Social memory inscribed in rock art: Bear Restoration Complex in Pleistocene-Holocene Transition Siberia and North America

Lynda D. McNEIL*

Using a poststructural practice approach to rock art interpretation,¹ this paper seeks to reconstruct an understanding of the social and cognitive processes involved in the transmission of an ancient Angara rock art style from central Siberia to North America. As I argued in a previous paper (McNeil 2005), Tungusic Manchu-speaking Evenki in Siberia produced rock art at ceremonial sites and inscribed images (Connerton 1989) intended to communicate a regional Bear Restoration Complex and bear-human ancestry religious beliefs. The ancestral Evenki clans’ shared practical and discursive knowledge (Bourdieu 1977; Giddens 1987, 1984) was grounded in hunter-gatherer lifeways, bolstered by bear restoration cycle beliefs and ritual practices. A similar style with probable connections to this ideology appears to have been replicated in North America (Wyoming) during the Pleistocene-Holocene Transition (PHT) or Early Holocene.

Both Siberian and Wyoming (USA) rock art data sets are based upon a combination of personal observation in the field and published photographs. The Siberian data set for this analysis is based upon personal field observation of rock art on the Middle Yenisey River (Minusinsk Basin) in the Soviet Republic of Khakassia, Siberia (July to August 2002), in addition to over one hundred published photographs from the following Middle Yenisey rock art sites: Oglakhky I-II, Tepsej I-II, Ust-Tubë II-III, and Shalabolino (Francfort & Sher 1995; Martynov 1991; Pyatkin 1998; Pyatkin & Martynov 1985; Sher et al. 1994). The Wyoming data set is based upon field observation of the Archaic Hunting style rock art at Legend Rock and of photographs taken by archaeologist Richard Wheeler in 1950 of the relevant rock art panel (48FR99) at the Boysen Reservoir site prior to the panel’s inundation.

The paper addresses the following research question: what social and cognitive processes could account for the reproduction of PHT Siberian Angara rock art style and bear restoration themes in North American (Wyoming)? Based upon a theory of structuration and materiality (idea-embodying style), I argue that the rock art’s emplacement and inscription both in central Siberian (Middle Yenisey) and in Wyoming (Wind River/Big Horn Basins) functioned to preserve and transmit collective social memories integral to the Bear Restoration Complex (cosmology, beliefs, and ritual practices) and their bear-human ancestry and identity.

* Research Affiliate, Arizona State University, School of Human Evolution and Social Change, Tempe, Arizona 85287 USA – Lynda.McNeil@colorado.edu
1 In the initial draft submitted, I focused on a phylogenetic approach to cultural transmission. In this revised paper, I have chosen to shift the focus to social, as well as to cognitive processes integral to cultural transmission.
To support this claim, the paper first gives an overview of its theoretical assumptions drawn from poststructural theories of the structuration of meaning, materiality, and the agency of the subject. Secondly, it discusses the issues of probable timing, route, and rapidity of a migration during the PHT from Siberia to North America. Next, it defines Angara style rock art in terms of its physical characteristics and method of production and compares it with Archaic Hunting style rock art at two sites in North America. Finally, it reviews the practical knowledge shared by Siberian emigrants and other hunter-gatherers who lived under similar conditions and engaged in similar habitual activities. In contrast to practical knowledge, discursive knowledge (religious beliefs, ancestry, cultural norms and principles) is built from the situated understandings of people living under a constrained set of conditions and transmitted transgenerationally. Alternative views, such as either the loss of social memories over great expanses of time and space or the independent creation of Wyoming rock art with new meanings, are viewed as less plausible.

1. Theoretical assumptions

In contrast to processual archaeologists who view material resources and cultural principles as dualistic and non-interactive, poststructural researchers argue that material and ideas are intertwined, recursive, and mutually constituting. Giddens’ theory of structuration (1979, 1984) or socially-constructed knowledge acknowledges human intention and creativity resulting from internalized conscious and unconscious structures of practical and discursive forms of consciousness. Practical consciousness (Bourdieu’s habitus, 1977) consists of tacit stocks of knowledge gained from habitual activities that reproduce many aspects of the social world. In addition to practical tacit knowledge, people as active agents build understandings of their worlds that are conscious and discursive, such as beliefs related to kinship, ancestry, and identity. As A. Joyce explains in the context of Mesoamerican structuration, “The boundary between practical and discursive consciousness is fluid. [And …] Both practical and discursive knowledge is always situated knowledge that is limited and incomplete; it is a product of a particular social position and experiences of the subject.” (Joyce 2010: 23)

Structuration provides the foundation for drawing inferences regarding the practical knowledge (habitus) shared by hunter-gatherer peoples living in similar conditions, as well as discursive knowledge (deep structures of meaning with long duration) regarding the emplacement and image-inscribing at both rock art locations. Moreover, deep structures of beliefs can be preserved materially and ideologically in social memory over a long period and can be generalized in a new setting (Sewell 1992 on deep structure, longue durée, and transformation of knowledge).

