in rituals for various purposes, such as rainmaking, protection against diseases or protection of crops against animals and insects (Skeat and Blagden 1906). Notably, Gua Tempurung lies within the present-day geographical boundaries of the Senoi people, further supporting the potential link between the rock art and the Senoi



LEVEL 5	GK	GKu	GKk	GMa	GMS-2	GS	GT	GTPR	GTS	GKR	GKR-2	Total
Level 4: Enclosed Geometric												
Chilli-shape								1				1
Circle Variant			1				21	8				30
Complex Geometric										2	3	5
Crescent-shape							5					5
Diamond-shape											1	1
Droplet Variant							18	3				21
t-shape				2			1					3
c-shape							2	1				3
L-shape							1	1				2
T-shape							1					1
y-shape							2					2
Oval Variant	3			6	1		164	17		2	3	196
Rectangle Variant							40	1	1			42
Semicircle							1					1
Spear-shape										1		1
Square Variant							13	1			1	15
Tilde-shape							1	1				2
Triangle Variant							5				4	9
Level 4: Open-Ended Geometric												
Complex Geometric				1	1							2
Horse-shoe-shape							1					1
c-Shape				1			1					2
L-Shape								1				1
X-Shape							1					1
Trident Type I								1				1
Trident Type III								1				1
Level 4: Other Geometric												
Amorphous							3	1	1		1	6
Ray Variant							4	1				5
Level 4: Single Line												
Curve							1	1	1			3
Horizontal								1				1
Slant							4					4
Vertical							29		2			31
Wavy							5					5
Level 4: Multiple Lines												
Complex Linear		1					4					5
Slant							3	3				6
Vertical		2	1	1			2		1			7
Wavy								1				1
Zigzag							2					2
Total motifs	3	3	2	11	2	0	335	45	6	5	13	

Table 3. Level 5 motif categorisation of the Geometric and Line Art motifs.

sites in Kinta Valley, which are GMS-2, GT, GTPR and GTS, where naturalistic animal figures are present. In contrast, sites where animal figures are absent tend to show a higher concentration of geometric designs. While geometric designs are also a characteristic of early rock art, their association with hunter-gatherer societies are less clear.

Geographically speaking, sites containing figurative motifs, such as GMS-2, GS, GT, GTPR and GTS, are more commonly found in the southern part of Kinta Valley. Non-figurative motifs, particularly geometric designs, are distributed more widely across the valley. This suggests that geometric designs represent a shared visual tradition, while figurative motifs may be associated with specific cultural groups or belief systems in the southern region. These spatial and stylistic distinctions show that the red rock art in Kinta Valley is not a single unified tradition but rather comprises multiple, possibly overlapping cultural expressions, shaped by both ecological and geographical context.

To better capture this diversity, this study integrates the five-level motif categorisation model with observations of motif placement, size and style. These additional attributes provide valuable insights into the artistic process, revealing how choices in location, scale and execution may reflect diverse cultural practices. For instance, at GT and GTPR, the production of rock art required elaborate efforts to access the surfaces; at most sites, the motifs show a preference for marine animals over land animals; and at GKR and GKR-2, triangular motifs stand out as elaborate and smaller in scale compared to other sites. Together, these observations offer a more nuanced interpretation of the rock art, leading to the identification of two distinct sub-traditions in Kinta Valley: sub-tradition 1 (ST1) and sub-tradition 2 (ST2).

ST1 is characterised by solid-infilled paintings that are larger in size, typically ranging from 50 to 100 cm or exceeding this size. Its motifs predominantly depict geometric designs and naturalistic animal figures, with commonly depicted species such as wild game and fish. Anthropomorphic figures are few, but each displays distinct attributes rather than simple schematic outlines. Handprints are present but uncommon. The complete absence of domestic animals and deliberate placement of handprints directly over wild boar figures suggest a hunter-gatherer rather than an agriculturalist worldview. In many Southeast Asian contexts, such composition has been commonly seen in the hunter-gatherer rock art tradition (Aubert et al. 2014, 2017; Taçon et al. 2014; Tan 2018). Moreover, wild boar was never domesticated in this region but is well known as a prey species for pre-Historic hunter-gatherer groups, and they continue to be hunted by Indigenous communities today. While direct dating remains unavailable, these features could tentatively place ST1 as early as the Hoabinhian period (~13,000 years ago in the Malaysian context), rather than the Neolithic period (~5000 to 2500 years ago) as generally

assumed. ST1 motifs are also typically associated with inaccessibility, such as at high-elevation rockshelters (e.g. GMS-2, GT) and deep caves with little or complete absence of natural light (e.g. GTPR, GTS).

