
Angara Style Rock Art: The Evolution of a Regional Emblematic and Syncretic Style

Lynda D. McNeil 

Rebutting previous claims, the paper employs comparative stylistic analysis and palaeoenvironmental data to argue that Angara style rock art originated in the Mongolian Altai during the Upper Palaeolithic (13,000–10,300 BP) where it evolved in situ. Around 8200–7300 BP, drought forced the hunter-gatherers who created Angara style rock art to migrate to the Upper Yenisey and the Selenga and Angara basins. When drought impacted that area c. 7500–7000 BP, Kotoi (Ket) culture descendants sought refuge in the resource-rich Minusinsk Basin. On the Middle Yenisey River, Angara style rock art served as a mnemonic device that encoded the syncretism of proto Ket and Evenki cosmologies and beliefs resulting from their social alliance.

Introduction

The origin, regional distribution and temporal frame of Angara style rock art (southern Siberia) have been the subjects of debate since representations of ‘elk’ (moose, *Alces alces*) were first identified in the Angara River Basin, Eastern Siberia (Okladnikov 1966; Podol’skiy 1973) and along the Tom River, Western Siberia (Okladnikov & Martynov 1972). Recently, in a comprehensive study of Eastern Siberia rock art, Ponomareva (2016; 2021, 107) argued that the putative place of origin for Angara style rock art was the Angara Basin (Cis-Baikal), with Angara style variants subsequently appearing in Yakutia (Trans-Baikal), Shalabolino (Tuba River, Minusinsk basin) and Tom River (Western Siberia).

To establish a time frame for Angara style rock art and its variants, researchers turned to portable artifacts depicting ‘elk’ recovered from dated archaeological contexts in the Angara Basin (see Ponomareva 2021, 113, table 6.2). Okladnikov (1966) was the first to attribute ‘elk’ depictions in portable art to the Kotoi mortuary tradition, which was subsequently radiocarbon dated to the Early Neolithic (8000–7000 BP) in the Angara Basin, South Baikal and Selenga Basin (Bazaliiskii 2010; Lkhov & Dudariok 2012. See Ponomareva 2021, 112, table 6.1 and 113, table 6.2).

Angara style rock art in the Angara River Basin and Yakutia (Lena River) with similar naturalistic depictions of ‘elk’ was also thought to belong to the Early Neolithic. Regarding Minusinsk Basin (Middle Yenisey) rock art, researchers maintain that two Neolithic period rock-art styles co-existed: a local ‘Minusinsk’ (not Angara) style and an Angara style at the Shalabolino site on the Tuba River, a tributary of the Middle Yenisey (Podol’skiy 1973; Ponomareva 2021, 109, fig. 6.17, 14–18; Sher 1980). In contrast, the Tom River images represented more stylized depictions of ‘elk’ with X-ray body-patterns attributed to the Eneolithic–Bronze Age (Okladnikov & Martynov 1972; Ponomareva 2021, 109, fig. 6.17, 1–6). At the Sukhanikha site on the Middle Yenisey, ‘elk’ depictions were thought to represent a Bronze Age Okunevo cultural variant (Ponomareva 2021, 109, fig. 6.17, 8–9; Sovetova & Miklashevich 1999).

This paper argues that stylistic analysis and multiple lines of evidence find the place and time of origin of Angara style rock art to be the Mongolian Altai during the Upper–Final Palaeolithic, 13,000–10,300 BP (Fig. 1). For several hundred years, Angara style evolved *in situ* until an episode of drought during the Late Mesolithic–Early Neolithic, c. 8200–7300 BP (Dirksen *et al.* 2007,

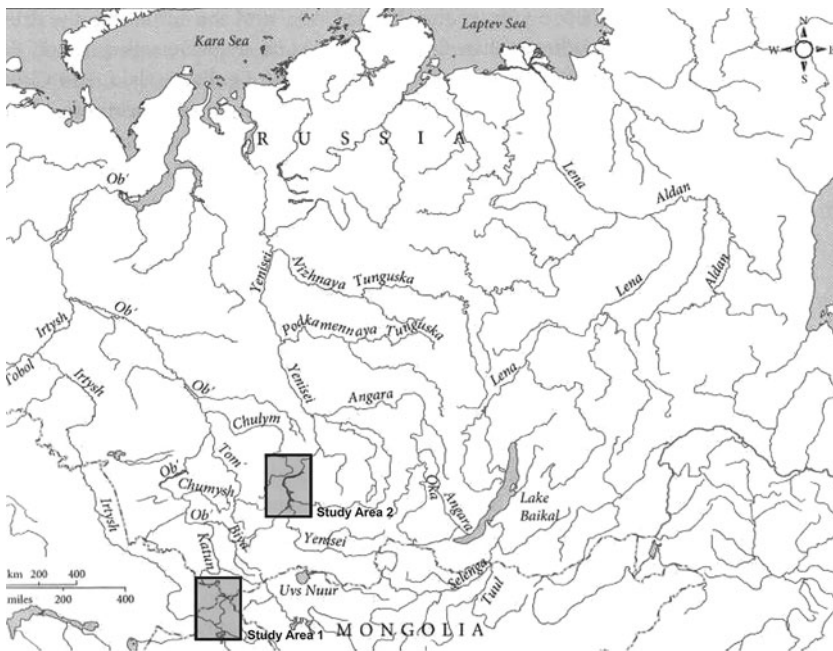


Figure 1. Map of north Asia including south Siberia and northern Mongolia with Mongolian Altai (study area 1) and Minusinsk Basin (study area 2) marked. (Altai Mapping Project, Jacobson/Meacham, University of Oregon, InfoGraphics Lab.)

1116; Grunert *et al.* 2000) forced the hunter-gatherer creators of Angara style rock art to migrate out of northwest Mongolia north to the Upper Yenisey and northeast to the Selenga and Angara basins near Lake Baikal. In the Angara Basin, an episode of drought (7500–7000 BP) compelled Kotoi culture inhabitants to abandon the area and seek refuge in the resource rich Minusinsk Basin to the west.

To support this argument, this paper first reviews the currently held definition of Angara style rock art as an artifact type composed of an assemblage of attributes focused on the naturalistic depiction of ‘elk’ (British/American ‘moose’). Next, it applies research regarding the palaeoenvironmental context of the Mongolian Altai, the Angara Basin and the Minusinsk Basin to identify ‘decisive indicators’ (Jacobson-Tepfer 2013, 155; McNeil 2005; Ponomareva 2021, 71–3) of fauna depicted in the rock art. Next, palaeoclimate records provide insights into Late Mesolithic–Early Neolithic hunter-gatherer mobility in response to an extended period of mesic conditions in northwest Mongolian region. To establish a time frame for pre-Kotoi hunter-gatherer migrations north from the Mongolian Altai, the paper references Early Neolithic stratified archaeological sites in the Upper Yenisey and the Kotoi mortuary tradition in the Selenga and Angara basins. Finally, I argue that Minusinsk Basin Angara style rock art was a variant whose function was to forge a connection to place and its people, palaeo-Siberian proto-Ket and proto-Evenki,

through marriage alliances and the syncretization of religious beliefs.

Angara style rock art and its variants

In this section, I review current conceptions of Angara style rock art as an artifact type—petroglyph or pictograph—focused on naturalistic depictions of moose (*Alces alces*) made of an assemblage of attributes in a characteristic pattern subject to variability in time and space. Stylistic attributes for Angara Basin style include petroglyphs depicting a moose motif shown with a massive body in contour (outline pecked) or in silhouette (contour with head or chest solid pecked), often right-facing in profile, standing or appearing to move slowly on four legs. Rarely are ‘elk’ depicted in X-ray style or solid pecked figures. According to Ponomareva (2021, 107), analysis of more than 400 designs in west, south and east Siberia attributed to the Angara rock art style by previous researchers supports the claim that the Angara Basin was the place of origin for the Angara style.

However, evidence suggests that all the stylistic features attributed to Angara Basin style are present in Late Pleistocene and Early Holocene animal depictions (mammoth, rhinoceros, aurochs, wild horse, maral deer, albeit rarely moose) at Mongolian Altai sites. While the Mongolian Altai animal depictions represent an assemblage of Angara Basin stylistic attributes, the palaeoenvironment of this area only marginally supported a riparian diet important to

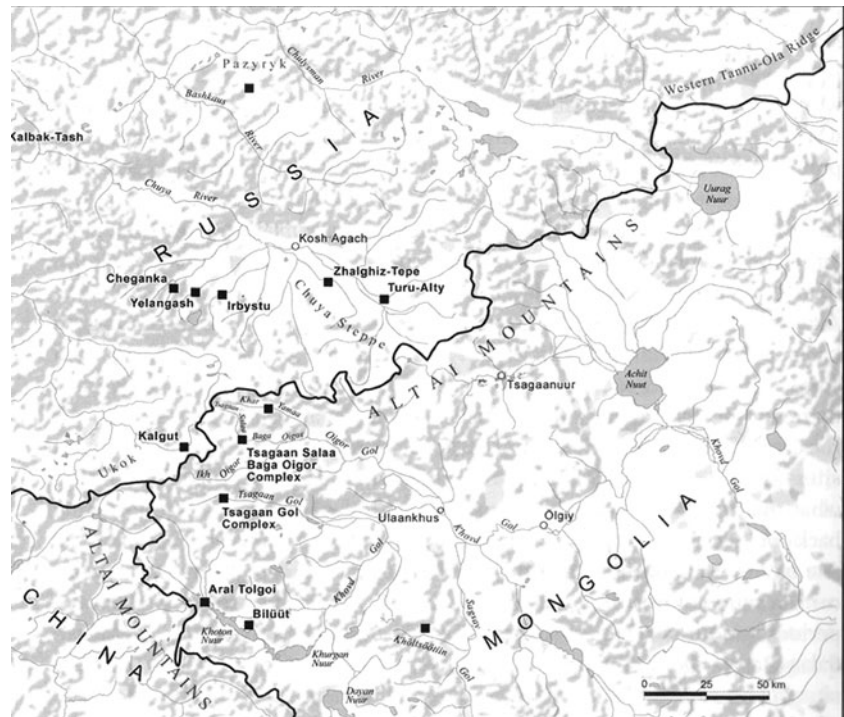


Figure 2. Map of rock-art sites in Bayan Olgii aimag, Mongolia, and adjoining region in the Russian Altai Republic. (Altai Mapping Project, Jacobson/Meacham, University of Oregon, InfoGraphics Lab.)