In addition to the structuration of meaning, a poststructural view of materiality, that is, the mutually constitutive properties of material resources and their culturally constructed meanings or cultural principles (Miller 2005; Tilley et al. 2006) provides the theoretical basis for linking natural or humanly modified material resources at meaningful places with socially meaningful inscriptions. In contrast to theories of processual archaeology which privileges material conditions over the ideational, poststructural theory rejects the dualism between materiality and idealism. Rock art is

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2 see Boyer 1994, 1998 on the counter-intuitive religious representations; McNeil 2008 on memory and recurrence of bear restoration beliefs.
a humanly modified material resource placed and inscribed on the landscape to embody cultural schemas or culturally constructed meanings. Both the place selection (or emplacement) and the image inscription are socially and ideologically meaningful activities, therefore, culturally situated or embedded (Bowser & Zedeño 2009). Both Angara (Siberian) and Archaic Hunting (North American) styles of rock art are placed and inscribed at humanly modified and socially meaningful natural places on the landscape. For example, the decision to locate rock art on cliffs overlooking rivers or perennial water sources is constitutive of the religious beliefs (discussed below) of ancient peoples inhabiting these regions.

2. Angara and Archaic Hunting styles

In this section, I compare Angara style of rock art in central Siberia (Middle Yenisey River, Minusinsk Basin) with Archaic Hunting style rock art in North America (Wyoming). To support my claim that Angara style rock art probably dates to the PHT, in a previous article I examined paleoenvironmental and archaeofaunal data that links Angara style rock art’s faunal assemblage and deciduous trees to the interstadial period, ca. 14,000 to 12,000 BP (McNeil 2005: 6-7; Okladnikov 1981: 109; Okladnikov & Martynov 1972: 70; Pyatkin 1998: 26-30; Pyatkin & Martynov 1985; Sher 1980: 185-93; Sher et al. 1994: IV-V, 20; contra Martynov 1991 and Francfort & Sher 1995). At the Legend Rock site in Wyoming, researchers Liu & Dorn (1996) made a rock art varnish micro-lamination sample from an Archaic Hunting style petroglyph on panel 35. It yielded a date of 10,660±50 14C BP, which is confirmed by the appearance of a dark layer associated with the Younger Dryas climatic event (ca. 11,700 to 10,700 BP). Based upon this evidence, I argue that the Middle Yenisey petroglyphs are slightly older than those in the Wind River (Big Horn) Basin in Wyoming, allowing a span of time for the rapid migration of Siberian emigrants with the requisite practical and discursive knowledge.

In the past, Russian researchers have distinguished between a Late Pleistocene Minusinsk style of rock art on the Middle Yenisey with meter-scale red deer (maral) or “elk” (Cervus elaphus) and a younger Neolithic Angara style with centimeter scale game animals. I disagree with this distinction, instead arguing that the two styles are more likely to be contemporaneous and that the difference in the size of Minusinsk and Angara style glyphs is related to mythological beliefs about the “cosmic elk.” According to Russian researcher, Anatoly I. Martynov, “the Neolithic (ca. 7000 to 3000 BP) art of the Siberian hunters was [...] a continuation, under new historical conditions, of the basic traditions of Paleolithic realistic art.” (Martynov 1991: 14). Angara style rock art, which depicts interstadial taxa and hunter-gatherer life ways (not Neolithic Evenki reindeer domestication) is consistent with the PHT, rather than with later Neolithic culture.

By situating Angara style rock art taxa within interstadial and archaeofaunal contexts, I reasoned that Angara style rock art represented a faunal assemblage associated with the post-Last Glacial Maximum (LGM) environment, that is, after the extinction of the Ice Age megafauna (woolly mammoth, rhinoceros, and bison) ca. 14,000 BP (Goebel 1999; Guthrie 1990; Vasil'ev 1992, 2001) and before the domestication of the reindeer during the Neolithic (ca. 7000 to 3000 BP): “After their (megafauna) disappearance or extinction, several ruminants (browsers, grazers, and intermediate types) co-existed in neighboring ecological niches into the last glacial period, ca. 14,000 to 12,000 BP.” (McNeil 2005: 6)
2.1 Relative dates at Legend Rock

Similar to Angara style rock art, on the eastern slope of the Rocky Mountains in central western Wyoming (Wind River Basin), the rock art at two sites in Wyoming, USA (Wind (Big Horn) River, now Boysen Reservoir, and Legend Rock on Cottonwood Creek) represents images in “Archaic Hunting style” (Francis & Loendorf 2002: 40-41, citing Gebhard 1969: 11). A glyph that resembles Angara style in the Legend Rock data set (48HO4, panel 35) has been tentatively dated to the Younger Dryas (10,660±50 yr. BP) based upon a preliminary ¹⁴C sample from panel 35 (Liu & Dorn 1996: 205), which was later corroborated by a rock art varnish micro-laminate study (Liu & Broecker 2007 on correlation of layers in desert varnish with known climate events). Moreover, a striking, meter-scale “elk” (48HO4, panel 48) appears in the context of smaller, centimeter scale Archaic Hunting quadrupeds (bison, deer, big horn sheep) that are similar in style and repatination to the one that Liu & Dorn (1996) dated to the YD (Fig. 1). On the “elk” glyph, there is visible evidence of recurrent human repecking, purportedly over a long period of time (Wyoming BLM archaeologist Michael Bies, personal conversation).

