



KEYWORDS: *Rock art – Lao PDR – Pha Taem – Highland Southeast Asia – Cliff paintings*

THE CLIFF PAINTINGS OF PHA TAEM, LUANG PRABANG, LAO PDR

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Abstract. Pha Taem in Luang Prabang Province, northern Laos, is a cliff face overlooking the Ou River with over 300 red pictograms, mostly hand prints, anthropomorphs, zoomorphs, and others interpreted as ‘hunting scenes’ and ‘boats’. One local interpretation of the site is as a commemorative scene for hunting animals, which took place on the opposite river bank. Interestingly, the motifs depicted on the wall have similarities with cliff paintings at the Pak Ou Caves some 70 km downstream. The physical connection of the two sites along the same river raises the possibility of locating more rock art sites along the Mekong and the Ou River and underscores the role of rivers as lines of communication in this mountainous environment.

While rock art has been found all over mainland and island Southeast Asia, most of the known published sites have been reported from Indonesia and Thailand, where archaeological research has enjoyed sustained interest from both local and international researchers. In contrast to the approximately 200 sites known in Thailand, the neighbouring countries of Myanmar, Cambodia and Laos collectively have only about 50 reported; this disparity is largely due to

physical and geopolitical conditions that have made access difficult (Tan 2014a). This paper describes the Pha Taem cliff paintings in the mountainous Luang Prabang Province of northern Laos (Fig. 1). The name Pha Taem, which roughly means ‘painted cliff’ in Thai and Lao, was marked on a 1903 map from the Pavie exploration mission of 1879–1895 (Pavie 1999: 66, Map 28). While the reports from the Pavie mission generated a wealth of information about life

along the Mekong in the 19th century, the exploration team did not appear to travel up the Ou River, and no descriptions of the site have been found. In more recent times the rock art was briefly mentioned in a report by Bouxaythip (2011) of the country’s rock art.

While conducting research at the Pak Ou Caves in the same province, I was contacted by a tourist who showed me pictures of the Pha Taem site (Patricia Garcia, pers. comm. 2016). Because of their similarity to the Pak Ou Caves cliff paintings, I acquired permission from the Laotian Department of Heritage to visit and document the Pha Taem rock art in December 2016. This paper summarises the result of the rock art recording at Pha

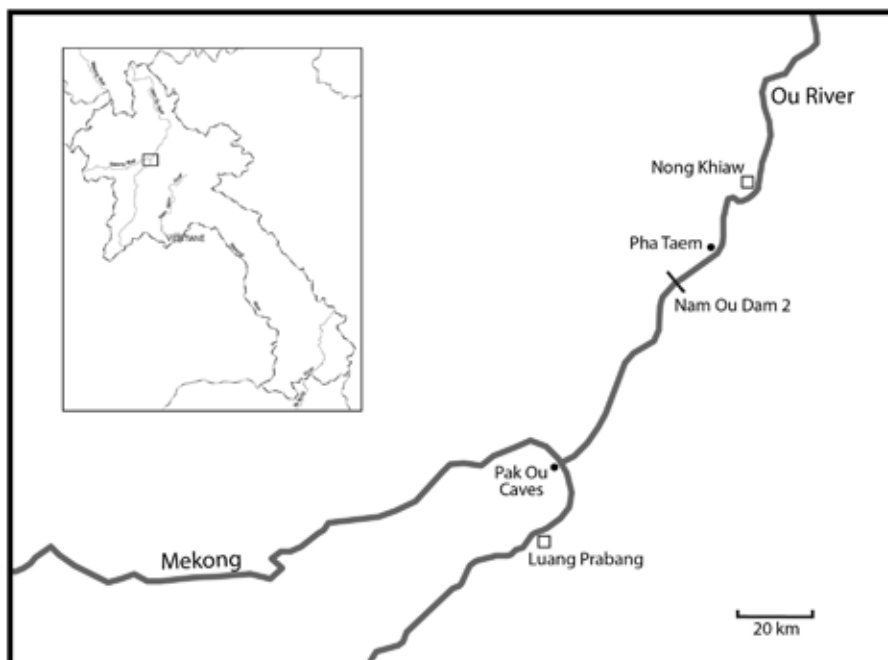


Figure 1. Location of Pha Taem in Luang Prabang, Laos. Images by Noel Hidalgo Tan unless noted otherwise.

Taem and compares them with the rock art at the Pak Ou Caves.

The Ou River is the longest river in northern Laos, originating from Phongsali province near the Chinese border and flowing 390 km southwards before it meets the Mekong at Pak Ou. The Ou River cuts through extensive and steep limestone karsts; the landscape is mostly mountainous and most people living in this area practice some form of swidden agriculture. While road networks have been slowly improving, the Ou River still plays an important role as the main communication and transportation channel. Like most of Laos, the Nam Ou Basin experiences a tropical savannah climate comprised of a wet season running from May to October and a dry season from November to April. Consequently, the water levels of river systems fluctuate greatly; for example, the recorded fluctuation of the Mekong at Luang Prabang is 2–15 m (Mekong River Commission 2017). Until recently, the Ou River experienced similar seasonal fluctuations, but these are being disrupted due to the construction of seven cascading hydroelectric dams which is scheduled to be completed in 2020.

Archaeology and rock art of Laos

Sporadic investigations into the pre-History of Laos began during the French colonial period of the previous century but sustained research only began in the last decade (Massie 1904; Mansuy 1920; Fromaget 1936; Arambourg and Fromaget 1938; Fromaget 1940a, 1940b; Singthong et al. 2016). Pre-Historic sites in Laos indicate human occupation in Laos from the Pleistocene: pre-Hoabinhian tools dating to c. 56 000 years bp have been found in north-eastern Laos (Zeitoun et al. 2012) and modern human remains date from 46 000 years ago (Demeter et al. 2012; 2015, 2017; but see also Pierret et al. 2012). Hoabinhian stone tools, as well as polished stone tools and metal implements associated with the Neolithic and Bronze Age have also been found (see Massie 1904; Mansuy 1920; Sayavongkhamdy et al. 2000; White et al. 2009). The Hoabinhian and Neolithic material from Laos are similar to the better-investigated sites in northern Thailand and Vietnam (see Higham 2014: 39–61), and indicate that hunter-gatherer societies had adapted to highland environments by the late Pleistocene.

From the Neolithic up until the 15th century almost nothing is known about the upland region of Laos, except for mythical stories. According to the Laotian Chronicles, the legendary divinely appointed king Khun Borom is thought to be the progenitor of the Tai-speaking peoples. His sons became the founder-chiefs of several settlements including Sip-song Panna (Yunnan), Hoaphanh (Vietnam), Lanna (Thailand), Intharapat (Myanmar) and most notably, Muang Sewa, which would later become Luang Prabang (Manich 1967). While these legends cannot be taken as historical records, Stuart-Fox (1997) suggests

that they preserve the folk memories of migration and displacement from the highlands to the lowlands. Another important subtext of the Khun Borom myth is related to the divine gift of buffalo and the introduction of rice agriculture (Archambault 1959; Wyatt 2003: 9–10), which is associated with the Neolithic in Southeast Asia. These myths suggest a movement of populations by Tai-speaking peoples from southern China into Southeast Asia: by the 8th century CE the Tai-speaking peoples had spread across highland Southeast Asia in five linguistic groups (Wyatt 2003: 9–16).

The Lao Chronicles follow the lineage of Khun Borom to Fa Ngum (1316–1393 CE), who founded his kingdom of Lan Xang Hom Khao ('Million Elephants and White Parasol' – symbols of military might and royalty) at Muang Sewa in 1353. While Lan Xang is the foundation of the modern Lao state, many scholars have noted that the narrative of Fa Ngum in Lao history is more mythical than factual, and that more reliable accounts of Laotian history only really begin from the 16th century (Stuart-Fox 1997, 1998; Evans 2002; Lorrillard 2006, 2008).