moose, the exclusive motif focus of the currently accepted Angara Basin style definition. Variants of Angara style in Eastern and Western Siberia include: a pictographic (painted) variant in the Yakutia area (Trans-Baikal); two styles at Middle Yenisey River sites, including a local ‘Minusinsk’ style (incorrectly excluded from Angara style) and a style similar to Angara style in the Angara Basin attributed to the Neolithic (Podol’skiy 1973; Sher 1980); and a more stylized (X-ray body-pattern) variant in the Tom River area attributed to Bronze Age.

Angara style place of origin: Mongolian Altai

In this section, I review evidence suggesting that Angara style rock art originated in the Mongolian Altai spanning the Upper–Final Palaeolithic to Late Mesolithic, and subsequently during a period of drought (8200–7300 BP) it diffused north with migrating hunter-gatherers to the Upper Yenisey and northeast to the Angara Basin (Fig. 1). At these sites, rock-art panels often depict game animals in association with small anthropomorphic figures engaged in various types of hunting or hunting-related ritual activities (Blednova *et al.* 1995; Jacobson-Tepfer 2000; 2015; Sher *et al.* 1994).

An analysis of Mongolian Altai (Fig. 2) and Minusinsk Basin (Fig. 3) Angara style rock art reveals stylistically and thematically similar images (game

animals, rarely moose in the former location) related to Early Holocene fauna (Jacobson-Tepfer 2013, 157; McNeil 2005). From the oldest images of Late Pleistocene megafauna to Early Holocene forest and steppe fauna, the animal depictions encompass a wide range of Angara style attributes, including pecking techniques and representation (contour, silhouette, solid pecked and X-ray). Esther Jacobson-Tepfer, who has studied rock art in the Mongolian Altai for decades, noted stylistic similarities between animal images made at Aral Tolgoi in northwestern Mongolia and Angara style images in the Minusinsk basin (Jacobson-Tepfer 2015, 36, n. 32), a point on which I expand below.

Mongolian Altai rock art

Petroglyphs at several Mongolian Altai sites represent the earliest manifestation of Angara style spanning the Upper Palaeolithic to the Early Neolithic (11,000–8000 BP). Jacobson-Tepfer (2000; 2013; 2015) recorded approximately 12 rock-art sites in the Russian and Mongolian Altai from the 1990s to early 2000. For this study, I consulted the Mongolian Altai Inventory Image Collection, Oregon University (<https://oregondigital.org/sets/maic>), focusing on photos and notes of archaic ‘Pre-Bronze Age’ petroglyphs. Three petroglyph sites are of particular interest, based upon style, technique, thematic similarities and spatial and temporal

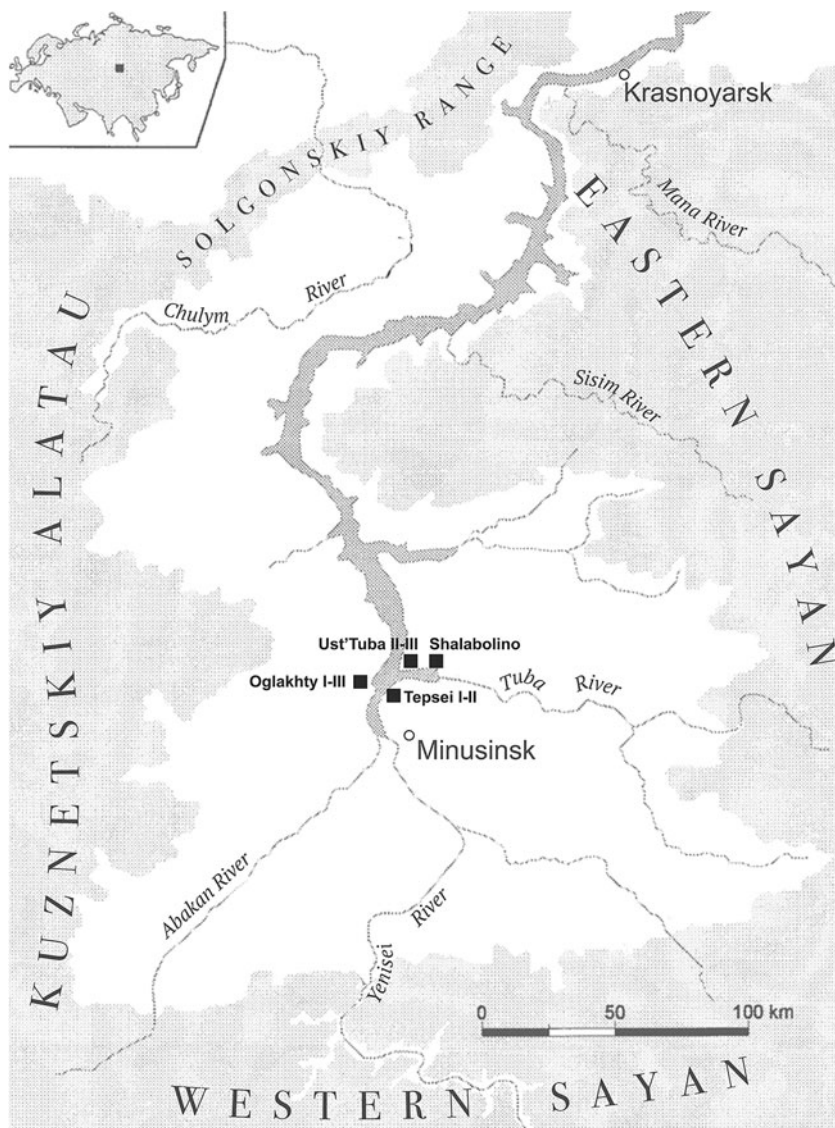


Figure 3. Map of Minusinsk basin, Republic of Khakassia, southern Siberia. The rock-art sites on the Middle Yenisei River (left to right): Oghakhty I, Tepsei I, Ust'-Tuba II and Shalabolino. (Mariel Wong, Allegra Graphic Designer.)

proximity to petroglyphs inscribed along the Upper Yenisey, Upper Angara and Middle Yenisey from 200 to 400 km to the north and northeast.

The Mongolian Altai sites encompass the Baga Oigor Complex, the Tsagaan Gol Complex and Aral Tolgoi on Khoton Nuur (Jacobson-Tepfer 2015, 10, map 1.1). On the eastern edge of Koton Nuur, a small percentage of archaic figures at the Biluut sites in the Bayan Olgi *aimag* rock-art complex were dated (by VLM or varnish microlamination) to the Neolithic (Kortum 2014; 2021, 19–20). I employ a palaeoenvironmental method of identifying 'decisive indicator' species to determine the relative dating of rock art images in both study areas (Jacobson-Tepfer 2013, 155; also McNeil 2005). The oldest petroglyphs which depict Late Pleistocene megafauna (e.g. mammoth) are overlaid by Early Holocene animals

(e.g. red deer) identified by lighter repatination. The technique of execution for these 'archaic' images is by direct (stone on stone) blows, producing deep and uneven edges. Many of these older images are very darkly repatinated and/or lichen-covered. The archaic style is typically contour (outline pecked, in rare cases with body interior lines) depicting game animals with massive body, static posture without a sense of interaction among animals on a given panel, and with only two legs depicted as tapered cones (Fig. 4). The more recent Early Holocene style shows forest and steppe animals' head and/or chest in a combination of contour and silhouette style (outline body and head/chest solid pecked) (Fig. 5). In rare cases, perhaps Early Holocene, the animal's entire body is solid pecked (Fig. 6) and repatinated to match the colour of the surrounding rock.