Fig. 1. Oglakhty I petroglyph of “cosmic elk”: drawing in Sher et al., 1994 (a) and photo his Plate 5 (b). (With permission of the editor.)

2.2 Minusinsk Basin Kokorevo culture

If the Angara style rock art fits into a PHT time frame, then archaeological research regarding Afontova and Kokorevo cultures in the Minusinsk Basin (Middle Yenisey region) of that period may shed light on the producers of the rock art and what it meant to them. Not exclusively a Yenisey Basin phenomenon, Afontova and Kokorevo cultural sites (ca. 14,000 to 11,000 BP) extend outside of the Minusinsk Basin as far as the Ob’ basin, the Altai mountains, the Angara River, and the Trans-Baikal region (Abramova 1979; Vasil’ev 1992: 357-360). The geographic range of

3 A cation-ratio (CR) date of ca. 2900 to 2000 yrs. BP for this “elk” glyph, placing it within the time frame for the more recent Dinwoody Style, was subsequently rejected as flawed by the authors (Francis & Loendorf 2002: 62-63). I argue that the evidence discussed suggests that this glyph represents Gebhart’s (1969) older Archaic Hunting style. More importantly for the purpose of this study, the dates for Middle Yenisey Angara style petroglyphs are older relative to those in the Wind River (Big Horn) Basin. If, as I argue, Siberian glyphs belong to the PHT, then the rock art dates in WY being Early or Late Holocene is incidental to my argument, except in relation to the rapidity of the migration.

Social memory of indigenous bands of “reindeer-breeding” Evenki recounts having inhabited the Middle Yenisey area, calling themselves “Yenisey Evenki,” before being relocated in historic times north of Krasnoyask. According to Ted Goebel, “Based upon available evidence, northern Evenki share material cultural features with Kokorevo culture: seasonal habitation or aggregation sites (in Kokoreveo I and IV), round, rosette-style hearths associated with light above ground dwellings (huts or tents), [occupied by] highly mobile hunter-gatherers.” (Goebel; 1999: 223; also see Okladnikov 1959: 5-16, 1981: 113; and Vasi'lev 1992: 357, 377).

2.3. Archaeological bridge

According to Goebel (2004), Ushki and Berelekh cultures in Western Beringia were most likely the progenitors of North American Clovis, and they extend to the Nenana nonmicroblade complex, notably in the Broken Mammoth cultural zone IVc, which predates Clovis occupation by as much as 400 calendar years (354-355). Put simply, archaeological evidence exists of a cultural (lithic) as well as a genetic bridge from pre-Clovis, Late Paleolithic sites in Western Beringia (Ushki and Berelekh sites) to Nenana culture in southern Alaska (13,800 to 13,000 cal. BP) (Goebel 2004; 350-351, Fig.11.10, Clovis and Nenana lithic artifacts, 354-355; Schurr 2004: 221-222 on the Native American parent population from the Lake Baikal region).

2.4. Route and timing of migrations

While still being debated, a plausible model (Bettinger & Young 2004) for human migration into North America posits two initial waves of indigenous Siberians. The first wave of emigrants is believed to have traveled from Siberia across Beringia and eventually inland through the Cordilleran Corridor (Fiedel 2004) during the pre-LGM (25,000 BP) into North America, making it as far as Monte Verde, Chile by 14,000 BP. A second wave, the one of most interest to the transmission of Kokorevo-like culture and concurrent Angara style rock art, migrated across the Bering Land Bridge during the post-LGM, creating or participating in Nenana culture in southern Alaska (ca.13,800 to 13,000 BP) (Goebel 2004; Hoffecker et al. 1993 in Yesner 2007), just prior to the opening of the Cordilleran corridor ca. 12,000 BP.

The proposition that a second wave of emigrants from central or western Siberia could have arrived in southern Alaska during the PHT (Nenana culture ca. 13,800 – 13,000 BP) is based upon a model of rapid migration as a risk minimizing strategy (Bettinger & Young 2004: 243). Researchers maintain that rapid migration is likely to have occurred on the scale of months, not years (Fiedel 2007: 11 on possible passage through the corridor in three months) is posited on the knowledge that such a migration would have occurred across the resource poor Bering Land Bridge and the inhospitable Cordilleran corridor (Bettinger & Young 2004; Goebel 2004). According to Bettinger & Young, “The post-LGM settlement pattern is said to be a repetitious series of short-term camps without evidence of storage.” (Bettinger & Young 2004: 243; also see Goebel 1999: 220).

This suggests a strategy of mobility-mediated risk reduction, which is susceptible to catastrophe when environmental deterioration is too widespread to be countered by moving. At the same time, “the ability to move long distances rapidly is a particularly effective response to the dramatic but short-term resource peaks
characteristic of the Arctic, and at the same time more conducive to rapid demographic expansion.” (Bettinger & Young 2004: 243) In conjunction with rapid migration, the domestication of dogs (*canis lupus*) ca. 15,000 BP in Siberia with their tracking abilities would have facilitated rapid migration, especially with regard to the pursuit of individual or small herds of caribou, wapiti, deer, or bison.