Within Laos, several rock art sites are known but most have not been formally described or recorded (see Tan 2014a and Singthong et al. 2016). A few rock art sites can be assigned, by iconography and writing style, to the Buddhist period which begins roughly from the 10th century: the Buddhist petroglyphs of Tham Vang Sang are described as Lopburi art style and are thus probably from the pre-Lan Xang period (Batteur 1925; Karpelès 1949); Khan Mak Houk is another petroglyph site depicting 11th century Brahmanic petroglyphs on the Mekong which can only be seen in April due to the seasonal decrease in the water level. It is associated with the World Heritage Site of Vat Phou and is similar to the riverbed petroglyphs at Phnom Kulen in Cambodia (Santoni et al. 2008; Boulbet and Dagens 1973). In Khammoune province, probably-recent Buddhist paintings were reported by Watanabe et al. (1985) at Thakhek, while other rock painting sites have been found by a French cave survey team (Ostermann and Mouret 2004; Mouret 2005). In Luang Prabang, white Buddha images have been painted on the walls of Tham An Mah (Lewis et al. 2015), and early forms of Laotian writing are noted in Pha Nang Aen and the Pak Ou Caves (Lorrillard 2009; Ferlus 1995). The rock art of the Pak Ou Caves is the best-studied site so far and contains several layers of paintings from possibly the Neolithic to the Lan Xang Buddhist period and more recent past (Tan 2014b, 2014c; Tan and Taçon 2014; Tan and Walker-Vadillo 2015; Tan 2018). The rock art similarities between the Pak Ou Caves and Pha Taem will be discussed later in this paper.

There are no direct dates for the non-Buddhist rock art sites in Laos; however, the general consensus is that red rock art in Southeast Asia is pre-Historic (Taçon et al. 2014). Red cliff painting sites in other



Figure 2. Unmanned aerial vehicle (UAV) photos of the Pha Taem cliff and the surrounding landscape. The author is on the boat.

parts of highland Southeast Asia such as southern China (Huashan and Cangyuan) and northern Thailand (Pratu Pha, Ban Tha Si and Doi Pha Kan) have yielded Holocene to Iron Age dates from pigments or associated finds and thus support the idea that such sites are of considerable antiquity (see Bednarik and Li 1991; Winayalai 1999; Zeitoun et al. 2013; Shao et al. 2017; Surinlert et al. in press).

Recording methods

Pha Taem was surveyed and recorded in December 2016. The entirety of the site is an exposed south-east-facing cliff at the edge of the Ou River. Close access to the rock art was impossible as the paintings were located between 5–11 m above the water level. Observations of the rock art and the site surroundings were made from a boat and the surrounding area was surveyed by an unmanned aerial vehicle (Fig. 2). Digital photographs of each panel were taken with a Nikon D7000 with a Nikon 18–300 mm lens, and from the panel images individual painting elements were identified and inventoried. From preliminary recordings, some of the lower portions of Panels A–C may need to be re-recorded because of paintings that were recovered after digital enhancement. DStretch was used to enhance the images and in a number of cases and I have identified images that cannot be seen with the unaided eye. Owing to the inaccessibility of the paintings, the scales in the images are based on a simple photogrammetric measurement of hand prints, which exist in all of the panels. In each panel, an exemplar hand print was chosen and assumed to be 15 cm wide.

Description of rock art

The exposed cliff area is roughly triangular, about

40 m high and 60 m at the base. The rock art at Pha Taem occurs in eight clusters across the cliff face: panels A–H (Fig. 3). The most prominent and visible set of paintings occupies a triangular space in the middle of the cliff face. Due to its size and complexity, it has been recorded as three panels (A–C). A total of 316 elements were identified, most of which are complete images although some elements may be parts of the same image that have been separated by surface deterioration (Table 1). The pictograms are all red; while some superimpositions of paintings can be detected, the general uniformity of the panels makes it hard to detect any temporal relationship between groups of paintings or between panels.

Table 1. List of rock art elements.

Panel	No.	Description
A	01	Right hand print
A	02	Indeterminate
A	03	Upside-down Y shape. The main trunk of the Y is visible while the appendages only show up after image enhancement.
A	04	Abstract design reminiscent of a fish bone
A	05	Anthropomorph
A	06	'Ladder' figure, bottom part of the painting is destroyed by surface damage
A	07	A pair of visible finger lines curving to join a triangular abstract form
A	08	Group of four standing figures, similar to A07
A	09	'Hand' drawing, triangular base with five lines extending from the top
A	10	Indeterminate, left side destroyed by water wash

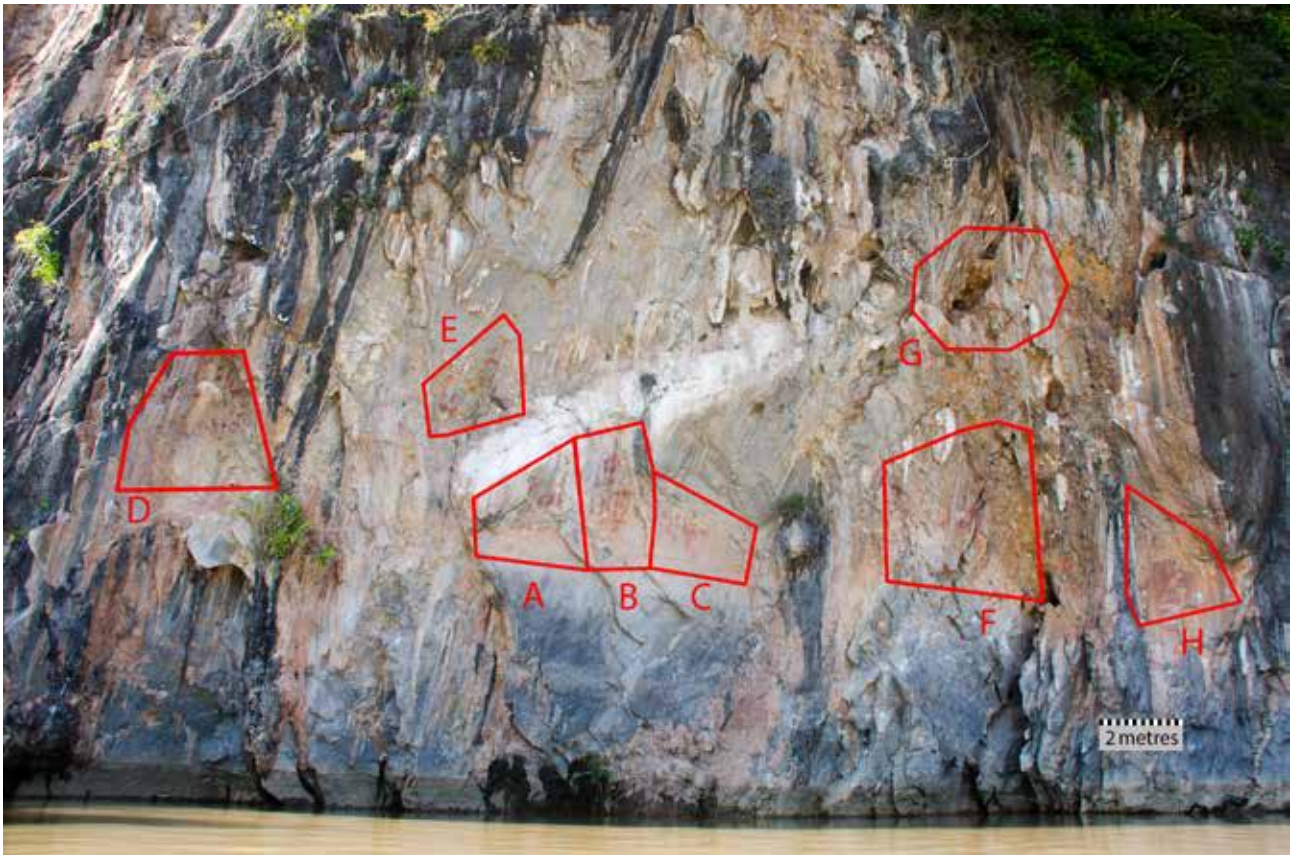


Figure 3. Panel sections of the Pha Taem Site.