Figure 4. Mongolian Altai Inventory Collection, University of Oregon (19 March 2023). RA_PETR_AT_0030. (Retrieved from <https://oregondigital.org/concern/images/df66pc54s>)

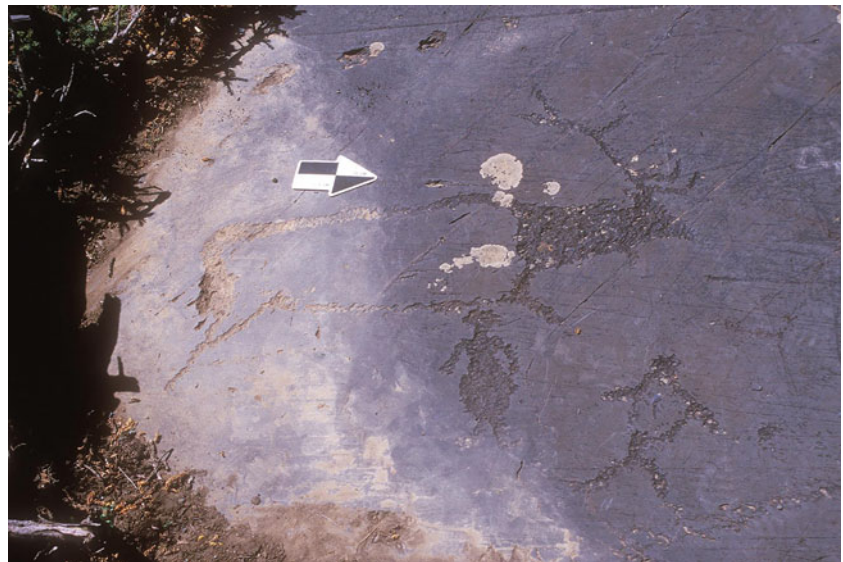


Figure 5. Mongolian Altai Inventory Collection, University of Oregon (20 March 2023). RA_PETR_AT_0014. Retrieved from <https://oregondigital.org/concern/images/df66pc35k>)

According to Jacobson-Tepfer (2013, 153), despite the absence of stratified sites in the Mongolian Altai area, there is ‘considerable [surface deposited artifactual] evidence of Paleolithic habitation along the Khovd River, as well as in the high valleys’ at Baga Oigor, Tsagaan Gol and Aral Tolgoi. Moreover, the realistically depicted animals provide a time frame for relative dating; ‘where there are clear connections between species and constraining environmental conditions, tentative dates are justified’ (Jacobson-Tepfer 2013, 153).

Based upon our knowledge of relevant fauna inhabiting different ecological niches, the relative dates of these petroglyphs span the Late Pleistocene

period of forested xeric vegetation and megafauna (12,000–11,000 BP) to the Late Pleistocene–Early Holocene boundary (10,000–8000 BP) period of steppe-forest mesic vegetation and fauna (Vasil’ev & Semenov 1993, 220). The latter was a period of expanding forests of spruce (*Picea*), larch (*Larix*) and Siberian pine (*Pinus*), receding glaciers and rising lake levels. By the Early Neolithic, 8200–7300 BP (Dirksen *et al.* 2007, 1116; White & Bush 2010, 21–2), the Mongolia–China summer monsoon system that had previously contributed to increased effective moisture in northwest Mongolia (Bayan Nuur: Grunert *et al.* 2000) retreated further south (White & Bush 2010, 17, 21). This was a period of increasing

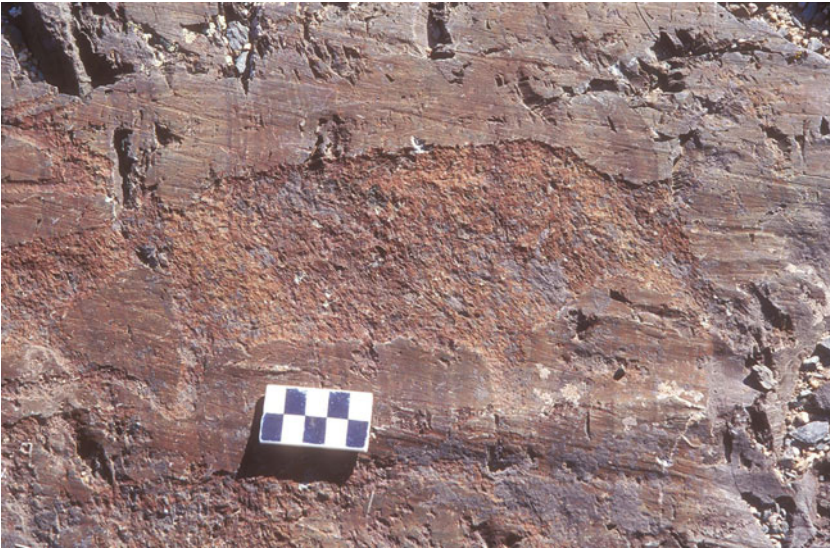


Figure 6. Mongolian Altai Inventory Collection, University of Oregon (19 March 2023). RA_PETR_AT_0059. (Retrieved from <https://oregondigital.org/concern/images/df66pc862>)

aridity, 'leading to adaptive strategies which selected for increased group mobility and consequent abandonment of established settlements' during the Early–Middle Neolithic transition ~8000–7000 BP (White and Bush 2010,17).

At the Baga Oigor site, the following Late Pleistocene megafauna are depicted: mammoths (*Mammuthus primigenius*, disappeared in Eurasia by 11,500 BP), rhinoceros (*Rhinoceros tichorhinus*, disappeared c. 12,000 BP), aurochs (*Bos primigenius*, spanned Late Palaeolithic to the Bronze Age) and ostriches (*Struthio asiaticus*, disappeared c. 8900 BP). Late Palaeolithic period images at Aral Tolgoi on Khoton Nuur include aurochs, wild horses, rhinoceros and ostriches (Guthrie 1982; Kuzmin 2010; Vereshchagin & Baryshnikov 1984, 495).

At Baga Oigor and Aral Tolgoi sites, Early Holocene (Mesolithic to Early Neolithic) fauna are depicted: red deer (*Cervus elaphus*), brown bear (*Urus arctos*) (forests); aurochs (*Bos primigenius*), wild horses (*Equus ferus*) (low regions); and argali (*Ovis ammon*) and ibex (*Capra sibirica*) (higher slopes). Images of red deer predominate, followed by aurochs and wild horses. Rare at these rock-art sites are images of moose (*Alces alces*), which typically inhabit a riparian zone as that present during the Early Holocene at Tsagaan Gol further north. In addition, at Baga Oigor and Aral Tolgoi sites, some of the earliest, 'archaic' images include 'birthing women', often juxtaposed with aurochs or wild horses, 'bell-shaped spirit figures', 'dancers', or 'hunters'.

The style and technique of the Early Holocene petroglyphs at Baga Oigor and Aral Tolgoi can be categorized from Palaeolithic/Mesolithic to Early Neolithic. Late Pleistocene style (e.g. mammoth,

aurochs) is deeply and unevenly pecked (direct stone on stone technique), darkly repatinated, sometimes lichen-covered, often in contour or solid pecked style. The animals are fairly realistic (not stylized as in later Bronze Age), except for their legs, which are represented as two tapered cones. Early Neolithic style is also roughly pecked but instead of contour or solid pecked, often they are contour (outline pecked) with silhouette (solid pecked heads and/or haunches), and in rare examples contour with interior lines (PETRO AT_0046); legs continue to be depicted as tapered cones.

These Late Mesolithic to Early Neolithic (8800–8000 BP) sub-styles (solid, contour, silhouette, and interior line) at Baga Oigor and Aral Tolgoi (Table 1) reappear in 'Angara style' (Sher 1980), probably Middle Neolithic (7000–6000 BP), identified further north in the Minusinsk basin of the Middle Yenisey River (discussed below with Table 2). Jacobson-Tepfer (2015, 36, n. 32) notes the similar manner in which animal images overlap at Aral Tolgoi and pre-Bronze imagery at Oglakhty I and Ust'-Tuba III on the Middle Yenisey.

Archaeological evidence of Early Neolithic migrations

The archaeological record for southern Siberia shows that during the aceramic Early Neolithic new sites appear along the Upper Yenisey corridor: 'the uppermost cultural horizons of Maina, Ui II, and Ust'-Kemchik 3, etc.', along with deeper (older) stratified sites (Vasil'ev & Semenov 1993, 213). Concurrently during the Early Neolithic in the Selenga and Angara basins and at the southern end of Lake Baikal, cemeteries of the Kotoi culture mortuary tradition are found. These burials totalled

Table 1. Data for contour, contour+silhouette, contour+interior lines and solid pecked styles represented at Aral Tolgoi and Baga Oigor rock-art sites.

Site	Animals	Contour	Solid	Contour+silhouette	Contour+interior lines	Total
Baga Oigor (BOI)	Elk	8	1	1		10
	Bear	2				2
	Aurochs	4	2	5		11
	Horse	9	2	1		12
	Argali	2	1			3
	Mammoth		5	1		6
	Birthing woman		5			5
	Spirit figure	2			1	3
Aral Tolgoi (AT)	Elk	8	3	2	1	14
	Bear	1	2	2		5
	Aurochs	4	1	5		10
	Horse	8	2		1	11
	Argali	1		2		3
	Ibex	6			1	7
	Caprid	1				1
	Ostrich		4	1		5
	Rhinoceros	1				6
	Birthing woman		2			2

hundreds of individuals at sites such as Lokomotiv, Kotoi, Ust'-Belaia, Galashikha and Shamanka II (Bazaliiskii 2010, 64–71). Shamanka II cemetery is noteworthy for the unusual placement of bear skulls, bones and teeth in many graves along with the presence of fire pits, possible evidence of bear and fire rituals (Bazaliiskii 2010, 67), elaborated on below.