In the case of a second wave of emigrants during the post-LGM, rapid migration could have occurred first horizontally from western to eastern Beringia. According to David B. Madsen, horizontal movement, such as that across the resource poor Bering Land Bridge, is predicted to be more rapid than longitudinal movement, based upon social learning of “solution(s) of problems at a given locality implies the ability to locate and move to hospitable places during inhospitable times” (Madsen 2004: 21-22). After arriving in southern Alaska and subsequently negotiating the “rugged, barren, wet, and inhospitable” Cordilleran corridor in a matter of months (Fiedel 2007: 11), along the eastern slopes of the Rocky Mountains they would eventually identify a familiar environment or “megapatch” (Madsen 2004: 21, citing Kelly 1996). The Minusinsk Basin refugia located at a temperate latitude (52 degrees north) and the Wind River Basin in west central Wyoming (43 degrees north) along the eastern slopes of the Rocky Mountains were such similar megapatches during the PHT and Early Holocene.

3. Practical knowledge of hunter-gatherers

In this section, I examine discursive and non-discursive (habitus) practical knowledge apparently shared by Siberian image-makers and their North American counterparts. Apart from the idea of diffusion, both groups chose to inscribe their rock art in microenvironments with similar flora and fauna, selected similar locations for rock art emplacement on the landscape, and employed similar methods of rock art production, style, and composition. All these aspects of practical knowledge, whether unconsciously or consciously transmitted transgenerationally, can be understood apart from direct diffusion, that is, they may have been integral to hunter-gatherer lifeways in similar ecological conditions.

3.1. Minusinsk and Wind River microenvironments

New territory with similar ecology and resources would require little adaptation, rather calling upon already acquired practical knowledge of subsistence strategies. According to Madsen (2004: 21, citing Kelly 1996), “the earliest Americans were primarily hunters relying on game as their principle food source and could move readily because knowledge of game is more easily transferred from one region to another than [is] knowledge of plants.” (Kelly 1996 in Madsen 2004: 21). Madsen adds, “That notion is certainly debatable, but, at best, will probably be true only within a megapatch or very similar metapatches.” (Madsen 2004: 21) Again, the Minusinsk and Bighorn Basins were just such similar megapatches.

In both the Middle Yenisey (Minusinsk) and the Wind (Bighorn) River Basin megapatches, large and small game of calorically equivalent taxa existed. In both locations, there is also a notable disparity between the animals present in the archaeological record and the higher-ranked large game depicted in the rock art. For example, at Kokorevo cultural sites the archaeofauna recovered was overwhelmingly reindeer, while the paleoenvironment is known to have included forest-steppe and interstadial animals: red deer, aurochs, moose, boar, birds, fatty fish, and small
game. Interestingly, Angara style rock art depicts the archaeologically rare or absent and more highly valued species: aurochs, moose, maral (elk, red deer), boar, large fish.

Similar to the Minusinsk Basin microenvironment, in Wyoming, the Younger Dryas climatic deterioration, ca. 11,700 to 10,700 BP (Yesner 2007: 29) correlates with a decrease in artiodactyls in Wind River (Bighorn) Basin (Byers et al. 2005). At the end of the Pleistocene, large game resources were “thinly distributed [and] only moderately predictable” (Guthrie 1983: 269), which was augmented by the “use of a broader spectrum of lower-return but more predictable resources such as small game, birds, and fish.” (Kelly & Todd 1988; Wilmsen 1974, cited in Yesner 2007: 29).

3.2. Minusinsk and Wind River archaeofauna

Angara style is a regional rock art style and tradition spanning the Ob, Tom’, and Middle Yenisey Rivers and east-flowing drainages, including the Angara and Tuba Rivers (the Sayan hydroelectric power station near Krasnoyask built in the late 1980s raised river water levels). Image makers depicted animal taxa associated with post-LGM (Sartan), ca. 14,000 to 12,000 BP interstadial Minusinsk Basin refuge paleoenvironment, that is, deciduous forest and steppe-prairie. No Ice Age megafauna (mammoth, rhinoceros), extinct in Siberia ca. 14,000 BP, are depicted in Angara style rock art.34 Rather, the rock art faunal assemblage includes the following zoomorphs: forest-steppe: red deer (Cervus elaphus, akin to N. American wapiti or elk), moose or “elk” (Alces alces), wild horse (Equus ferus), brown bear (Ursus arctos); steppe-prairie: aurochs (Bos primigenius), wild boar. Missing or rare taxa in the faunal record suggests decreased numbers even in refugia due to climate fluctuations during the PHT. With large game animals, Angara style rock art depicts small hunting figures using atlatl, bow, or spear (Martynov 1991: 140, Fig. 12; 157, Fig. 29; 158, Fig. 30; 160, Fig. 32). These hunting scenes may allude to the influx of emigrants from Eurasia into Siberia, as well as the small, but steady population growth of Siberian emigrant hunter-gatherers during the PHT.

As in central Siberia, at Legend Rock (48HO4) and at the Wind River (Boysen Reservoir) sites (48FR12, 48FR99), the archaeofauna recovered from PHT strata consisted mainly of lower-ranking, easy to procure animals (Byers, et al. 2005: 128, 132, Fig. 8 on Holocene artiodactyl index for Wyoming Basin; Bies5, personal conversation on Legend Rock YD archaeofauna). Hunting strategies would have been opportunistic and heterogeneous. Techniques for obtaining herd species such as bison or wapiti probably would have involved the use of javelins or spears for taking individual animals, rather than the use of game drives or impoundments (specialized techniques) (Yesner 2007: 31). In contrast to what these people were procuring for food, the taxa depicted in the rock art at these sites, like their counterparts in Angara style, consists of scarce or difficult to procure large game artiodactyls (deer, elk, bison, big horn sheep) and grizzly bear.