A	11	Indeterminate, left side destroyed by water wash
A	12	Hand drawing, does not appear to be a print
A	13	Left hand print
A	14	Left hand print. The scale for this panel is based on the width of this hand print as 15 cm
A	15	'Fencing'. Thick horizontal line topped with thin vertical lines. Parts damaged by water wash and surface spalling
A	16	Indeterminate, possible hand print
A	17	Right hand print. Some smudging and surface spalling
A	18	Left hand print
A	19	Indeterminate, possible hand print
A	20	'Peeing man'. Probably a depiction of a skirt or loincloth. Similar to rock art in the Pak Ou Caves (see Pak Ou Caves J07 in Tan, in prep.)
A	21	Indeterminate, possible anthropomorph
A	22	Anthropomorph carrying a 'bow'
A	23	Anthropomorph wearing a 'headdress' with arms upraised, beckoning to the 'buffalo' A24
A	24	'Buffalo'
A	25	Indeterminate. Heavy water wash, possible anthropomorph
A	26	Indeterminate
A	27	Indeterminate. Possible a set of three hand prints
A	28 29 30	Large red horizontal line, possibly connected to A26

A	31	'Buffalo'
A	32	Indeterminate, possible 'Buffalo'
A	33	Faded form, possibly the hindquarters of an animal
A	34	Right hand print
A	35	Left hand print
A	36	Solid round shape
A	37	Indeterminate form. Possible hand print
A	38	Left hand print
A	39	Indeterminate, possible hand print
A	40 41	Indeterminate
A	42 43	Indeterminate, possible hand print
A	44	Possible 'buffalo', but image is slanted due to contour of the rock surface and may be distorted
B	01	Right hand print with long fingers. May not be a true print but a drawn hand
B	02	Anthropomorph
B	03	Indeterminate, may be one or more hand prints
B	04	Series of three animals climbing up a slope. Below the slope is a band of red that bends, as if to form a mountain and create white space separating it from B5
B	05	Anthropomorph 'pulling' on a 'buffalo'
B	06	Anthropomorph. Most of it has been affected by water wash
B	07	'Charging bull'. Four legged zoomorph with two protrusions from the head, possibly a buffalo in mid-charge

B	08	Paint smear, indeterminate
B	09	Left hand print
B	10	Indeterminate, roughly rectangular in a vertical orientation
B	11	Indeterminate
B	12	Right hand print
B	13	Indeterminate
B	14	Right hand print
B	15 16	Left hand print
B	17	Right hand print
B	18	Indeterminate, possibly a right hand print
B	19	'Thumbs up'. Almost certainly not a hand print. Portions have been destroyed by water wash. Similar to C11
B	20	'Paw' print or small hand print
B	21	Dual hand print
B	22	Anthropomorph with a 'blowpipe', aiming at B23
B	23	Bovid zoomorph with horns curved into itself, touching its neck. Appears to be 'hunted' by A22 and A24 who are using 'blowpipes'
B	24	Anthropomorph with a 'blowpipe', aiming at B23. A mirror of A22
B	25	'Scythe'. V-shape with a knob at the junction
B	26	Left hand print
B	27	Thick vertical line, tapering at the bottom
B	28	Indeterminate
B	29	Right hand print
B	30	Left hand print
B	31	Right hand print. The scale for this panel is based on the width of this hand print as 15 cm
B	32 33	Right hand print
B	34	Left hand print
B	35	Indeterminate
B	36	Left hand print. Covers B53 and B38
B	37	Right hand print. Covers B38
B	38	Two anthropomorphs holding a large 'saw' or 'plough' between them. Parts of their heads are 'deliberately' covered by B36 and 37
B	39	Left hand print. May be a double print
B	40	Red paint smear of indeterminate form, possibly a hand print
B	41 42	Left hand print
B	43	'Starfish' shape
B	44	Three dots, possibly finger points
B	45	Large red figure, possibly an 'elephant'. Parts are heavily damaged by water wash
B	46	Right hand print
B	47 48	Indeterminate form, possibly part of the 'elephant' B45
B	49	Indeterminate form
B	50	Short red line, the length of a finger. May be connected to B51
B	51	'Snake', may be connected to B50
B	52	S shape, may be connected to B25

B	53	Anthropomorph, partially covered by B36. The little and ring finger of B36 form the shoulder and head of the anthropomorph, and the left hand extends from there.
B	54	Hand print, possibly left hand but indeterminate. Partially obscured by B40
C	01	Right hand print
C	02	Left hand print
C	03	Left hand print, heavily weathered
C	04	Right hand print, heavily weathered
C	05	Right hand print
C	06	Left hand print
C	07	Indeterminate, possibly zoomorph
C	08	'Boat': canoe with a curved hull, with possibly three anthropomorphs aboard. Figure on the left appears to be sitting while the headless middle figure is holding an 'oar'
C	09	Possible zoomorph, a 'deer' with curved 'horns' charging towards C9
C	10	Stooping anthropomorph with head about to collide with C10. Possibly female because of pronounced torso. The curved posture is also reminiscent of human figures of the Pak Ou rock art (J20-23, Tan in press)
C	11	'Thumbs up', similar to B19
C	12	Hand print, possibly of right hand
C	13 14	Right hand print
C	15	Wavy vertical lines, probably finger trails
C	16	Left hand print
C	17	Right hand print. The scale for this panel is based on the width of this hand print as 15 cm
C	18	Right hand print, partial water damage
C	19	Left hand print, partial water damage
C	20	Right hand print, partial water damage
C	21	Top half of an anthropomorph with a prominent 'chin' and thin upraised arms. Covered by C27
C	22	Indeterminate, possible hand print
C	23	Left hand print
C	24	Right hand print
C	25	Indeterminate, possible hand print
C	26	Head and shoulders of an anthropomorph with a strong 'chin', similar to C21
C	27	Large red figure of indeterminate form. Despite being unidentifiable, it is the largest and most prominent figure in the panel
C	28	Indeterminate form, guitar shaped. Best seen on DStretch yre filter
C	29	Orange left hand print, obscured by C28. Detected on DStretch lds filter
C	30	Anthropomorph
C	31	Right hand print
C	32	Possible watercraft or 'barge': long hull with curved 'prow' and 'rudder' and one anthropomorph aboard
C	33	'Buffalo' being led by an anthropomorph
C	34	Zoomorph: small quadruped standing on a 'pedestal' C35
C	35	'Pedestal' or platform on which C34 is standing

C	36	Double-hulled 'watercraft', which is the most interesting part of the panel since it is almost invisible to the naked eye. Individual components are described in C37-42, 47
C	37	T-shaped pole, possibly used for affixing a rudder or mooring
C	38	
C	39	Anthropomorph
C	40	Zoomorph, bovid, probably a buffalo due to size relative to anthropomorphs
C	41	Anthropomorph, 'holding a leash' attached to C40
C	42	Pair of T-shaped poles, similar to C37 and 38
C	43	Long horizontal strip with animals (C44, 45, 48) standing on it, probably 'watercraft'
C	44	Zoomorph, quadruped with upright tail. Possibly 'dog'
C	45	
C	46	May be part of C27 or a bird's eye view of a 'boat', given the presence of other 'boat' motifs in the area
C	47	Zoomorph standing on the hull of the 'boat' C36. Similar to C34
C	48	Zoomorph, possibly 'dog'
D	01	Indeterminate form, probably hand print
D	02	
D	03	
D	04	
D	05	Left hand print
D	06	Right hand print
D	07	Left hand print
D	08	Right hand print
D	09	Left hand print
D	10	Right hand print
D	11	Left hand print. The scale for this panel is based on the width of this hand print as 15 cm
D	12	Right hand print
D	13	Right hand print
D	14	Indeterminate
D	15	Indeterminate, possible hand print
D	16	Indeterminate
D	17	Hand drawing, fingers facing down. Wrist is drawn in and open circle design in place of the palm
D	18	Right hand print
D	19	Left hand print
D	20	'Cockroach man', anthropomorph with 'feelers'
D	21	Zoomorph, probably bovid but head is indeterminate
D	22	Right hand print
D	23	
D	24	Left hand print
D	25	Indeterminate, possible hand print
D	26	Indeterminate
D	27	Indeterminate, possible hand print
D	28	Right hand print
D	29	
D	30	
D	31	
D	32	'Cockroach man', anthropomorph with 'feelers'
D	33	
D	34	Left hand print
D	35	