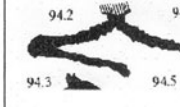




















MtDNA analysis of Kotoi individuals showed them 'to be close to the Kets and Shors and more distant from other modern Siberian groups' (Schurr *et al.* 2010, 128–9). From the Upper Palaeolithic to Early Neolithic, evidence suggests that proto-Ket people were physically and linguistically isolated in the Russian and Mongolian Altai (Vajda 2001) from the Mal'ta, their genetic founding population (Flegontov *et al.* 2016, 2). Evidence presented here suggests that proto-Ket migrations (subsequently Kotoi people) occurred during the Early Neolithic, but after the Bronze and Iron Ages some genetic drift to modern Selkups apparently occurred (Flegontov *et al.* 2016, 2). During the Early to Middle Neolithic transition (7500–6500 BP), the Angara Basin–south Lake Baikal area was abandoned due to increased aridity resulting in 'critical fluctuations in riverine ecosystems' and disrupted 'seasonal subsistence of resident (Kotoi) hunter-gatherer groups' (White & Bush 2010,17).

Near Upper Yenisey Neolithic level stratified habitation sites (Vasil'ev & Semenov 1993), Angara style rock art has been documented at the Aldy-Mozaga rock-art site, Sayan Canyon near Tuva (before the dam inundated the area) (M. Devlet 1998, 92, panel 30; 99, panel 40; McNeil 2005, 13). In the Angara River Basin area near Early Neolithic Kotoi cemeteries, Angara style rock art has been recorded at Baolshaya Kada and Kamenny Ostrov II (Jacobson-Tepfer 2015, 29, fig. 2.1; Okladnikov 1966, pl. 65; Ponomareva 2021, 107, fig. 6.15 and 109, fig. 6.17, 11–13). On the Tuba River, an east-flowing tributary of the Middle Yenisey, Angara style rock art has been recorded at Shalabolino (Pyatkin & Martynov 1985; McNeil 2005) and at the Middle Yenisey site of Ust'-Tuba II (Blednova *et al.* 1995, panels 34 and 39; McNeil 2005).

Recolonization of the Minusinsk Basin

Dirksen and colleagues (2007) concluded from pollen and microfossil analyses of lake-bed core samples taken from the eastern shore of the Middle Yenisey that Mesolithic and Neolithic cultures (~11,000–6000 BP) were practically absent in intermountain depressions within the Altai and Sayan mountain systems of southern Siberia. This would be the

Table 2. Angara styles of petroglyphs divided into four sub-styles (A–D). The upper left-hand corner of each square shows the total number of occurrences of that animal style at the four sites visited: Oglakhty I–II, Tepsej I–II, Ust’Tuba I–IV and Shalabolino. (From McNeil 2005, 13, table 1, with permission.)

	Auroch	Moose	Red Deer	Wild Horse	Wild Boar	Brown Bear
A	21 	20 	8 	4 	1 	1 
B	59 	69 	36 	11 	12 	9 
C	45 	28 	11 	12 	10 	11 
D	26 	16 	13 	2 	1 	2 

period immediately after the disappearance of Afontona and Kokorevo cultures (~18,000/16,000–10,000 BP) in the Minusinsk Basin and adjacent areas (Vasil’ev and Semenov 1993, 213). Palaeoclimate models suggest that the abandonment of these areas was most likely due to increased aridity negatively impacting plant and animal resources.

Dirksen and colleagues’ analysis suggests that people recolonized the Minusinsk Basin (Depression) ~7650–5090 BP when aridity gave way to a period of increased effective moisture and warmth (Big Kyzikul Lake site: Dirksen *et al.* 2007, 1112). Their analysis of pollen samples suggests that reforestation in the basin occurred along with climate conditions amenable to forest-steppe and riparian fauna. As a result, the Minusinsk Basin would have offered a resource-rich environment for returning colonists to the region, a natural refugia for a variety of game animals and birds. Moreover, the basin would have been relatively easy to access by boat during ice-free periods from spring to autumn.

Minusinsk Basin rock-art styles

Since the 1980s, Soviet researchers have debated whether the time frame of petroglyphs at major sites on the Middle Yenisey River (Fig. 3) fell into several temporal stages: an Upper Palaeolithic ‘Minusinsk’ style (Oglakhty I, Tepsej I), Angara Basin style (Shalabolino and Ust’-Tuba II) and Bronze Age (Francfort *et al.* 1993; Martynov 1991, 25; Okladnikov 1966; 1981, 109; Pyatkin 1998, 26–30; Pyatkin & Martynov 1985; Sher 1980, 185–93; Sher *et al.* 1994, IV–V, 20; Sovetova & Miklashevich 1999). Sher (1980; Podol’skiy 1973) argued that ‘Minusinsk style’ rock art at Oglakhty I and Tepsej I represented a local expression dating to the Upper Palaeolithic, based upon thematic similarities to European Upper Palaeolithic cave art’s faunal assemblages and metre scale. Clearly there are similarities in the metre-scale depiction of massive body red deer (*Cervus elaphus*) at Oglakhty I (Sher *et al.* 1994, panel 5) and Tepsei I (Blednova *et al.* 1995, panels 5–6), albeit they are open-air petroglyphs, not cave paintings (Fig. 7; see McNeil 2005, figs. 4, 5, 7).

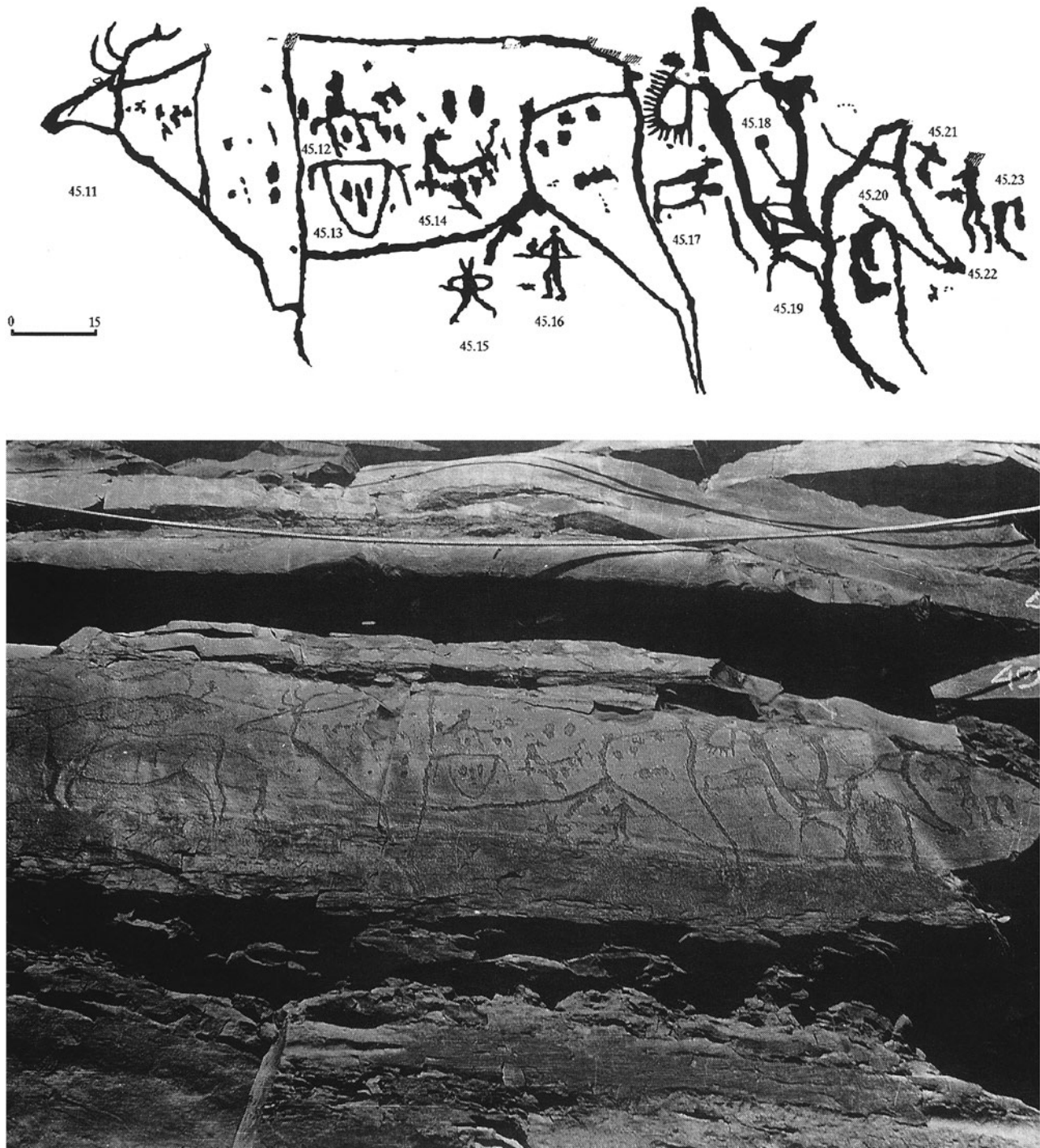


Figure 7. Oglakhty I petroglyph of ‘cosmic elk’ and bear. (a) Drawing from Sher et al. (1994); (b) Photograph from Sher et al. (1994, pl. 5). (With permission of the editor.)

Instead, I propose that petroglyphs at the Mongolian Altai sites of Baga Oigor and Aral Tolgoi represent a geographically closer and more accurate stylistic and thematic analogue.