3.3. Minusinsk and Wind River emplacement

The two study areas for Siberian Angara and North American Archaic Hunting rock art stylistic traditions to be discussed are located on rock cliffs situated along major

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4 See McNeil 2005: 13, Table 1 for quantitative data used for each species represented.
rivers: the Minusinsk Basin on the Middle Yenisey River and in North America along Wyoming's Wind River (Big Horn) Basin on the eastern slopes of Rocky Mountains. In the Minusinsk Basin, Angara style rock art is found on south or east-facing cliffs at Oglakhty II, Tepsij II, Ust'-Tuba II-III, and Shalabolino (Fig. 2).

![Map of Northern Asia showing the Minusinsk Basin](image)

**Fig. 2** The location of the Minusinsk Basin (Middle Yenisey River) in central Siberia and a Google Earth close-up of the Middle Yenisey River sand Toub River sites: Oglakhty II-III, Tepsej, Ust’Tuba II-III, Sukhankia and Shalabolino. *(Graphic by Adrian Wisniewski.)*

In terms of the spatial orientation of imagery, Middle Yenisey rock art sites occur on a west-east axis with the meter-scale elk and bear appearing furthest west at the Oglakhty II site and the preponderance of bear images (22) appearing furthest east at the Shalabolino site (see map, Fig. 2). In an earlier paper (McNeil 2005), I discuss the cosmological significance of rock art image emplacement on the Middle Yenisey landscape in Northern (Yenisey, etc.) Evenki ethnohistory. Its emplacement on this east-west axis coincides with Evenki mythology related to the bear-ancestor’s journey to placate the Cosmic Elk residing in the upper world of the West (Fig. 1) and the bear’s emergence in the East from the lower world through a river portal at the clan rock art site at Ust-Tuba II (Fig. 3 –bear bust upper right, twin bears lower center). I further argue that Angara style rock art embodies culturally constructed Bear Restoration religious meanings (e.g., cosmology, mythic journey of the bear-human (Evenki) ancestor).

On the Wind River drainages of western Wyoming, rock art is inscribed on south-facing rim rock cliffs overlooking perennial water sources (Fig. 4). At the Boysen Reservoir site on the north-south flowing Wind (Big Horn) River (before it was dammed) the Archaic Hunting style rock art panel (48FR99) overlooked the river on south to south-west facing rocks. This panel (now inundated) was photographed by Richard Wheeler in 1950 (Wheeler 1957, Pl. 9c) (Fig. 5 –bear lower right leading game). At the Legend Rock site, the Archaic Hunting style rock art is inscribed on a long south-facing escarpment that runs parallel to the east-west flowing Cottonwood Creek of the Wind River drainage (Fig. 6 –possible bear bust lower right; Fig. 7). Emigrants
may have chosen these places based upon their abundant food resources, perennial
twater sources, winter forage for artiodactyls (elk, deer, antelope) and bison, and
prairie habitat for lagomorphs (rabbits), rodents, birds, and fish.

Fig. 3. Ust'-Tuba II petroglyph of two “bears”, with herd of “aurochs” and “mooses”; bear bust in upper right of this panel; a. outside view (photo L.D. McNeil); b. drawing (from Francfort & Sher 1995, Pl. 39).

Fig. 4. The location of Wyoming (USA) in relation to the Cordilleran Corridor and Bering Land Bridge and a Google Earth close-up of the Legend Rock Site (48HO4) and he Boysen Reservoir Site (48FR99). (Graphic by Adrian Wisniewski.)
Fig. 5 Wind (Big Horn) River (Boysen Reservoir, inundated) petroglyphs (48FR99, Feature 1): a. photo (by R. Wheeler 9/14/1950, National Anthropological Archives, Smithsonian Institution [48FR99-2]); b. drawing (by R. Wheeler [1950] in Walker 1994: 162, fig. 26 [upper]).

Fig. 6 Legend Rock site, panel 35 on Cottonwood Creek in the Wind River (Big Horn) Basin: a. photo (by J.A. McNeil); b. drawing (by Bernie Jones).
3.4. Method of rock art production

Practical knowledge expressed tacitly or discursively through personal memory, one-on-one instruction, or through imitation would involve the method of manufacture (pecking, four sub-styles), subject matter (faunal assemblage represented is desired large game, religiously meaningful, but not procured) and material characteristics, such as the scale, sub-styles, and composition (design) of images. At Middle Yenisey sites, all images are pecked and generally on a decimeter scale (a foot or less), with the exception of meter-scale, interior-lined elks at Oglakhty II to the west. All decimeter-scale quadrupeds are depicted in four distinct sub-styles that suggest a symbolic meaning for Northern Evenki clans, discussed below (see Fig. 8).