D	36	Rectangular red figure
E	01	Right hand print
E	02	Left hand print
E	03	Rectangular red figure
E	04	Indeterminate
E	05	Indeterminate, possible hand print
E	06	
E	07	Indeterminate
E	08	X shape
E	09	'Buffalo' and also the depiction of the surface it stands on
E	10	Hand print, handedness cannot be determined
E	11	Left hand print
E	12	
E	13	Right hand print
E	14	Left hand print
E	15	Indeterminate form
E	16	Right hand print. The scale for this panel is based on the width of J17 as 15 cm
E	17	
E	18	
E	19	'Buffalo'
E	20	Anthropomorph half washed away. Appears to be carrying a 'club' or 'fan' on the right hand
E	21	Right hand print
F	01	'Bird', perhaps a duck or goose portrayed with lines emanating from the rear
F	02	Indeterminate
F	03	Right? Hand print
F	04	Indeterminate
F	05	Right hand print
F	06	
F	07	
F	08	
F	09	
F	10	
F	11	Indeterminate, possible hand print
F	12	Right hand print
F	13	Indeterminate, possible hand print
F	14	Indeterminate
F	15	Left hand print
F	16	Right hand print
F	17	Indeterminate, partly destroyed by water wash
F	18	Right hand print
F	19	
F	20	Indeterminate, probably hand print, partly destroyed by water wash
F	21	Right hand print, partly destroyed by water wash. The scale for this panel is based on the width of this hand print as 15 cm
F	22	Left hand print, partly destroyed by water wash
F	23	Right hand print, partly destroyed by water wash
F	24	Indeterminate, possible hand print
F	25	Indeterminate
F	26	Finger lines
F	27	Left hand print
F	28	Right hand print
F	29	Indeterminate, possible hand print
F	30	Indeterminate, probably finger lines
F	31	Indeterminate

F	32	Indeterminate, possible hand print
F	33	Right hand print
F	34	Indeterminate, may be part of F32
F	35	Left hand print
F	36	Indeterminate, possible hand print, partly destroyed by water wash
F	37	'Buffalo', small for its size, 'tail' obscured by water wash
F	38	Anthropomorph with large torso and arms spread out. Partly obscured by water wash. Leg area obscured by water wash and surface damage. There might be more than one painting there
F	39	Zoomorph, possibly 'buffalo' or 'elephant' it has both a pair of horns and a long 'trunk'; alternatively could be a bull elephant
F	40	Rectangular figure
F	41	Indeterminate, may just be water wash
F	42	Indeterminate
F	43	Three-fingered hand print
F	44	Indeterminate, probably hand print
F	45	Right hand print
F	46	Right hand print
F	47	Indeterminate form
F	48	Indeterminate form
F	49	Anthropomorph with upraised arms. Right leg is visible
F	50	Large red mass, may be an accretion of paint wash from other paintings
F	51	Pair of finger lines) (
F	52	'Buffalo', covered by F53
F	53	Indeterminate, may be an accretion of paint wash from other paintings
F	54	Indeterminate
F	55	Indeterminate, possibly zoomorph
F	56	
F	57	
F	58	
F	59	Indeterminate form
F	60	Indeterminate form
F	61	Rectangular form
F	62	Right hand print
F	63	Right hand print
F	64	Negative right hand stencil
F	65	Indeterminate, possible hand print
F	66	Right hand print
F	67	Left hand print
F	68	Left hand print
F	69	Indeterminate, possible hand print
F	70	Left hand print
F	71	Right hand print
F	72	Indeterminate
F	73	
F	74	
F	75	
F	76	Indeterminate, obscured by floral growth. May contain more than one image
G	01	Right hand print, thumb damaged by water wash
G	02	Indeterminate, probably hand print
G	03	Linear design

G	04	Thick Y shape, damaged by water wash
G	05	Round figure, damaged by water wash
G	06	Possible anthropomorph with outstretched arms, damaged by water wash
G	07	Right hand print, possibly a drawing rather than a print. Partly obscured by root growth
G	08	Anthropomorph with upraised arms. Lower section damaged by surface spall. May be connected with G9-11
G	09	Possible leg of G8
G	10	
G	11	
G	12	Possible hand print
G	13	Left hand print
G	14	Anthropomorph with upraised arms
G	15	'Mushroom' shape
G	16	Right hand print
G	17	
G	18	
G	19	Left hand print. The scale for this panel is based on the width of this hand print at 15 cm.
G	20	Rectangular figure
G	21	Hand print, handedness indeterminate. Damaged by water wash
G	22	Indeterminate, damaged by water wash. Possibly anthropomorph
G	23	J shape. Bottom part obscured by surface damage
G	24	Indeterminate
G	25	
G	26	Indeterminate, possible hand print
H	01	Indeterminate, possible hand print
H	02	Right hand print. The scale for this panel is based on the width of this print as 15 cm
H	03	Y shape. Possibly an anthropomorph
H	04	Hand print, handedness indeterminate
H	05	Indeterminate
H	06	Finger lines
H	07	Cluster of finger lines
H	08	Abstract 'fleur de lis' design, possible anthropomorph or stylised hand image
H	09	Indeterminate, possible hand print
H	10	Line and ball design

Table 1. List of rock art elements.

As seen from the UAV footage, the painters chose depressions in the cliff wall to place the rock art, which has provided some protection of the paintings from the elements. Perhaps for this reason, most of the pictograms appear fresh. However, due to their overall exposure to the elements about half of the pictograms recorded show some signs of weathering and deterioration. Streaks of water wash can be observed cutting across some panels, dissolving the paintings away. Along with water wash, mineral accretion has covered some paintings with a white patina, while some other paintings have been damaged by rock surface exfoliation. Floral growth obscuring some paintings has also been observed.

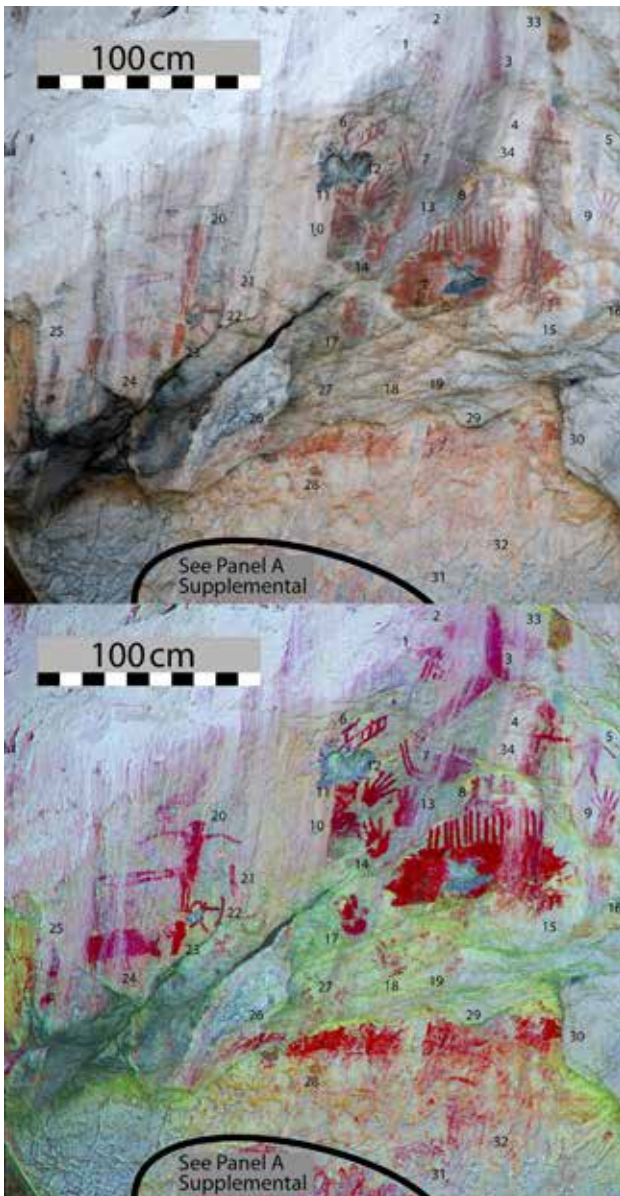


Figure 4. Panel A, elements 01–34, with DStretch yrd filter (below).