ST2, in contrast, consists exclusively of smaller, solid-infilled geometric designs. These often include shapes such as triangles, which are rarely seen in ST1. Unlike ST1, the rock art associated with ST2 is typically located at more accessible locations, such as low-elevation rockshelter or cave entrances that receive sufficient sunlight (e.g. GK, GKU, GMA, GKR). In some instances, they are placed within grooves or hidden spots on the rock surfaces (e.g. GKR-2), suggesting a different approach to both composition and audience.

These differences in motif placement, size and style suggest a temporal difference or a shift in function between the ST1 and ST2. While ST1 exhibits many of the features commonly associated with early period rock art in Southeast Asia, a lack of comparable data made it difficult to determine whether ST2 is contemporaneous with ST1 or represents a later development. The recognition of these two sub-traditions provides a valuable framework for future research; it highlights a complex visual culture that is present in the West Malaysia rock art culture.

## Conclusion

This study has demonstrated that a more structured and detailed approach to motif categorisation can significantly enhance our understanding of Malaysian rock art. While subjectivity is an inherent challenge in motif interpretation, this study shows that it can be reduced through structured typological criteria, consistent terminology and transparent categorisation procedures, which still allows space for revisions in future studies. Unlike previous studies that often stopped at Level 3 and were limited to broad categories such as *Zoomorph* or *Geometric*, the application of a five-level motif categorisation model here has revealed patterns otherwise overlooked. At Level 4, the model effectively captures the diversity and complexity of both figurative and non-figurative motifs. At Level 5, it allows further refinement of non-figurative motifs, revealing localised iconographies invisible at earlier levels. Although most figurative motifs lack definitive features to support classification beyond Level 4, the model still proves valuable, especially when complemented with stylistic analysis. When combined with additional contextual observations on placement, size and style, it offers new perspectives for interpreting ecological symbolism (e.g. preference for marine animals over land animals), belief systems (e.g. handprints potentially related to hunting rituals) and potential cultural connections (e.g. stylistic similarities across sites) that may have affected motif choice by the artist.

Overall, the red rock art of Kinta Valley is dominated by solid infilled non-figurative motifs, particularly *Geometric* motifs, followed by *Abstract* and *Line Art*

motifs. Figurative motifs account for a smaller portion, with *Zoomorph* motifs being the most common, followed by *Anthropomorph* motifs, *Botanic* motifs and *Handprints*. This study also contributes to Malaysian rock art research by proposing two sub-traditions: one reflecting an early hunter-gatherer rock art style common in Southeast Asia, characterised by large, naturalistic animal figures and geometric shapes; and another consists of smaller geometric motifs, particularly triangles, that may represent a distinct or later development. The identification of stylistically similar motifs at Gua Tambun and Gua Tempurung suggests the development of a locally sustained rock art tradition in Kinta Valley rather than an isolated artistic tradition.

While the five-level motif categorisation model has proven useful in generating a more comprehensive understanding of motif distribution and stylistic variation, the absence of chronometric dating remains a significant limitation. Without reliable dating, it is difficult to establish the temporal relationships between sites or to situate Malaysian rock art precisely within a broader regional context. Future work that incorporates scientific stratigraphical excavations, chronometric dating of the rock art, and ethnographical studies will be essential for advancing our understanding of Malaysian rock art. Rock art analysis is inherently interpretive and anthropological in nature, particularly in regions where scientific datasets are limited or yet to be developed. In such contexts, this study argues that the five-level categorisation model provides a crucial methodological foundation. It will not contradict the data using other approaches, but serves as a complementary tool that facilitates cross-site comparisons and supports future scientific investigation. The model is not intended as a fixed or final system but as a framework that can evolve alongside the growing rock art record. In this way, it can contribute not only to a deeper understanding of Malaysian rock art traditions but also to the broader Southeast Asian region.

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