According to Vasil’ev and Semenov (1993, 233; also Martynov 1991, 5–13, 116–17, map 1), the Upper

Palaeolithic to the Mesolithic (13,000–9000 BP) is widely represented in the Minusinsk basin and Western Sayan canyon archaeological record. During this time frame, Afontova and Kokorevo culture thrived throughout the Sayan-Altai region ~18,000/16,000–10,000 BP (Vasil’ev 1992; Vasil’ev & Semenov 1993). However,

Table 3. Distribution of Angara style animal species at Oglakhty, Tepsej, Ust'Tuba (Middle Yenisei River) and Shalabolino (Tuba River). Shows the increase by number and percentage of brown bear petroglyphs from west to east (Evenki territory). (From McNeil 2005, 14, table 2, with permission.)

	Aurochs	Moose	Red deer	Wild horse	Wild boar	Brown bear
Oglakhty I-II	73	34	36	16	3	1 (6%)
Tepsej I-II	12	2	5	1	4	1 (4%)
Ust'Tuba I-IV	38	17	5	5	2	4 (5.6%)
Shalabolino	28	80	22	7	13	22 (12.8%)
Total	151	133	68	29	24	28 (6.5%)

excavations and lake-bed core samples in the Minusinsk basin (Dirksen *et al.* 2007) suggest that there was a long hiatus (11,000–7600 BP) in human habitation, with only one known stratified site, Sosnovka Golovan's Kaya (Vasil'ev & Semenov 1993, 220–22). This changes dramatically during the Early Neolithic beginning 8000 BP with the appearance of several aceramic, uppermost cultural horizons in the Upper Yenisey area at stratified sites Maina and Ui II, Urst' Khemcik 3, etc. on the southern edge of the Minusinsk basin.

Given this time frame, I maintain that 'Minusinsk' style (Oglakhty I and Tepsei I) and Angara style (Ust'-Tuba II and Shalabolino) petroglyphs represent Early Holocene animals that inhabited the Minusinsk basin forest-steppe and riparian zones during the Early to Middle Neolithic (Zotkina 2019). Based upon this, I argue that 'Minusinsk' style represents an earlier phase of Angara style in the Minusinsk basin and is very similar to Late Mesolithic–Early Neolithic (8800–8000 BP) Mongolian Altai depictions of massive contour body red deer and bear with legs depicted as two tapered cones. The subsequent Early to Middle Neolithic phase (~7600 BP) Angara style petroglyphs found on the east side of the Middle Yenisey (Ust'-Tuba II) and east-flowing Tuba River (Shalabolino) include the four sub-styles previously described at Baga Oigor and Aral Tolgoi sites in the Mongolian Altai, but predominantly in the body contour and head silhouette manner of execution (Tables 2 & 3). No Ice Age megafauna, which were extinct in the region by 11,500 BP (Guthrie 1982, 307–26; Kuzmin 2010; Vereshchagin & Baryshnikov 1984, 495), are depicted in either early or later phase Angara style in the Minusinsk basin.

The Early Holocene animal taxa depicted in Minusinsk basin Angara style include: moose (*Alces alces*), red deer (*Cervus elaphus*), aurochs (*Bos primigenius*), wild horse (*Equus ferus*), brown bear (*Ursus arctos*) and wild boar (*Sus scrofa*), waterfowl (white goose, duck and loon) and anadromous (fatty) fish

(salmon, shad, etc.).¹ Pine and deciduous conifer (larch) expanded as habitat for forest types (red deer, moose, wolverine, wolf, roebuck, wild boar and brown bear) and forest-steppe, open space types (reindeer, fox, hare, others), while aurochs occupied the steppe/prairie niche and moose occupied the riparian wetlands. In the ice-free rivers and streams of southern Siberia, large fatty fish became an available food source and, notably, boats, fish traps, harpoons and hooks appear in the Neolithic archaeological record.

Discussion

Over the past three decades, cognitive anthropologists have found that collective memory and oral tradition can be reliably transmitted over long periods of time (Boyer 1994; 2001; Green 2012; Jones & Russell 2012; Thomson 2012). Despite this advance, some archaeologists continue to raise doubts concerning the reliability of Ket and Evenki ethnohistories in relation to proto-Ket and proto-Evenki ancestral populations. With regard to palaeo-Siberian people, the known candidates are few and the collective memories preserved in their oral traditions last into the present time.

According to Soviet historians (Popov & Dolgikh [1956] 1964; Vasilevich & Smolyak [1956] 1964; Vajda 2001, and others), Ket and Evenki are the two major palaeo-Siberian groups who inhabited southern Siberia and northern Mongolia before the Iron Age. Based upon interdisciplinary research on collective memory conducted over the past three decades, in this section I argue that Ket and Evenki oral traditions and material culture, including rock art, have reliably transmitted their collective memories regarding religious beliefs and ritual practices integral to their ethnocultural identities. With Soviet era (1960–70s) attempts to assimilate indigenous people and erase their ethnic identities, Evenki and Ket ethnographies sought to construct written narratives

based upon macroband and communally shared oral traditions and social memories integral to their ethnocultural identities rooted in prehistory (Green 2012; Jones & Russell 2012; Thomson 2012; Wertsch 2002).

Most of the information contained in Ket and Evenki ethnographies would have been collected from community members responsible for transmitting oral traditions about communally shared rites and symbolic representations that rely upon memory-enhancing strategies. According to cognitive anthropologist and evolutionary psychologist Pascal Boyer (1994; 2001), some rituals and symbolic representations fall into the category understood as cognitively optimal for transmission or that reflect 'recurrence above chance' inter-generationally. One of the most effective mnemonic strategies in cultural transmission is the creation in non-literate, imagistic cultures of 'external memory supports' or 'cognitive prostheses involving symbolic codes' (McCauley & Lawson 2002, 54; Whitehouse 1995, 197).

In this section, I discuss Evenki and Ket oral histories transmitted intergenerationally in oral narratives (folktales, myths), ritual action scripts (bear spring revival rites), and rock-art iconography as a form of external memory support. In a salient example, a comparative study of Evenki bear revival rites and the extant Ute Bear Dance, US Southwest, demonstrated the 'recurrence above chance' of their ritual practices, beliefs, and rock-art imagery (McNeil 2008, 71–98).

The Ket are Yeniseian speakers (a linguistic isolate), whose oral traditions recount how in the distant past they occupied a vast region from northern Kazakhstan and the Upper Irtysh watershed through the Altai-Sayan intermountain zone and the Angara River Basin (Aleksenko 1968; Vajda 2001, map I, xii–vii; 2011). According to Jacobson-Tepfer (2015, 320), many Mongolian Altai rock-art images encode Ket beliefs reflecting their hunter-gatherer life way and religious beliefs (discussed below). Evenki are Tungusic speakers whose oral histories recount how they migrated north from Central Asia into the Pre-Baikal *taiga* (forest) zone on the east side of the Middle Yenisey. In the *taiga* forests, Evenki bear-cult and mythic tradition emerged (Jacobson-Tepfer 2015, 322, n. 23; Vasilevich 1971), perhaps as early as the Late Mesolithic.

Ket (non-Tungus) and Evenki (Tungus) marriage alliances

Due to Evenki wide distribution in small bands with low population densities, their oral traditions (stories, festivals, beliefs of bear-hero) recount how

proto-Evenki peoples and their non-Tungus (proto-Ket) neighbours relied upon aggregations of neighbouring clans for autumn hunting and spring revival rites as a way to address challenges in exogamous mate-finding and information or food-sharing during late winter scarcity. A Yenisey Evenki tale transmits a social memory about an important event in their ancestral past when Tungus Evenki formed alliances through marriage with their non-Tungusic (probably proto-Ket) neighbours to the west. The tale of 'Xeladan and Ngamondri' recounts how Xeladan, an Evenki girl, is abducted by the anthropomorphized frozen clan river, Engdekit, how she spends the winter with Ngamondri, a bear representing a non-Tungus ancestor, and kills and dismembers him ritualistically at his request. When she returns to her village, she finds that he has made reindeer (game) plentiful, in response to which the Evenki people perform a ceremonial Round Dance in his honour (Vasilevich 1980, 110–12).

Evenki and non-Tungusic (Ket) Fall Bear Festival

Evenki Fall Bear Festival rites and myths (*nimngakan*) preserved in collective memory continue to be performed across Trans-Baikal from the Yenisey and Angara Rivers to the Okhotsk Sea and Lower Amur River (Anisimov 1958; 1963b; de Sales 1980; Shirokogoroff [1929] 1966; Sokolova 2000; Turov 2000; B. Vasilevich 1948; G. Vasilevich 1963; 1971; 1980, n. 5). In the autumn, after ambushing a brown bear in its den and killing it, Evenki bands and their non-Tungus neighbours related by marriage assemble for a Bear Festival that lasted three or more days. It is comprised of a sequence of bear post-mortem and pre-restoration rites that enact beliefs about bear-human and non-Tungusic-Evenki 'marriage' alliances.

From the time that an Evenki hunter found the bear's den to the skinning and partitioning of the bear carcass, he involves his wife's brother, his brother-in-law by marriage or 'ally' (*nimak*), to act as intercessor between the bear and the Evenki people (Anisimov 1958; 1963a, 174–91; 1963b, 99–112; de Sales 1980, 179; Shirokogoroff [1929] 1966, 196; G. Vasilevich 1963, 60–71; 1971, 38–40; 1980, 127). Reverently taking their share of the meat (*sêvên*), Evenki and their allies by marriage repeat the word *davun*, meaning: (1) an ally who marries an Evenki woman and (2) one who receives a portion of the *sêvên* (de Sales 1980, 179, 185–7; G. Vasilevich 1980, 134, n. 44).