The rock art production at Legend Rock and the Boysen Reservoir sites reflects pecking with the rough replication of the four sub-styles, with some scratching instead of pecking interior lines; the elk is larger in relation to other large game animals (Fig. 9, only some animals in all four sub-styles). Panel 48FR99 at the Boysen Reservoir (and a bear upper body with game animals in Clear Creek Canyon, Utah; see Baker & Billat 1999: 72, Fig. 2.57) clearly represents a walking bear “leading” game animals. At this site and at the Legend Rock site (panel 48), image-inscribers represented a meter-scale elk with interior lines and standing at an oblique angle, suggesting emergence from the lower world. Also at Legend Rock (panel 35), among obliquely angled quadrupeds (bison, deer, big horn sheep) there appears to be the bust of a bear below these figures (Fig. 6); if so, it replicates similar bear busts, signaling emergence from the river portal, depicted with game herds at Middle Yenisey rock art sites.
Fig. 8  Angara styles of petroglyphs. Table 1 divides petroglyphs into four sub-styles that may relate to the cycle of emergence of six animal species (auroch, moose, red deer, wild horse, wild boar, and brown bear) from the lower world: A. Head and chest (bust): emerging of the upper body from the river portal (birthing); B. full body, outline with partial interior pecking: emerging into the human world or clan territory; C. full body, solid pecked: fully emerged into the human world (born); D. full body, outline with interior line pecking: passing through the lower world (not yet born, skeletal style).

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Fig. 9  Archaic Hunting style of petroglyphs. Table 2 sorts the petroglyphs into the types that correlate with Angara four sub-styles, but in relation to five Wind River (Big Horn) Basin animal species (bison, white tail or mule deer, elk (wapiti), big horn sheep, and grizzly bear): A. head and chest (bust); B. full body, outline with partial interior pecking; C. full body, solid pecked; D. full body, outline with interior line pecking (or scratching). The Angara four sub-styles are represented, but not for every animal, expect interestingly for the bear.
4. Bear Restoration Complex in social memory

Rock art related to indigenous inhabitants of central Siberia embodied discursive knowledge (oral traditions, stories, ritual practices) connected to widely held religious beliefs, ritual practices, and bear-human ancestry and identity. Such discursive knowledge can typically be generalized in new settings and it relates to deep structures of meaning with long duration (Sewell 1992). In addition to deep structures of knowledge transmitted in ancestral Tungusic-Manchu speaking Evenki oral traditions and ritual practices, this discursive knowledge was inscribed in Angara style rock art in the Minusinsk Basin region. Evenki oral histories recount how Evenki clans colonized southern Siberia from the Ob and Yenisey River in the west, Lake Baikal, and to the Okhotsk Sea in the east. These Northern Evenki peoples adopted clan names related to their territorial rivers (including Zapadnye or Yenisey). It is likely that “Yenisey Evenks” adapted from seasonally mobile hunter-gatherers to semi-sedentary ‘reindeer breeders’ during the Neolithic or Eneolithic, ca. 7000 to 3000 BP (McNeil 2005: 7-8). Angara style rock art clearly depicts a mobile hunter-gatherer life way and macroband aggregations at river clan rock art sites.

Ethnographies of Northern Evenki small family groups inhabiting the Yenisey River and its tributaries to the east (Angara, Tuba Rivers)--before Northern Evenki domesticated the reindeer--shed light on the religious meaning of Angara style rock art, that is, beliefs and ritual practices associated with ancient Evenki Late Pleistocene or Early Holocene hunter-gatherers’ Bear Restoration or Revival mythological narratives (Anisimov 1963a, 1963b; Vasilevich 1963, 1971a, 1971b).

One particularly relevant narrative recounted in Siberian Evenki ethnographies is the story of the bear “spirit of the ancestors” and Master of the lower World (khargi, mangi) who ascends to the upper world by way of the clan tree (turu). There he implores the Mistress/Master of Animals (Kheglen, “elk”/maral) to release the souls of unborn animals into the clan territory. The bear’s return to the human world with reincarnated game animals takes place at the clan center (rocks and clan tree: bugady mushun) (Vasilevich 1963, 1971a, 1971b).

It is this discursively (songs, stories) and non-discursively (rock art, ritual activities) transmitted sacred narrative that was apparently preserved in social memory through rock art representations and communal practices (“shamanizing” in the Tungusic non-trance sense of narrating stories or songs) at the clan territory’s rocks and trees. Angara style rock art appears to depict an iconic narrative related to Evenki cosmology and religious beliefs about the supernatural powers of their bear-ancestor, a “culturally-postulated superhuman agent” (CPS-agent) who embarks on a mythic journey to gain the release of game animals into Evenki clan territory (McCauley & Lawson 2002:42). The rock art composition depicting game animals at oblique angles or as head or chest suggests their emergence from the river portal, a culturally acquired belief (McNeil 2005: 10-11; Anisimov 1963a, 1963b; Vasilevich 1963, 1971a, 1971b) with deep structure and longue durée.

4.1. Materiality in Angara style

Discursive knowledge related to religious beliefs and shared collective identity appears to have been embodied in image-inscribing conscious decisions. Angara style rock art reflects four sub-styles with symbolic meaning related to Evenki cosmology, bear’s cosmic journey mythology, composition (individual animals, often
oblique body positions), a bear (entire body, upper body, or only head/chest) leading a herd of high-ranking, albeit rarely procured, game animals.