Panel A

Panel A consists of the left (southern) part of the main art triangle over a space approximately 3 m wide, 4 m high, its base 6 m from the water line. The most prominent image is a rectangular red figure topped with thin vertical lines (A15), its representation unknown. Water wash has affected parts of the upper, left and lower sections of the panel leading to poor visibility of most of the paintings. The recording of this panel is in two figures, A01–34 (Fig. 4) and A35–44 (Fig. 5).

Panel B

This panel is approximately 2 m wide and 3 m high and located between Panels A and C (Fig. 6). While paintings on the upper and lower section of the panel have deteriorated, the majority of the paintings are intact and visible with vibrant colours. The

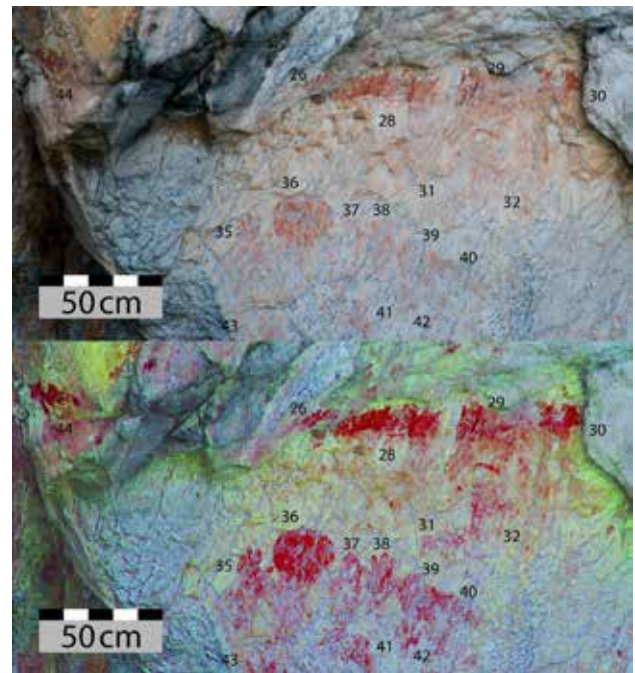


Figure 5. Panel A, elements 26–44, with DStretch yrd filter (below).

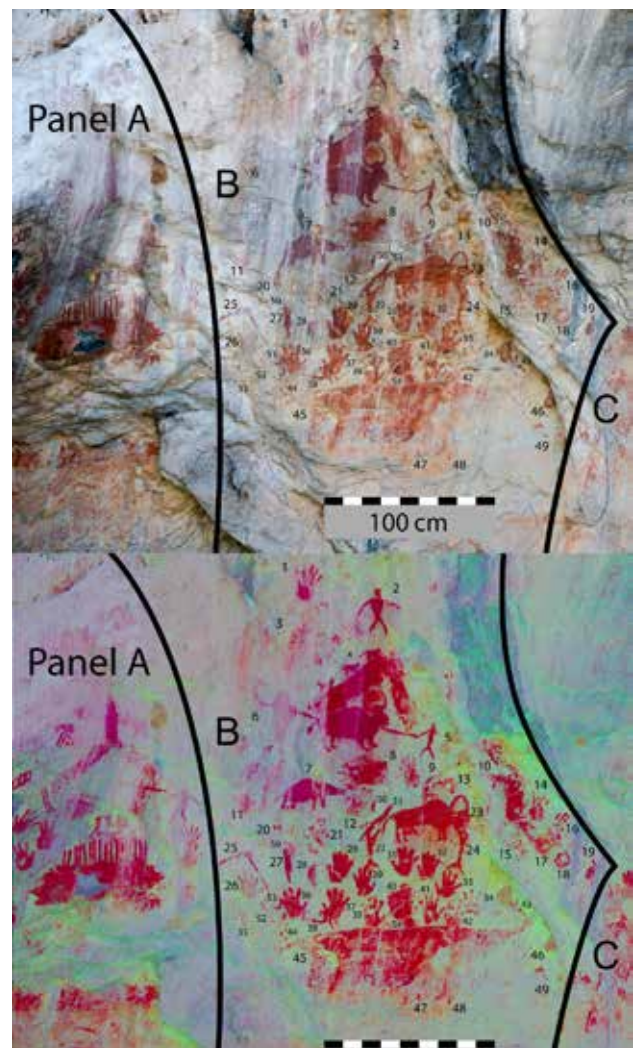


Figure 6. Panel B, with DStretch lre filter (bottom).

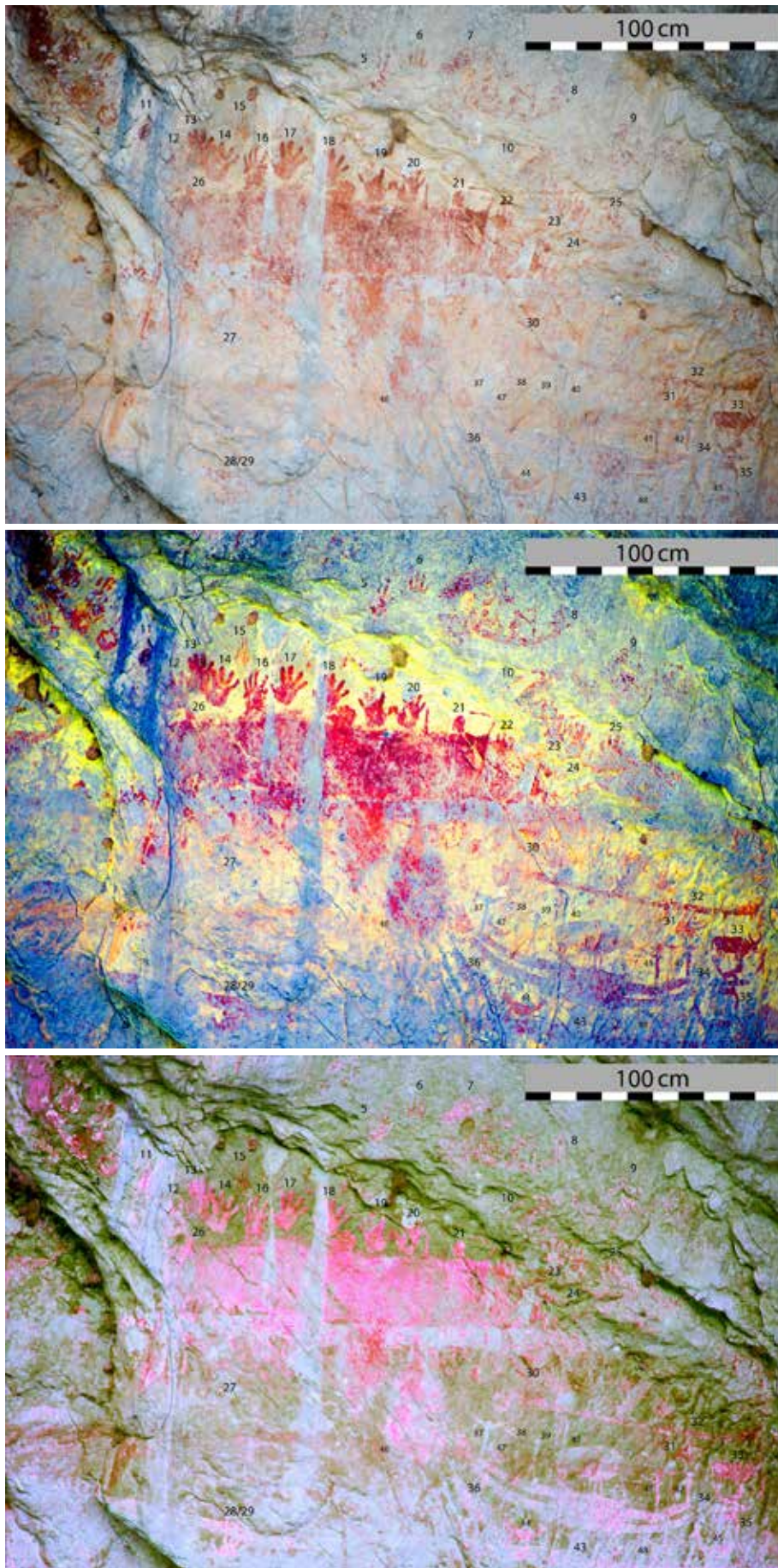


Figure 7. Panel C with DStretch lds filter (middle) and yye filter (bottom).

upper half of the panel features depiction of 'men' and 'buffaloes', perhaps a domestication and hunting scene as one 'buffalo' can be seen being 'led by a human' (B5). Below them, another 'buffalo' (B23) appears to be attacked by two people using blowpipes (B22 and 24). The middle section of the panel is dominated by hand prints while the lower section has a large deteriorated image that may possibly depict an elephant (B45).

