Landscape and Connections:

Petroglyphs of the Altai in the 2nd and 1st Millennium BCE

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For

Helen and Michael O'Sullivan – the two Ravenclaws from whom I inherited everything; Graham O'Sullivan – the Hufflepuff whose friendship and support means that I am here now; and Casper, whom I'd bet money on being a Slytherin.

Abstract

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This thesis presents a holistic study of connections in the Altai Mountains of the eastern Eurasian Steppe, as shown by rock-art. Currently divided by four countries, pecked images (petroglyphs) and painted images from the 2nd–1st millennium BCE have been subjected to very separate research traditions, exacerbated by language barriers. This thesis focusses on the entire Altai Mountain range as a study area, integrating research published in Chinese and Russian, with supplementary literature in Kazakh and Mongolian consulted.

To demonstrate the potential for connectivity and, consequently, movement, a map of accessibility was generated, showing that there are various optimal routes for movement throughout the Altai. The locations of rock-art sites relative to these routes indicate that movement was a key feature contributing to the creation of rock-art. Examining topographic features in the vicinity of rock-art sites of three regions (Mongolia, Russia, PRC) highlighted an association between watercourses and sites, whilst studying the micro-landscape within panels found that the creators of rock-art were not representing the tangible spatial relationship of figures to the landscape. More broadly, similarities between motifs at rock-art sites, as well as on portable art, demonstrate that the people making them, regardless of whether they were aware of it or not, were part of a wider understanding of *how* to depict subjects. Evidence of this understanding can be found even in regions with very different cultural backgrounds to

the Steppe, such as the Chinese Central Plains, demonstrating that groups outside of the Steppe were aware of and using this way of representing. By combining analysis of motifs with that of the landscape, this thesis demonstrates that rock-art as a practice was inherently linked with to the landscape, whereas content and style are more indicative of a wide-ranging belief system amongst Steppe pastoralists, which was expressed aesthetically.

Contents

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A difficulty of working in a border region is accessing publications, many of which are confined to regional institutions. Consequently, the author is grateful to the following individuals, who helped obtain resources on multiple occasions: Dr Alice Cheng (Yu); Dr Ray Liu (Ruiliang); Dr Lee Li (Haichao); Daisy Holden (He Daiqing); and Dr Kagawa Sosuke. Dar'ya V. Maznova was also extremely helpful in providing access to books at the N. A. Nekrasova Universal Scientific Library of Yaroslavl' Oblast, whilst Dr Anna V. Abrosimova of The Yaroslavl' Russian Language Centre made first contact.

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Notes

1. If the reader is referred to a section of the thesis, this is given as a number, without a symbol to indicate 'section', e.g. '2.1' indicates 'see section 2.1'.

Transliteration

2. Chinese words are Romanised using the *pinyin* system, with the following rules:
    i. When researchers' names are included in-text, Chinese characters are not provided. Cited researchers are referred to by their full names (surname and forename), with Chinese characters provided in the reference list only.
    ii. Major works of research mentioned in the text are referred to by their English name. For details of their original Chinese names, see the full reference.
    iii. Characters are provided for all proper names and regions within the borders of the PRC at the first mention.
        a. Where the proper name in English corresponds to the *pinyin*, only characters are provided, e.g. Tianshan 天山.
        b. Where the proper name in English is different from the *pinyin*, both the *pinyin* and characters are provided in brackets after, e.g. Xinjiang Uyghur Autonomous Region (*Xinjiang weiwu'er zizhiqu* 新疆維吾爾自治區).
3. Kazakh, Mongolian, and Russian words and names are transliterated from Cyrillic according to the United States Board on Geographic Names (BGN)/Permanent Committee on Geographical Names for British Official Use (PCGN) system.

i. The exception to this is if a more common transliteration of a word is used or a word was read in translation and already transliterated using a different system.

1 Introduction

1.1 Aim

This thesis examines interaction between groups within the Altai Mountains of eastern Eurasia during the 2nd and 1st millennia BCE (Figure 1.1). *Interaction* refers, more specifically, to contact between people within the Altai, as well as with neighbouring regions, as shown by archaeological evidence. The impetus for conducting such a study is that the Altai currently forms the international borders between four countries: Kazakhstan, Mongolia, the People's Republic of China (PRC), and Russia (Figure 1.2). Its current role as a geographical divider not only means that this is how it is viewed in prehistroy, but also that it has been subjected to the various research traditions of these four nations and language barriers continue to impede a holistic study. To illustrate the arbitrary nature of this division, international borders have been removed from the map in Figure 1.1, showing the Altai Mountains as a single entity. A core aim of this thesis is to bring materials from disparate language spheres and archaeological perspectives together, in order to examine interactions between prehistoric peoples across what was undoubtedly a highly interconnected landscape.