All decimeter-scale quadrupeds are depicted in four distinct sub-styles that embody stages in the bear ancestor’s mythic journey according to Northern Evenki clans, discussed below (see Table 1). The four sub-styles include: en toto or solid pecked with discernible outline; outline pecked with head, neck, haunches often solid-pecked; interior-line with outline discernible; and en toto or outline pecked animal bust or chest. The images are positioned and put in a context that suggests a pictorial narrative (Evenki Bear Restoration mythology), e.g., bear climbing a deciduous tree (myth and rock art; see McNeil 2005: 11, Fig. 1 at Shalabolino); bear leading herds of game (return in spring), bear alone or with other animals “emerging” (depicted as head-bust (emerging from river portal), partial or full-body at an oblique angle) from the river portal (lower world; McNeil 2005: 10, Fig. 9 at Ust’-Tuba II).

Similarly, at the Boysen Reservoir and Legend Rock sites, the oldest representations of quadrupeds, ca. 10,660±50 yrs. BP (Liu & Dorn 1996: 205), are depicted in an Archaic Hunting style that closely resembles the Angara four sub-styles. This concurrence suggests conscious decision-making based upon culturally acquired and transmitted information (representing large game herd with bear), design/oblique, and pictorial narrative context (see Fig. 9): bears, dogs, and high-ranked, large-bodied quadrupeds: wapiti (elk), white tail or mule deer, bison, and bighorn sheep. In addition, an iconic innovation at Legend Rock (not seen in Angara style) represents bison and elk hooves as “balls” or circles, like those depicted in eastern WY (perhaps socially linking these groups).

4.2. Emplacement and meaning

Like the Middle Yenisey rock art emplacement at clan aggregation sites, Walker & Francis (1988) hypothesize that Legend Rock may have been a communal site where large game foraged from late fall to early spring. By the PHT, hunter-gatherer societies had developed to the point where social identity was associated with territory, specifically “clan rocks” on which clan members recorded images and told stories related to sacred narratives through rock art representations (Simms 2008: 112, 139). These images functioned to preserve and transmit religious beliefs iconographically (possibly as a prompt for oral transmission).

Before the domestication of the reindeer in the Neolithic, Evenki colonists in southern Siberia appear to have uniquely integrated Mongolian cosmology with Eurasian (Finno-Ugrian) beliefs about the bear as totemic ancestor and spirit helper (Humphrey 1996: 247-248; cited in McNeil 2005: 10; Pentikäinen 2007: 31-42 on Khanty and Mansi bear rites). At clan rock art sites, everyone was encouraged to enter into ceremonial shamanizing activities; “to shamanize” in Tungusic Manchu means to narrate or sing clan stories, not trance or séance related to healing rites (Anismov 1963a: 116; Humphrey 1996; Kehoe 2000; Vasilevich 1963: 46-47; 1971b: 40-41, cited in McNeil 2005: 10-11).

Emigrants entering the Wind River (Big Horn) Basin would also have found these places meaningful in proximity to rivers, regarded as portal from the lower world out

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6 See McNeil 2005 on Bear cult mythology probably transmitted by Finno-Ugrian emigrants (Ob River Khanty and Manti) to indigenous Tungusic-Manchu-speaking Northern Evenki inhabiting central Siberia during the Late Pleistocene. Their ethnographic descendents are the Northern Evenki reindeer herders relocated north of Krasnoyarsk.
of which their bear ancestor would lead game animals into their new clan territory in spring. It is likely, then, that Legend Rock was chosen as an aggregation site, thereby making the emplacement and inscription of a bear restoration narrative similar to social aggregation behaviors in the Minusinsk Basin and similar locations in central Siberia. Like the symbolic emplacement of Middle Yenisey rock art on a west-east axis, the Legend Rock site with a “cosmic elk” glyph is oriented to the west of the Boysen Reservoir panel (48FR99) that depicts a bear “leading game animals.”

4.3. Social memory and identity

In contrast to a processual dualistic view of material resources and ideas, I argue that Angara style rock art of the Late Pleistocene or Early Holocene (ca. 14,000 to 12,000 BP) as a material resource was intertwined with cultural principles (discursive knowledge) integral to the emigrants’ sense of collective identity (that is, bear-human kinship, clan identity, and role of communal ritual activities in restoring the bear ancestor to life after hibernation). Since rock art production was a situated practice, reinterpretation or transformation (Sewell 1992) in local contexts is predicted. However, in the case of immigrating small family groups to a new land, conservation (not transformation) of identity is the more predictable behavior. Rock art as visual metaphor and pictorial narrative was inscribed at meaningful places, thereby reflecting social decisions based upon what was considered to be meaningful to the group.

Rock art sites also often embodied the shared identities and histories of the group, including sacred narrative traditions expressed in multiple media. Image-making as a situated practice implies that despite shared cultural principles of dispersed Evenki clans, e.g., religious beliefs, each family group or clan would add its own interpretations. While reinterpretation is generally the case in transmission, I argue that under circumstances where migration to new territory is involved, transmission of beliefs integral to the group’s identity (kinship, ancestry) tend to be more conservative. This may have been the case for small and widely-dispersed groups inhabiting the Wind River region of western Wyoming during the PHT or early Holocene, e.g., rock art similar styles and themes at Boysen Reservoir (Wind River or Big Horn River) and Legend Rock.