In the final rite of the bear festival, a funereal one, the bear's skull and bones are properly and

symbolically disposed of. The skull receives special treatment, being taken into the forest (*taiga*) to a cedar tree (*kongi*) (G. Vasilevich 1971). There, the top of the cedar is shaved, leaving two spikes on top, between which the bear skull, embellished with cedar hoop earrings and colorful ribbons, is cradled, facing east to signify regeneration. This rite, called 'seeing the bear off', refers to the belief in helping the bear on its journey of ascent up the *turu* to the upper world, where it serves as an intermediary between humans and a deity of the upper world (*Ėksri*) (G. Vasilevich 1963, 46–7; 1971, 40–41).

Ket and Evenki cosmologies and beliefs

Oral traditions recount how proto-Ket and proto-Evenki inhabited the Pre-Baikal region on either side of the Middle Yenisey and participated in bear-cult rituals associated with their hunter-gatherer (Ket) and reindeer-herding (Evenki) lifeways. A close examination of their bear-cult beliefs, however, reveals important details that distinguish Ket and Evenki beliefs.

The Ket religious beliefs are at heart dualistic, envisioning a mythic universe composed of seven levels in which mythic characters personify existential opposites, such as life and death, good and evil, and engage in a cosmic struggle for balance. The female deity Toman personifies the renewal of life, fertility and well-being, while the female deity Khosedom personifies death by cold, fever, or sickness and destruction (Alekseenko 1968; Jacobson-Tepfer 2015, 332–4). According to Ket archaic beliefs, the bear, like Toman, is the source of life and a regenerative force symbolized by its hibernation and emergence with cubs in the spring. As such, bear is the animal double of birthing women (*kaigus*), recalling the Eurasian (Hungarian) reference to a mother who has just given birth as a 'bear'. While Ket beliefs find unity in the generative aspect of women and bears, they also acknowledge the fierceness and destructive powers of the bear.

In contrast to Ket cosmology, Evenki beliefs envision a three-tiered cosmos composed of an upper world (*ugu buga*), a human world, clan territory (*dulin buga*) and a lower world where the dead reside (*khergu buga*) (G. Vasilevich 1963; 1971). For Podkamennaya Tunguska Evenki, who occupied the right (east) bank of the Middle Yenisey, the bear represented a cultural hero who was uniquely able to access the upper world by ascending the clan tree (*turu*) to solicit the Mistress of Animals (*bugady enintyn*) to release the souls of dead animals (Anisimov 1963b, 204–5; see Fig. 8 below). In post-Bronze Age times, only a shaman possessed

the power to access the upper world (Jacobson-Tepfer 2015, 339). Through the Evenki rite of *shingkelevun*, killed game animals are restored to life when the bear-hero embarks on a mythic journey that first passes through the lower world of the dead and then emerges into clan territory by way of a 'cosmic' river portal (see Fig. 9 below).

Angara style rock art as mnemonic device

The presence of Angara style rock art in high view areas along the Middle Yenisey and Tuba rivers, seasonally ice-free river corridors, suggests that proto-Ket and proto-Evenki allies used these rock-art sites for community aggregations at festivals and seasonal revival rites (Bower & Zedeño 2009; Conkey 1980). In this section, I argue that Minusinsk Basin Angara style rock art functioned as an external memory support in the form of a visual narrative form recounting how the bear-hero embarks on a mythical journey to restore killed game animals essential to the hunter-gatherer lifeway.

Minusinsk Basin: Angara style as syncretism of beliefs

According to Wiessner (1983; also Barth 1969; Hodder 1982), emblematic aspects of style carry information about social identity and indicate linguistic, ideological, sexual, or other boundaries. I propose that Angara style in the Mongolian Altai was initially an emblematic style important to hunter-gatherers (proto-Ket) who were in the process of constructing a macroband ethnic identity. This would have remained true when proto-Ket (Kotoi) people, who must have shared the same language and worldview, migrated into the Selenga and Angara basins, a new territory.

Subsequently, when this previously isolated people (Kotoi, proto-Ket) moved to the Minusinsk basin, they most likely came into contact with proto-Evenki with whom expediency dictated that they form a social alliance. At rock-art sites on the Middle Yenisey, I believe Angara style rock art served a new function, to reinforce this social alliance in visual narrative form. I propose that both phases of Middle Yenisey Angara style imagery represent the ideational blending or syncretism (Bentley 1993) of proto-Ket (non-Tungus) and proto-Evenki (Tungus) beliefs resulting from their social alliance. Recall that at Mongolian Altai archaic sites of Baga Oigor and Aral Tolgoi, numerous images depicting birthing women, the Mother of Animals (red deer), and the Bear reflect Ket beliefs in the generative forces in nature, which were deemed crucial to restoring killed game animals to life.



Figure 8. Mykalent copy of a petroglyph of 'bear' climbing a 'deciduous tree' ('spirit figure' hovering above) at Shalabolino on Tuba River. (Photograph: with permission of Elena Miklashevich, Kemerovo State University and Museum of the Archaeology and Ethnography of Southern Siberia.)

On the west side of the Middle Yenisey, Oglakhty I and Tepsej I petroglyphs depict this very theme, possibly dating to the Early Neolithic when, in my view, proto-Ket people migrated into the Upper Yenisey area. The 'Cosmic Elk' and Bear are represented in archaic 'Angara' style identical to that employed at Baga Oigor and Aral Tolgoi: massive body and small head in contour with antlers that signify the World Tree and two tapered cone legs (Anisimov 1963a: 83–4; 1963b, 112, 183; Jacobson 1993, 185, 193–4; Jacobson-Tepfer 2015, 337–8; Martynov 1991, 99–107). Notably, between them stands a moose, possibly representing Animal Mother who for Evenki represents the force of nature that restores the souls of the dead. The Moose's position between the Red Deer and Bear suggests to me that Middle Yenisey proto-Ket and proto-Evenki had formed an affiliation in which they shared beliefs about totemic animals involved in killed game animal restoration. For both people, the Middle Yenisey appears to have represented the mythic

headwaters where the lower world enters clan territory (Ket in the west and Evenki in the east) and bear returns to clan territory with restored dead game animals.

Angara style rock art: Bear restoration visual narrative
The Bear Restoration complex combines elements derived from Ket and Evenki beliefs, taking its most visually elaborated form in Angara style rock art of the Minusinsk Basin (McNeil 2005; 2008). In Evenki clan territory on the east side of the Middle Yenisey at Ust'-Tuba II and on the east-flowing Tuba River at Shalabolino, rock art depicts bear's (*mangi's*) emergence from the 'cosmic' river portal (lower world) while leading game animals into clan territory. At Shalabolino, which is due east of Oglakhty I, Tepsej I and Ust'-Tuba II, Angara style petroglyphs depict scenes that suggest steps in the eternal circuit of bear's journey. A unique petroglyph at Shalabolino depicts the first stage of the bear's journey to retrieve the souls of killed animals: the



Figure 9. Ust'-Tuba II petroglyph of two 'bears', herd of 'aurochs' and 'moose' with 'bear bust' in upper right corner and bear 'twins' in bottom centre. (Photograph: Elena Miklashevich, Kemerovo State University and Museum of the Archaeology and Ethnography of Southern Siberia, with permission.)

bear's ascent to the skyworld by way of a leafless deciduous larch, most likely after being sacrificed in the autumn. A spirit-like figure, perhaps the Mistress of Animals who purportedly holds a basket containing the souls of killed animals, hovers above (Fig. 8). Another petroglyph at Shalabolino depicts a larger bear with a smaller one, perhaps mother and cub, next to a natural fissure, perhaps a liminal portal in the rock (McNeil 2005, fig. 12). Images of boats at Shalabolino recall Evenki beliefs regarding the soul's journey by boat on the clan river, *Engdekit* (McNeil 2005, fig. 13), out of the lower world through the river portal (G. Vasilevich 1963, 58–60).

At Ust'-Tuba II (Blednova *et al.* 1995, panels 34 and 39), Angara style images on a single panel depict what is in my view the final phase in the eternal cycle of life, the emergence of restored animals led by the bear-hero out of the river portal into the human world (Fig. 9). On this panel, images are represented in four Angara sub-styles that hark back to the Mongolian Altai petroglyphs: outline or contour

body, contour body with silhouetted head, entire body and head solid pecked, and contour body with interior lines. Here the bear is represented by its outline pecked head/chest (bust), suggesting that it is emerging from the river with its body partly submerged. Several game animals on this panel are depicted in similar fashion, suggesting that they too are emerging from the river portal in spring.

The bodies of other bears and game animals are depicted in contour with interior lines, possibly in X-ray (or skeleton) style (E. Devlet 2000), suggesting that they are passing through the lower world of the dead. The bear's arrival with game into the clan territory (*bugady dulin*) is suggested by a single solid pecked bear walking on all fours and leading a herd of game animals (McNeil 2005, fig. 14). The same trope of the eternal cycle of life also appears further south at the Aldy-Mozaga rock-art site, Upper Yenisey at Tuva, where Angara style rock art depicts a bear bust next to what appears to be an endless cycle of game resources: moose, red deer, horse, argali, birds and fish (M. Devlet 1998, 99, panel 40).