A similar idea that, likewise, contributes to making acceptance of this region's interconnectedness difficult, is the assumption that mountains are impermeable. The perception of mountains as barriers pervades much research (discussed in 1.2.1), and is retroactively fed by current political borders, many of which utilise mountains as their boundaries. The presence of rock-carved imagery on stone surfaces in the Altai Mountains, however, testifies, not only to their permeability, but also serves as evidence that people were present throughout these mountains in prehistory. This thesis examines the idea that rock-art can be used to infer where actual routes were, i.e. that the location of rock-art sites was determined by their accessibility to routes throughout the Altai.

This provides a means to examine the very mechanism of connectivity itself—the potential for movement. It is acknowledged throughout this thesis, however, that other factors in addition to movement contributed to the creation of rock-art. People will have been influenced by their cultures, societies, subsistence strategies, as well as wider factors, including the relationship between their group and others. Whilst the prevalence of hunting and pastoralism in the Altai during this time would have exerted a strong influence on why and what people chose to depict, it is important to note that each image represents the intersection of multiple socio-cultural factors and, indeed, can be considered more representative of a *process* than a static image, which expresses the creators' beliefs in an animated landscape. The intentionality and planning that, thus, lie behind each rock-art image are examined in this thesis, which further aims to demonstrate that rock-art is embedded within complex webs of interaction between humans, the landscape, and non-human persons that inhabit the world alongside us.

1.2 Background

1.2.1 Study material

Rock-art is an archaeological material singularly appropriate for investigating connections in the eastern Eurasian Steppe, as it is found throughout the region. It is found predominantly in mountain environments, which dominate the landscape, however, mountains are not usually perceived as loci of dynamic social interaction due to perceptions that they are natural barriers.[1] Rock-art comprises imagery carved, engraved, or pecked into rock surfaces – petroglyphs – and pigment-based images –

[1] Characterisation of mountain ranges as barriers is common in earth sciences, as well as botany and zoology, where it is used as an explanation for species distributions (e.g. Korisettar 2007, 69; Mahaney *et al*. 2007, 803; Ballantyne and Dawson 1997, 30). Whilst not a formal theoretical perspective in archaeology, the assumption that mountains are barriers is often implicit. However, the impetuses behind human behaviours are often less determinist, meaning that people choose courses of action contrary to what an evolutionary perspective may see as rational.

rock painting. In one form or another, rock-art is found throughout the world and on most continents, from Rapanui to the British Isles. Subjects depicted in petroglyphic form range from highly distinctive emblems of ritual practice, such as Rapa Nui's Birdman,[2] to the pervasive cup marks identified by researchers in eastern Africa, western Europe, and the Korean Peninsula, to name but a few locations.[3] Rock-art can be found in caves or under rock overhangs; on small, portable rocks; or on large, non-portable rock panels formed from outcrops. As an archaeological artefact, rock-art is difficult to move physically, particularly if on large rock panels, thus it provides direct evidence of human engagement with the environment.[4] However, a caveat is that rock-art is not protected by depositional processes. In most cases, from the moment of creation, it is subjected to environmental damage, including erosion by wind and rain, weathering from fluctuations in temperature, as well as changes caused by human and non-human animals. Whilst a bronze axe head excavated from an undisturbed 5th century burial was sealed within its context after deposition,[5] there is no moment of deposition for rock-art, which is still exposed to later people, who make additions, changes, or vandalise the original image. Whilst this presents some issues for dating, it is one of the reasons that rock-art makes such exceptional archaeological evidence, as it is an unapologetic reminder that the world, elements, and human societies change constantly and continuously.