4.4. Memory and cognition

Cognitive psychologist Pascal Boyer’s research on the “cultural fitness” of religious representations complements Giddens’ theory of deep structures of meaning that have long duration. According to Boyer, “micro-processes of cognition and interaction impose strong constraints on the diffusion and transmission of religious assumptions, thereby leading to the recurrence of ideas or representations in the religious domain” (Boyer 1994: 12). In other words, the religious knowledge domain is uniquely constrained in that it combines: 1) universal cognitive capacities or intuitive (INT) principles that unpin practical knowledge (e.g., observing, categorizing, inference drawing, scripted behaviors) –such as bear and human similar diets and behaviors, inferences regarding bear-human kinship, ancestry; and 2) culturally acquired, stored, and transmitted counterintuitive (C-IN), “attention-grabbing assumptions” that violate empirical (intuitive) expectations –such as bear’s supernatural powers and the mythic narrative of its cosmic journey and sudden emergence from the river portal in the spring leading game animals.
Boyer asserts that these constraints on the religious knowledge domain predict that, “all else being equal, representations that combine culturally acquired C-IN principles and INT background [...] are more likely to be acquired, stored, and transmitted.” (Boyer 1998: 822). Boyer’s claim has been verified by experiments in cross-cultural recall of counter-intuitive (C-IN) religious representations (Boyer & Ramble 2001). In addition, embedding religious representations in causally integrated schema, such as in narrative scripts, further predicts that they will be faithfully replicated over time (Harmon-Vukić & Slone 2009).

Boyer’s third prediction [P3] for the rough replication of religious representations involves the use of behavioral and material cultural support to achieve stability in the inference-drawing processes during cultural learning or transmission. For example, inscribing visual imagery in rock art, songs, or stories or embedding visual imagery in ritual structures [...] provide memorized, constrained interpretations” (882-883; McCauley & Lawson 2002: 42-45) as, for example, when the bear-ancestor emerges from the river portal with large game animals in spring time at the rock art site on clan territory.7

Conclusion

Tungusic Manchu-speaking Northern Evenki inscribers of Angara style rock art engaged in a variety of behaviors that were based upon practical and discursive knowledge integral to their biological and social survival. Central to this study, rock art pictorial narratives preserved and transmitted communally shared beliefs, thus fostering social alliances and exchange networks. The possibility that Angara style rock art production and imagery may have been remembered and roughly replicated in North America suggests that it must have been very important to the social memory of emigrants from Siberia. It may have been transmitted through personal memory or a social process of imitation or small group instruction.

In this paper, I examined the social and cognitive processes that predict for the diffusion of ancestral Evenki Bear Restoration religious knowledge and representations with migrating kinship groups into North America. Alternate views, such as a theory positing that the Wyoming rock art is the result of independent creation with unique cultural meanings stretches credibility, so numerous and culturally bound are their similarities to Angara style and ideology (e.g., manufacture, scale, theme/taxa, composition/design, and pictorial narrative). Another view might assume the loss of Bear Restoration discursive knowledge over the vast expanses of time and space as a priori. I disagree, maintaining that social memory loss in this case is a less plausible hypothesis, given a) the likelihood of rapid migration which would greatly reduce the pressure on social memory, b) the social and cognitive processes identified here that predict for recurrence of these representations.

Regarding the former, social behaviors predict for the transmission and rough replication of acquired cultural principles; these social behaviors include: 1) rock art emplacement at meaningful places where the bear-ancestor was believed to emerge from the clan river and rocks; 2) rock art inscriptions of the bear ancestor in the context of a pictorial narrative related to its cosmic journey of ascent to the sky world and emergence from the river portal in the spring; 3) the preservation of

7 See McNeil 2008: 91-92, Table 1 on recurrence of Evenki Bear Restoration representations and ideas in North America.
representations that reinforce core religious beliefs, bear-human kinship, and clan identity; and 4) the modification or reinterpretation of these religious representations by local family groups over time.

Regarding cognitive processes involved in memory and cultural transmission, 1) representations grounded in the religious knowledge domain predict for the cognitive recurrence or remembering of these beliefs and representations, most notably within kinship (ethno-linguistically related) groups. Also predictive of recurrence of representations are cognitive characteristics that: 2) combine intuitive innate cognitive capacities (e.g., observation, inference drawing, forming analogical and causal connection, etc.) with culturally-acquired counter-intuitive, attention-grabbing ideas (e.g., bear-human behavioral and inferred biological kinship); and 3) embed minimally counter-intuitive concepts in causally integrated narrative scripts or schemas.

And so, in closing, it appears that emigrants from central Siberia carried with them the essentials needed to survive in a new, but ecologically familiar land: the practical knowledge related to sustaining health, offspring, and food procurement. Equally important, they carried the discursive knowledge and the cognitive capacities needed to pass on important social memories, which they embodied and inscribed in rock art pictorial narratives for the purpose of preserving clan identities, histories, and shared Bear Restoration Complex beliefs and ritual practices.

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