Panel C

Panel C is dominated by a large red shape (C27), which, similar to Panel B, is topped with a number of hand prints. While in the case of B45 there were a number of attributes to suggest an animal identification, C27 is too deteriorated to make such a suggestion. However, the most exciting aspect of Panel C is invisible: DStretch enhancement revealed a number of 'boats' or 'watercraft' on the right side of the panel. The 'boat' C36 contains a number of associated features (37-42, 47) and appears to be transporting a buffalo (Fig. 7). The discovery of rock art in the lower right section of the panel indicates there are probably more paintings in the lower section that were not recorded during the field survey. This panel measures approximately 3 m wide, 3 m high and begins about 5 m above the water line.

Panel D

Located approximately 6 m left of Panel A and 9 m above the water line, Panel D is the southernmost panel of pictograms (Fig. 8). The paintings are mostly well-preserved because they are located under a small overhang which has protected them from the elements.



Figure 8. Panel D with DStretch yre filter (bottom).

Hand prints dominate this panel, but there is one bovid (D21) and several unique anthropomorphs which are depicted with 'headdresses' (D20, 32, 33). These figures have two hands and two legs, but the 'feelers' are unique and not replicated anywhere else in the site.

Panel E

This is a small panel above Panel A, located just above where the outcrop that forms Panels A–C begins to protrude from the cliff face (Fig. 9). The lower group of paintings contains hand prints, an anthropomorph and a bovid figure while the central group comprises a bovid and more hand prints. Another cluster of paintings to the right may contain more hand prints. The panel is located approximately 9 m above the water line and occupies a 3 × 3 m space.

Panel F

Approximately 5 m to the right of Panel C, at roughly the same elevation is another set of paintings designated Panel F (Fig. 10). The central figures on this panel are some bovinds and possibly an elephant, surrounded by numerous hand prints. The 'bird' painting (F01) is unique and the only example of such in the site.

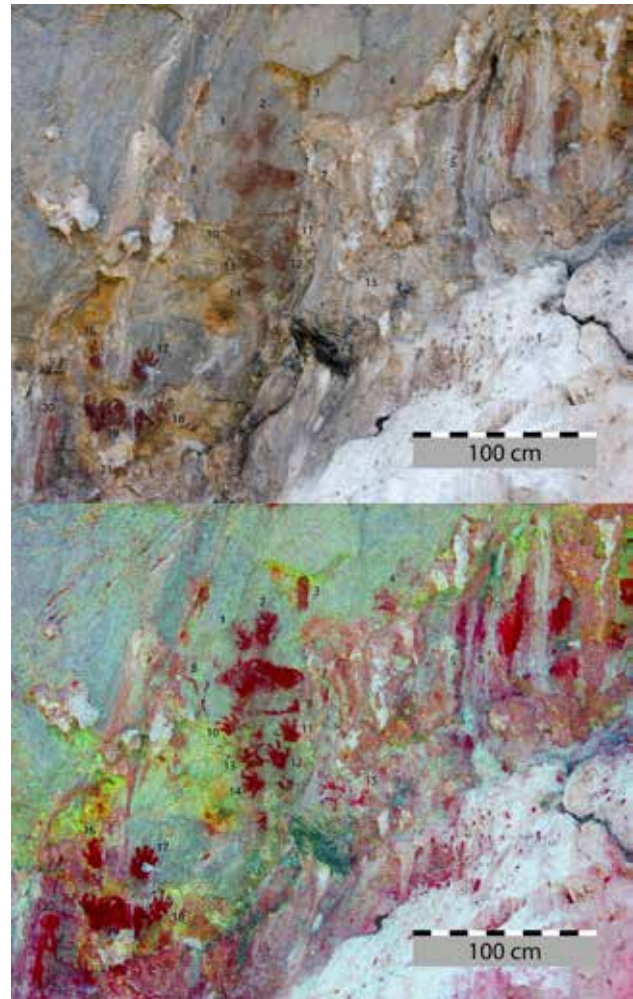


Figure 9. Panel E with DStretch yrd filter (bottom).

Panel G

Located 5 m above Panel F and 12 m above the water line, Panel G is the highest panel in the site. The paintings are clustered around an opening on the cliff face, and the surface is not smooth (Fig. 11). Perhaps it is this abundance of handholds that has made this location attractive for the painters. Besides hand prints, the paintings include depictions of two anthropomorphs with upraised arms — perhaps an action of climbing in order to paint in this area of the site.

Panel H

Compared to the other panels of this site, the lower density of images may be attributed to the lack of smooth surfaces, or to water wash that has led to mineral accretion on the surface of the cliff face of the left part of the panel (Fig. 12). As with the other panels, hand prints dominate the panel. A curious linear design, dubbed the 'fleur de lis' (H8) is a unique design.

Observations

Motifs

The inaccessibility of the paintings meant that I was unable to get close enough to the cliff face and



Figure 10. Panel F, with DStretch yre filter (bottom).



Figure 11. Panel G, with DStretch yre filter (bottom).

examine the paintings in detail. It is probable that most pictographs were done by hand — ostensibly because of the presence of hand prints and finger lines. A total of 316 pictographs were identified on the walls of Pha Taem, although the number is a high estimate as some individual elements may once have been part of the same image but are deteriorated beyond recognition. Images of hands make up approximately half of the pictographs at Pha Taem. Most of the hand prints are true hand prints, i.e. paint was applied to the palm which was then applied to the rock surface, which leads to very characteristic rounded finger tips and sometimes a blank space in the centre of the palm. Some exceptions are drawings of hands (e.g. A9, B1), a paw print (B20) and one negative hand stencil (F64).

The anthropomorphs of Panels A–C are uniform, having long and slim stick figure forms (e.g. B05 and A20), with two notable exceptions: one has a depiction of ‘breasts’ (C10) while another is depicted with arms outstretched with lines emanating from the waist (A20), which is similar to a painting at the Pak Ou Caves (J07 in Tan 2018). The ‘climbing man’ (G08, 14) motif also appears at the Pak Ou Caves.

The vast majority of zoomorphs depicted are some sort of bovid, probably water buffaloes as many of them have curved crescent-shaped ‘horns’. Both domestic and wild buffaloes might be presented, either as subjects of ‘hunts’ (B23) or ‘being led on a leash’ (B05 and C40). A smaller four-legged creature, presumably a mammal such as a dog, is represented in a smaller scale (e.g. B4) and at least one appears to be domesticated as well (C47). A single ‘bird’ is represented (F01), and what could possibly be two elephants (B45 and F39). The absence of unambiguous game animals is apparent.

The most surprising find from the rock art are the presumed nautical imagery, which is invisible to the naked eye and was discovered after digital enhancement. The depictions include four ‘watercraft’ which can be tentatively described as a ‘canoe’ (C8), two ‘rafts’ (C32 and C43) and a ‘double-hulled barge’ (C36), based on the shape of the hulls. The ‘barge’ appears to be made from two canoes lashed together, and is large enough to carry at least two ‘men’, a ‘buffalo’ and a ‘dog’. T-shaped posts are depicted on either end of the ‘boat’, possibly used for mooring and also to hold the two hulls together. Depictions of boats are generally rare, and most Southeast Asian boat imagery comes from coastal sites (Harrison 1959; Ballard 1988; Chaimongkhon and Phikpen 1990; Blake 1996; Ballard et al. 2003; O’Connor 2003; Lape et al. 2007; Sukkham et al. 2017) although the Pak Ou Caves also have a depiction of a steamship (Tan and Walker-Vadillo 2015).