Conclusion

In previous years, researchers argued that Angara style rock art originated in the Angara Basin, Cis-Baikal, and that it was characterized by petroglyphs depicting naturalistic images of 'elk' (moose) in a static or walking stance. Based upon evidence from palaeoenvironmental data, palaeoclimate analyses and stylistic and thematic comparisons of pre-Bronze Age rock art across the region, instead I argue that Angara style rock art originated in the Mongolian Altai during the Upper-Final Palaeolithic, 13,000–10,300 BP. For several hundred years Angara style evolved *in situ* until an episode of drought during the Late Mesolithic–Early Neolithic, c. 8200–7300 BP, compelled the hunter-gatherer creators of Angara style rock art to abandon the area. Archaeological evidence at stratified sites dated to the Early Neolithic confirms that these hunter-gatherer bands migrated north to the Upper and Middle Yenisey drainages while some of their kinsmen headed northeast to the Selenga and Angara basins near the southern tip of Lake Baikal. In the Angara and Selenga basins, their arrival coincides with the appearance of the Early Neolithic Kotoi (mtDNA identified as proto-Ket) mortuary tradition.

In the Angara Basin, a period of drought (7500–7000 BP) compelled Kotoi (proto-Ket) culture inhabitants to abandon the area and to seek refuge in the resource-rich Minusinsk Basin to the west that was recolonized around 7200 BP. At Minusinsk Basin Middle Yenisey sites, Angara-style rock art was found to represent two styles: 1) at Oglakhty I and Tepsei (west side) a style depicting massive contour body red deer with two tapered, cone-shaped legs, similar to 'archaic' Mongolian Altai depictions, and 2) at Ust'-Tuba and Shalabolino (east side) a more anatomically realistic (four legs), smaller, centimetre-scale style depicting herds of forest-steppe and riparian fauna, often led by a bear. This second Angara style variant served as a mnemonic device that encoded a visual narrative representing the syncretism of proto-Ket and proto-Evenki cosmologies and beliefs resulting from their social alliance and shared bear-cult revival rites.

Note

1. By the end of the Neolithic (6000–5000 BP) and the beginning of the Bronze Age (5000–4000 BP), evidence of domestication of sheep, horses and cattle appears in the Minusinsk area.

Acknowledgements

This research project started with an archaeological expedition organized by faculty at Kemerovo State University to Abakan, Khakassia, Russian Republic in 2002, resulting in a paper published in *Rock Art Research* (2005). New research made available by the Baikal Archaeological Project (2010) and on-line access to the Mongolian Altai Inventory Image Collection, University of Oregon, helped shape the ideas presented in this paper about the temporal and spatial origin of Angara style rock art and the migrations of palaeo-Siberian people who produced it.

I sincerely thank the faculty of the Department of Archaeology at Kemerovo State University, Siberia, for inviting me to join their expedition to Khakassia and to the Siberian Association of Rock Art Researchers (SAPAR) and the Museum of the Archaeology and Ethnography of Southern Siberia. I am grateful to Russian and American scholars who shared their time and expertise: Marianna and Ekaterina Devlet, Russian Academy of Sciences (Moscow); Elena Miklashevich, Kemerovo State University (Khakassia); and Elena Kostoglodova, Slavic and Germanic Languages and Literature Department, University of Colorado, Boulder, who translated articles from Russian to English.

Lynda D. McNeil

Anthropology

University of Colorado at Boulder

Boulder, CO 80309-0401

USA

Email: Lynda.McNeil@colorado.edu

References

- Alekseenko, E.A., 1968. The cult of the bear among the Ket (Yenisei Ostyaks), in *Popular beliefs and folklore tradition in Siberia*, ed. V. Dioszegi. Bloomington: Indiana University Press, 175–91.
- Anisimov, A.F., 1958. *Religiya Evenkirov v istoriko-geneticheskom izuchenii i problemy proiskhozhdeniya pervobytnykh verovaniy* [Evenki religion from the perspective of history and origins, and the problem of the source of primitive belief]. Moscow-Leningrad: Akademiya nauk.
- Anisimov, A.F., 1963a. Cosmological concepts of the peoples of the north, in *Studies in Siberian Shamanism*, ed. H.N. Michael. (Arctic Institute of North America, Anthropology of the North, Translations from Russian Sources 4.) Toronto: University of Toronto Press, 157–230.
- Anisimov, A.F., 1963b. The shaman's tent of the Evenki and the origin of the shamanistic rite, in *Studies in Siberian Shamanism*, ed. H.N. Michael. (Arctic Institute of North America, Anthropology of the North, Translations from Russian Sources 4.) Toronto: University of Toronto Press, 85–123.

- Barth, F., 1969. *Ethnic Groups and Boundaries: The social organization of culture difference*. Oslo: Universitetsforlaget.
- Bazaliiskii, V.I., 2010. Mesolithic and Neolithic mortuary complexes in the Baikal region, in *Prehistoric Hunter-Gatherers of the Baikal Region, Siberia: Bioarchaeological studies of past life ways*, eds A.W. Weber, M.A. Katzenberg & T.G. Schurr. Philadelphia (PA): University of Pennsylvania Museum of Archaeology and Anthropology, 51–86.
- Bentley, J., 1993. *Old World Encounters: Cross-cultural contacts and exchanges in pre-modern times*. New York (NY): Oxford University Press.
- Blednova, N., H. Francfort, N. Legtchilo, L. Martin, D. Sacchi, J. Sher, D. Smirnov, F. Soleilhavoup, & P. Vidal, 1995. *Répertoire des pétroglyphes d'Asie centrale. Fascicule No. 2, Sibérie du Sud 2: Tepsej I–III, Ust'-Tuba I–IV* (Russie, Khakassie) [Petroglyphs of Central Asia. South Siberia 2: Tepsej I–III, Ust'-Tuba I–IV]. Paris: De Boccard.
- Bower, B.J. & M.N. Zedeño, 2009. *The Archaeology of Meaningful Places*. Salt Lake City (UT): University of Utah Press.
- Boyer, P., 1994. Cognitive constraints on cultural representations: natural ontologies and religious ideas, in *Mapping the Mind: Domain specificity in cognition and culture*, eds L. Hirschfield & S. Gelman. Cambridge: Cambridge University Press, 391–411.
- Boyer, P., 2001. *Religion Explained: The evolutionary origins of religious thought*. New York (NY): Basic Books.
- Conkey, M., 1980. The identification of prehistoric hunter-gatherer aggregation sites: the case of Altamira. *Current Anthropology* 21(5), 609–30.
- de Sales, A., 1980. Deux conceptions de l'alliance à travers la fête de l'ours en Sibérie [Two concepts of alliance involving the Siberian bear festival]. *Études mongoles et sibériennes* 11: *L'Ours, L'Autre de l'homme*, 147–213.
- Devlet, E.G., 2000. X-ray style anthropomorphic art images and the mythological subject of obtaining the gift of shamanizing. *Archaeology, Ethnology and Anthropology of Eurasia* 2, 88–95.
- Devlet, M., 1998. *Pamyatniki istoricheskoy Mysli* [Petroglyphs on the bottom of the Sayan Sea]. Moscow: Russian Academy of Sciences, Institute of Archaeology.
- Dirksen, V.G., B. van Geel, M.A. Koulikova, et al., 2007. Chronology of Holocene climate and vegetation changes in their connection to cultural dynamics in southern Siberia. *Radiocarbon* 49(2), 1103–21.
- Flegontov, P., P. Changmai, A. Zidkova, et al., 2016. Genomic study of the Ket: a Paleo-Eskimo-related ethnic group with significant ancient North Eurasian ancestry. *Scientific Reports* 6, 20768.
- Francfort, H., D. Sacchi, J.A. Sher, F. Soleilhavoup & P. Vidal, 1993. Art rupestre du bassin de Minusinsk: nouvelles recherches franco-russes [Minusinsk Basin rock art: new Franco-Russian research]. *Arts Asiatiques* 48, 5–52.
- Green, A., 2012. Can memory be collective?, in *The Oxford Handbook of Oral History*. Oxford: Oxford University Press, 96–111.
- Grunert, J., F. Lehmkuhl & M. Walther, 2000. Paleoclimate evolution of the Uvs Nuur Basin and adjacent areas (Western Mongolia). *Quaternary International* 65/66, 171–92.
- Guthrie, R.D., 1982. Mammoths of the mammoth steppe as paleoenvironmental indicators, in *Paleoecology of Beringia*, ed. D.M. Hopkins. New York (NY): Academic Press, 307–26.
- Hodder, I., 1982. *Symbols in Action: Ethnoarchaeological studies of material culture*. New York (NY): Cambridge University Press.
- Jacobson, E. 1993. *The Deer Goddess of Ancient Siberia: A study in the ecology of belief*. Leiden: E.J. Brill.
- Jacobson-Tepfer, E., 2000. Petroglyphs and natural history: sources for the reconstruction of the ecology of culture. *Archaeology, Ethnology, and Anthropology of Eurasia* 1, 57–65.
- Jacobson-Tepfer, E., 2013. Late Pleistocene and Early Holocene rock art from the Mongolian Altai: the material and its cultural implications. *Arts* 2(3), 151–81.
- Jacobson-Tepfer, E., 2015. *The Hunter, the Stag, and the Mother of Animals: Image, monument, and landscape in ancient north Asia*. Oxford: Oxford University Press.
- Jones, S. & L. Russell, 2012. Archaeology, memory and oral tradition: an introduction. *International Journal of Historical Archaeology* 16, 267–83.
- Kortum, R., 2014. Sacred imagery and ritual landscape: new discoveries at the Biluut petroglyph complex in the Mongolian Altai. *Time & Mind: Journal of Archaeology, Consciousness and Culture* 7(4), 329–84.
- Kortum, R., 2021. Altai rock art: visions of the past in Mongolia. *Current World Archaeology* 106 (March).
- Kuzmin, Y.V., 2010. Extinction of the woolly mammoth (*Mammuthus primigenius*) and woolly rhinoceros (*Coelodonta antiquitatis*) in Eurasia: review of chronological and environmental issues. *Boreas* 39, 247–61.
- Lokhov, D.N. & S.P. Dudariok, 2012. A zoomorphic figurine from the multilayer site of Ust'-Yodarma II. *Bulletin of Irkutsk State University. Geoarchaeology, Ethnology, and Anthropology Series* 1(1), 126–37.
- Martynov, A.I., 1991. *The Ancient Art of Northern Asia* (trans. D.B. Shimkin & E.M. Shimkin). Urbana (IL): University of Illinois Press.
- McCauley, R.N. & E.T. Lawson, 2002. *Bringing Ritual to Mind: Psychological foundations of cultural forms*. Cambridge: Cambridge University Press.
- McNeil, L.D., 2005. Seasonal revival rites and rock art of Minusinsk Basin colonisers (southern Siberia). *Rock Art Research* 22(1), 3–16.
- McNeil, L.D., 2008. Recurrence of bear restoration symbolism: Minusinsk Basin Evenki and Basin-Plateau Ute. *Journal of Cognition and Culture* 8(1–2), 71–98.
- Mongolian Altai Inventory Image Collection, Oregon University. <https://oregondigital.org/sets/maiiic>