Ou River levels

It is puzzling how the paintings appear so high above the cliff face, as there are no ledges along the wall. There is evidence in South-east Asia that cliffs were scaled by skilled climbers, particularly in search of products such as honey or birds nests, but there is no physical evidence of such on the walls (Tan 2010). Given the possible depiction of watercraft found in Panel C, it may be possible that some of the rock art was created in conjunction with the seasonal fluctuations of the water level.

While there is no specific data from the Pha Taem area, historical data from Muang Ngoi (a village some 40 km upstream of Pha Taem) indicates that prior to 2005 the water level of the Ou River fluctuated between 1 m in the dry season and 9 m depth in the wet season (Mekong River Commission 2017). Since the construction of the Nam Ou 2 Dam in 2015, locals report that the river level is more stable and now only fluctuates by 1–2 m, and the distance between the river and the rock art may have also changed substantially. As noted earlier, my visit in December was in the middle of the dry season when the water was approximately 5 m below the lowest rock art panels; however, Bouxaythip (2011) noted that during his visit in October 2010 the water was much lower, at 12 m. Bouxaythip's recorded level in October would have been at the end of the wet season when the water level would be at its historical highest. This discrepancy implies that prior to the construction of the dam the paintings would have been much higher over the river during the dry season, at least 12 to possibly 20 or more metres.

Despite this great height, it is still entirely plausible that the painters exploited the seasonal fluctuations of the river in order to create the rock art. As recently as 1966, villagers living in the vicinity of the Pak Ou Caves downstream reported that they were able to reach the local cliff walls by boat during a particularly heavy rainy season when the level of the Mekong River was unusually high. When compared

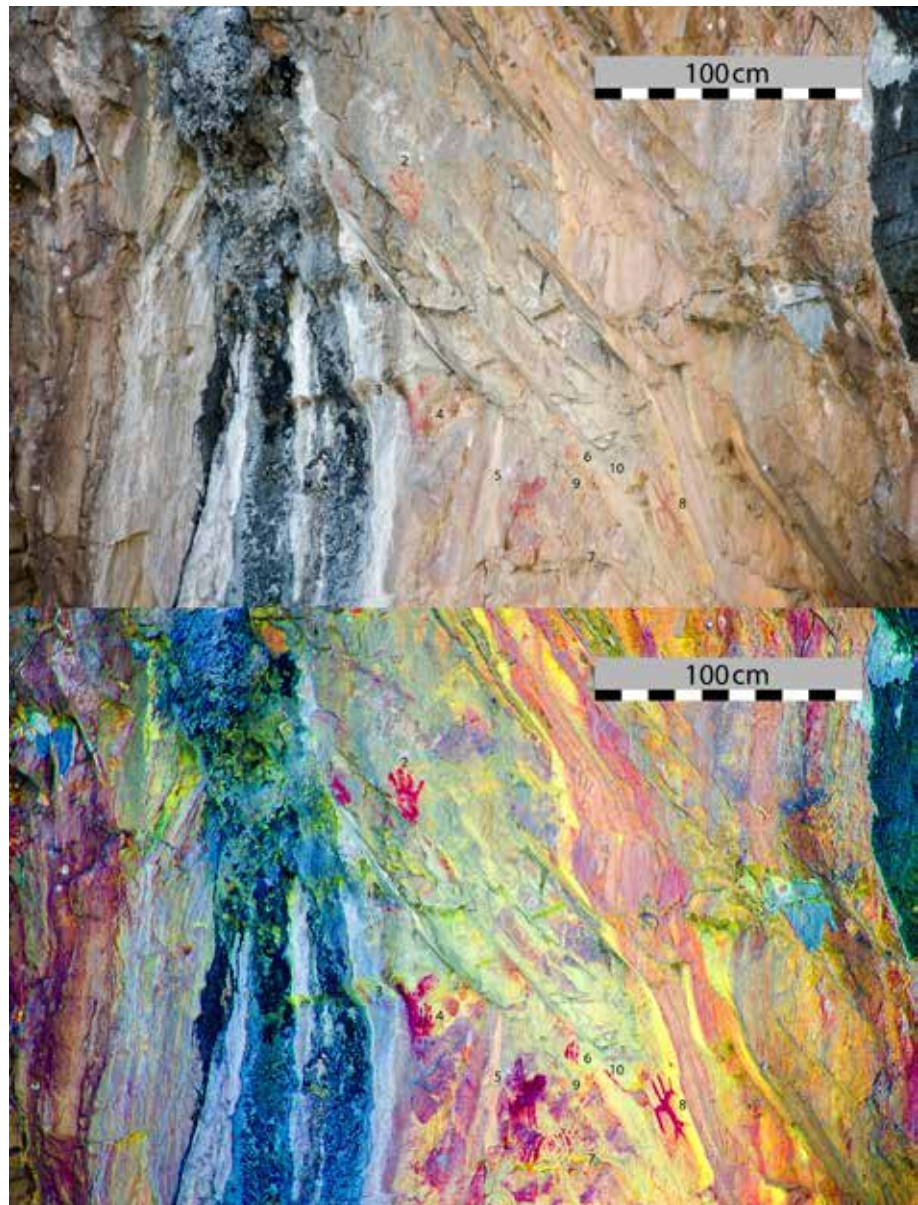


Figure 12. Panel H with DStretch lds filter (bottom).

to the December 2016 level, these recent cliff paintings were located approximately 25 m above the Mekong River (Tan 2018). While recording the rock art, the Ou River was relatively still and slow-moving with the boat drifting at approximately 1 m/minute. However, the water flow velocity prior to the dam construction and also during the rainy season when the discharge rates are higher is currently not known.

Given the previous fluctuations of the river level, one scenario could be that the painters chose parts of the cliff face that were deliberately higher up on the cliff and would be immune to the river's seasonal water level changes. Another possible scenario is that seasonal fluctuations of the river level had previously allowed people to reach the level of the paintings, but changes in the environment (e.g. erosion of the river bedrock) have caused the waters to recede over time until the rock art was beyond reach.



Figure 13. Digital elevation model of the Pha Taem landscape, indicating a lowland area across the river which a local informant has described as a hunting zone. Source: Google Earth V 7.1.2.2041 (February 10, 2016). Pha Taem. 20° 28' 11.51" N, 102° 33' 31.09" E. Eye alt. 497 m. CNES/Airbus, Landsat/Copernicus 2017; <http://www.earth.google.com> [2 January 2018].



Figure 14. UAV photo of the opposite bank of Pha Taem, showing the incline from the mountains to the hunting zone on the banks of the river.

Dating

There is no way to determine when the panels were created in relation to each other. In the scenario where the water level was much higher before and gradually receded over a long period of time, a reverse stratigraphy would apply which would suggest that Panels G, E and D were the earliest panels to be created, while Panels A–C and F–H were the most recent. This theory is only speculative and cannot be tested at this point.

There are a few diagnostic images that can narrow the time frame of the paintings. Water buffaloes (*Bubalus bubalis*), if that is what was depicted, have been exploited and domesticated in Southeast Asia from around 5000 years ago (Barker et al. 1997; Higham 2014), while domesticated dogs do not appear until 2000 BCE in Neolithic contexts in northeast Thailand (Higham and Thosarat 2012) but are more common in the Bronze Age (Higham 2014). Therefore, if the iconography proposed is accepted it would suggest

that rock art of Pha Taem is younger than 4000 years, due to the level of organisation required to create the paintings vis-a-vis boat building and the depiction of domesticated 'water buffalo' and 'dogs'.

Local interpretations

The local history of Pha Taem was recounted to me by Mr Mang, 32, the owner of a hotel and tour company in Nong Khiaw. Mr Mang was born in Muang Ngoi, a town on the Ou River some 17 km north of Nong Khiaw but his family originally came from Sop Jem, which is two hours further upstream from Muang Ngoi. His knowledge of the Pha Taem paintings came from his grandparents, who said that the rock art was already there before and they in turn had heard the story of the site from their elders. This suggests that the rock art predates living memory, which is corroborated by the Pavie mission's 1903 map.

The story told to Mr Mang by his grandfather is that the bank across Pha Taem sits at the end of

a mountain trail, which made the bank an excellent hunting ground. As part of a village hunting activity, people would go to the mountain to drive wildlife towards the end of the trail, where the game would be trapped by the river. After killing the animals, the hunters, their hands still wet with blood, would go to the cliff face and put their hand prints and also draw what animals they had caught.

Aerial views of the landscape support this idea of a hunting zone (Figs 13, 14). The land slopes gently towards the water, and a team of hunters working in unison would be able to easily corral animals towards the edge where there would be little space to escape (semi-ethnographic accounts of jungle hunts can be seen in the 1927 film *Chang*, filmed by Cooper and Schoedsack in northern Siam. That duo would later go on to direct their most famous movie, *King Kong*). Without being able to analyse the rock pigments, the story of using blood to create the rock art cannot be verified. To date, there are currently no examples of blood being used in rock art pigments in Southeast Asia. The general durability of red ochres on limestone faces would suggest that the pigments were made from iron oxide rather than blood (see Tan 2010a).

Some of the painting subject matter supports the idea of a hunting ground, such as the example of two 'hunters attacking a buffalo' with 'blowpipes' (B22-24) and a 'hunter' figure carrying a 'bow' (A22); also the depiction of a 'woman' and a 'buffalo' charging against each other evoke some sort of confrontation between man and nature. The numerous hand prints found at the site are often clustered around animals and could represent a claim to a particular kill.

The major obstacle to the hunting theory is the fact that most animals do not appear to be hunted; in fact, they are evidently tamed or domesticated. B05 is a depiction of a 'person leading a buffalo on a leash' while A23 and 24 depict a 'person' attempting to beckon, supplicate or otherwise gesture' towards a 'buffalo'. Additionally, it is highly unlikely that the 'buffalo' on the 'boat' (C33) would be the product of a hunt; it would be more efficient to carve the meat into pieces for transport and additionally, wild animals would pose a serious stability risk on such a light craft. That a 'buffalo' is depicted on a 'boat' suggests that it was intended to be kept alive, and as such would have had to be pacified or domesticated.

Connections with the Pak Ou Caves

Besides the near-invisible 'boats', the most inter-

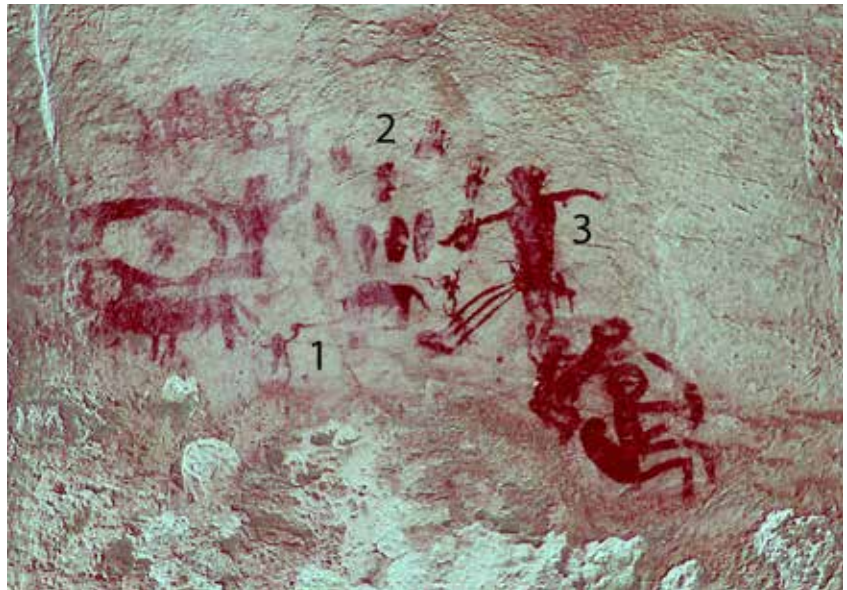


Figure 15. Enhanced image of Panel J from the Pak Ou Caves, located on a cliff face 28 m above the Mekong River. Note similarity of motifs to those found in Pha Taem, particularly the 'domesticated buffalo' (1), hand prints (2) and anthropomorph with outstretched hands (3).

esting feature of the Pha Taem rock art is its similarity to that of the Pak Ou Caves, located at the confluence of the Ou and Mekong Rivers (Fig. 1). The Pak Ou Caves complex is an important Buddhist shrine related to Lao royalty and Luang Prabang. While rock art inside the upper cave is associated with the Lan Xang-Buddhist period dating from the 15th century, red rock paintings also occur on the cliff face which may predate the Buddhist occupation of the site. The cliff face rock art of Pak Ou shares numerous points of similarity with Pha Taem. Both are red rock paintings situated on a cliff face overlooking a river and like Pha Taem, the Pak Ou cliff paintings are located high above the water level, some 28 m above the Mekong during the December 2016 dry season. Additionally, duplicate motifs are found in both sites including hand prints, 'domesticated buffalo' and anthropomorphous forms with similar arm poses (Fig. 15). These similarities suggest that the painters of these two sites shared a similar visual culture, or may even have been the same group of people subsisting and commuting along the Ou River. This shared culture is even more striking considering that Pha Taem is some 70 km away from the Pak Ou Caves, which translates into a 3–5 day journey (assuming a top speed of 15–25 km a day).

The landscape in front of the Pak Ou Caves is at the base of small hill, which makes the area of what is now Baan Pak Ou (Pak Ou Village), an excellent hunting ground similar to the one described at Pha Taem. That these two rock art sites are associated with a flat plain on the opposite shore seems more than a coincidence, and it might be interesting to see if other rock art sites found along the waterways of the Mekong



Figure 16. Digital elevation model of the Pak Ou landscape, indicating lowland areas and potential hunting ground across the river from the Pak Ou Caves, which is now Baan Pak Ou (Pak Ou Village). Source: Google Earth V 7.1.2.2041 (February 9, 2016). Pak Ou 20° 02' 59.03" N, 102° 12' 55.86" E. Eye alt. 703 m. CNES/Airbus, Landsat/Copernicus 2017. <http://www.earth.google.com> [2 January 2018].

and its tributaries are associated with such 'hunting spaces'. The areas in front of the two rock art sites may be potentially good areas for archaeological investigation, which may further verify the belief that the rock art is associated with hunting activity or an interchange point (Fig. 16).

Ultimately, the congruence of this observed similarity rests on future archaeological research such as excavations on these potential hunting areas, the direct dating of the rock art and the discovery of new sites along the Ou and Mekong rivers.

Conclusion

The similarities between the Pha Taem and Pak Ou Caves cliff paintings suggest that the people who made them shared a similar visual culture, and raises the possibility of using rock art motifs to track the movements of highland populations along the Ou River and further down to the Mekong. From the paintings we can potentially infer such activities as hunting, buffalo domestication, boat building and by extension riverine communication. The iconographic details suggest that the rock art is no earlier than the Southeast Asian Neolithic, and more specifically postdates the arrival of buffalo domestication in the region. The idea of rock art sites such as Pha Taem as markers for a hunting ground has not been explored in Southeast Asia and is a hypothesis that might be testable by excavation. The similarities in the landscape and painted motifs between Pha Taem and the Pak Ou Caves also suggest a predictive value in identifying other riverine rock art sites in the region.

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The corpus of hundreds of millions of rock art motifs surviving in the world today represents the principal source of information chronicling the cognitive evolution of humanity. It records the world views, concerns, beliefs and communication systems of mostly pre-literate peoples, from the Middle Pleistocene up to the most recent past. It is the largest body available for study that documents the development of the hominin ability of storing memory traces or cultural information external to the brain, as exograms, which is the primary difference between humans and other animals. It precedes systems of writing by up to hundreds of millennia, and it is the main repository of cultural information about nearly all of human history. It amounts to humanity's longest record of cultural

rather than technological evidence. In recent years the study of this immense resource has become an increasingly sophisticated scientific field, supplanting traditional approaches of simplistic interpretation and ethnocentric construal. This collection of *Arts* is dedicated to assembling a collection of scholarly articles that will serve as a benchmark for current research and priorities in rock art research. Contributions are invited on any topic demonstrating the present knowledge state of the discipline, from any continent and from the perspective of any related field. In particular this collection is hoped to illustrate the great diversity of world rock art, which reflects the cultural diversity of humanity, and from which ultimately all recent arts derive.