- Okladnikov, A.P., 1966. *Petroglify Angary* [Angara petroglyphs]. Moscow/Leningrad: Nauka.
- Okladnikov, A.P., 1981. *Petroglify Chulutyn-Gola (Mongoliya)* [Chulutyn-Gola (Mongolian) Petroglyphs]. Novosibirsk: Nauka.
- Okladnikov A.P. & A. I. Martynov, 1972. *Sokrovishcha Tomskikh pisanits* [The treasures of the Tom' pictographs]. Moscow: Iskusstvo.
- Podol'skiy, N.L., 1973. O printsipakh datirovki naskalnykh izobrazheniy: Po povodu knigi A.A. Formozova "Ocherki po perobytnou iskusstvu: Naskalnye izobrazheniya I kamennye izvayaniya epokhi kamnya I bronzy na territorii SSSR" [On the principles of dating rock art pictures. Apropos A.A. Formozova's book 'Essays on the prehistoric rock art: Rock pictures and stone sculptures of the Stone and Bronze age in USSR']. *Soviet Archaeology* 3, 265–76.
- Ponomareva, I.A., 2016. On the Angara petroglyphic style [original in Russian]. *Archaeology, Ethnology, & Anthropology of Eurasia* 44(2), 69–80.
- Ponomareva, I.A., 2021. *Change and Continuity in the Prehistoric Rock Art of East Siberia: An archaeological and anthropological exploration into ethno-cultural identity, belonging, and symbolism*. (BAR International series S3057.) Oxford: BAR Publishing.
- Popov, A.A. & B.O. Dolgikh, [1956] 1964. The Kets, in *The Peoples of Siberia*, eds M.G. Levin & L.P. Potapov. Chicago (IL): University of Chicago Press, 607–19.
- Pyatkin, B.N., 1998. The Shalabolino petroglyphs on the River Tuba (Middle Yenisei). *International Newsletter on Rock Art* 20, 26–30.
- Pyatkin, B.N. & A.I. Martynov, 1985. *Petroglify iz Shalabolino* [Petroglyphs from Shalabolino]. Krasnoyarsk: Krasnoyarsk University Press.
- Schurr, T.G., L.P. Osipova, S.I. Zhadanov & M.C. Dulik, 2010. Genetic diversity in native Siberians: implications for the prehistoric settlement of the Cis-Baikal region, in *Prehistoric Hunter-gatherers of the Baikal Region, Siberia: Bioarchaeological studies of past life ways*, eds A.W. Weber, M.A. Katzenberg & T.G. Schurr. Philadelphia (PA): University of Pennsylvania Museum of Archaeology and Anthropology, 121–34.
- Sher, J.A., 1980. *Petroglify srednej i central'naj Azii* [Petroglyphs of Central Asia]. Moscow: Nauka.
- Sher, J.A., with N. Blednova, N. Legchilo & D. Smirnov, 1994. *Répertoire des pétroglyphes d'Asie Centrale. Fasc. 1. Sibérie du Sud: Oglakhty I–III* (Russie, Khakassie) [Petroglyphs of Central Asia. South Siberia: Oglakhty I–III]. Paris: De Bocard.
- Shirokogoroff, S.M., [1929] 1966. *Social Organization of the Northern Tungus*. Oosterhout: Anthropological Publications.
- Sokolova, Z.P., 2000. The bear cult. *Archaeology, Ethnology and Anthropology of Eurasia* 2(2), 121–30.
- Sovetova, O.S. & E.A. Miklashevich, 1999. Chronological and stylistic features of the Middle Yenisei petroglyphs, in *Archaeology, Ethnography, and Museology*. Kemerovo: Nauka, 47–74.
- Thomson, A., 2012. Memory and remembering in oral history, in *The Oxford Handbook of Oral History*. Oxford: Oxford University Press, 78–95.
- Turov, M., 2000. Kul't medvedya v folklore i obryadovoi praktike Evenkiy [The bear cult in the Evenkian folklore and rituals], in *Narody Sibiri: istoriya i kul'tura/Medved' v drevnih i sovremennykh kul'turah Sibiri* [Peoples of Siberia: history and culture. Bear in ancient and modern cultures of Siberia]. Novosibirsk: Izdatelstvo Instituta arheologii i etnografii, 48–60.
- Vajda, E.J., 2001. *Yeniseian Peoples and Languages*. Richmond: Curzon Press.
- Vajda, E.J., 2011. Siberian landscapes in Ket traditional culture, in *Landscape & Culture in Northern Eurasia*, ed. P. Jordan. Walnut Creek (CA): Left Coast Press, 297–314.
- Vasil'ev, S.A., 1992. The Late Paleolithic of the Yenisei: a new outline. *Journal of World Prehistory* 6(3), 337–83.
- Vasil'ev, S.A. & V.A. Semenov, 1993. Prehistory of the Upper Yenisei Area (southern Siberia). *Journal of World Prehistory* 7(2), 213–42.
- Vasilevich, B.A., 1948. Medvežij prazdnik [The bear festival]. *Sovetskaja Ètnografija* 4.
- Vasilevich, G.M., 1963. Early concepts about the universe among the Evenki (materials), in *Studies in Siberian Shamanism*, ed. H.N. Michael. (Arctic Institute of North America, Anthropology of the North, Translations from Russian Sources 4.) Toronto: University of Toronto Press, 46–83.
- Vasilevich, G.M., 1971. Preshamanic and shamanistic beliefs of the Evenki. *Sovetskaja etnografija* 5, 29–44.
- Vasilevich, G.M., 1980. À propos du culte de l'ours chez les Èvènk [Regarding the Evenki bear cult]. *Études mongoles* 11, 109–45.
- Vasilevich, G.M. & A.V. Smolyak, [1956] 1964. The Evenkis, in *The Peoples of Siberia*, eds M.G. Levin & L.P. Potapov. Chicago (IL): University of Chicago Press, 620–54.
- Vereshchagin, N.K. & G.F. Baryshnikov, 1984. Quarternary mammalian extinctions in northern Eurasia, in *Quarternary Extinctions*, eds P.S. Martin & R.G. Klein. Tuscon (AZ): University of Arizona Press, 483–516.
- Wertsch, J.V., 2002. *Voices of Collective Remembering*. Cambridge: Cambridge University Press.
- White, D. & A. Bush, 2010. Holocene climate, environmental change, and Neolithic biocultural discontinuity in the Baikal region, in *Prehistoric Hunter-Gatherers of the Baikal Region, Siberia: Bioarchaeological studies of past life ways*, eds A.W. Weber, M.A. Katzenberg & T.G. Schurr. Philadelphia (PA): University of Pennsylvania Museum of Archaeology and Anthropology, 1–26.
- Whitehouse, H., 1995. *Inside the Cult: Religious innovation and transmission in Papua New Guinea*. Oxford: Clarendon Press.
- Wiessner, P., 1983. Style and social information in Kalahari projectile points. *American Antiquity* 48(2), 253–76.
- Zotkina, L.V., 2019. On the methodology of studying palimpsests in rock art: the case of the Shalabolino rock art site, Krasnoyarsk Territory. *Archaeology, Ethnology & Anthropology* 47(2), 93–102.

Author biography

Lynda D. McNeil has published research on southern Siberia rock art, Colorado Plateau (USA) Ute Bear Dance spring rites and rock art, and Hopi-Fremont rain-making

ideology and rock art. Her research combines linguistics, archaeology and rock-art analysis to reconstruct an understanding of interactions between diverse small-scale social groups and migrations across southern Siberia and the American Southwest.