Analysis of a rock-art figure can focus on its subject matter or the motif. Subject matter denotes the object depicted, and motif refers to a particular way of representing a

[2] Horley and Lee 2008.
[3] An introduction to the cup mark phenomenon is provided by Gosso and Webster 2013, 61. For more detail on cup marks in eastern Africa, see Soper 1966; for the Korean examples, see Yang 2015.
[4] Wilson and David 2002, 1.
[5] An artefact's being deposited does not preclude the possibility that it passed through multiple owners and had various uses beforehand.

certain object, which is repeated on other panels. An example of this is the caprine motif in Figure 1.3 – the subject matter is the ibex (*Capra sibirica*), whilst the way the ibex is represented in profile, with a square body and exaggerated horns with notches, are the motif. The ibex also has four limbs, whereas the bovine (*Bovinae* sp.) next to the ibex has only two. These two ways of depicting animals, combined with the subject matter, create different motifs. Another feature of rock-art often mentioned in the literature is style,[6] which contributes to the construction of the motif. Style is used in this thesis to apply to a more general way of doing, i.e. it denotes the features used to construct a motif that are recognisable in other motifs. An example of this is the stone stele in Figure 1.4, which is carved with deer petroglyphs. The deer have elongated bodies, beak-like muzzles, and wave-like antlers. A similar style is evident in the petroglyphs shown in Figure 1.5. from the Russian Altai of a deer, with a beak-like muzzle and antlers running parallel to its body. Although its antlers are different from the ones on the deer in Figure 1.4, its other aspects are similar enough that the two images can be considered part of the same style.

In the case of this thesis, the significance of stylistic attributes is that the majority of dates for rock-art in the Eurasian Steppe are suggested based on apparent relationships with styles seen on archaeological parallels and between rock-art images. As this thesis predominantly utilises previously published data to examine such styles, the main publications and resources on rock-art that are accessible to the author for each country are briefly outlined in 2.1. In addition, style is a major component in detecting

[6] 'Style' has accrued various connotations in archaeology and other disciplines. This is mainly due to researchers using it to describe artefacts and imply connections between them, without defining what 'style' refers to. This is particularly the case for rock-art, where 'style' has been used uncritically as a basis for dating figures, or as a means to assess rock-art through the Western lens of 'art' (see 2.3). Whilst the author is aware of these issues, the historical connotations associated with 'style' are worthy of a thesis in their own right. 'Style' is, therefore, used in this thesis, but in the context of the definition given in the text.

connections. As a manner of expression that transfers information about the society that created it,[7] style and its geographical distribution, in addition to motifs and other features, allows suggestions of contacts between sites or regions.[8] This differs from this thesis' use of the term *aesthetics*, which here denotes a set of principles that are expressed outwardly, either through a person's behaviour and actions, or the objects they create.[9] Images are, therefore, agents that express the social context of their creators' ideological lenses, then interact with society, sometimes independent of how that creator intended.[10] The way an image interacts with the human world is expressed archaeologically by later additions to the rock panel in relation to it and repetition of the image elsewhere and in different media. It cannot be stated with any certainty, however, which specific image came first due to broad date ranges, thus attributing cultural provenance has limited utility in studies of rock-art. Foregoing provenance as an interpretation does not mean that rock-art imagery does not show connections between groups, as the distribution of styles and motifs throughout regions shown by other archaeological remains to have been connected. In short, rock-art provides a means of enriching and exploring archaeological theories, whilst prompting researchers to view the past from a uniquely pastoralist angle.

1.2.2 Location

The study area is located in eastern Eurasia – part of a huge Steppe ecoregion stretching from eastern Europe to eastern Siberia. Alternatively known as the Great Steppe, this

[7] Rice 1987, 244.
[8] *Ibid.*, 249–251.
[9] 'Aesthetics' comes with various implications concerning art and beauty, particularly in relation to rock-art. However, the purpose of this thesis is not to debate the use (or misuse) of the philosophy of aesthetics in studying rock-art, thus 'aesthetics' is used in this thesis according to the definition given in the text.
[10] Agency in aesthetics understands the potential for images to affect the viewer, whether this be the original creator, members of their society, or another person and their group several centuries later. This effect cannot be dictated by the rock-art's creator, though this person presumably had intentions as to how the image would function when they made it (Back Danielsson *et al*. 2012, 5–6).

area borders on such environmentally disparate regions as the Siberian taiga and deserts of the Gobi and Taklamakan (Figure 1.1). The Altai Mountains are positioned at the junction between these ecoregions, straddling the international borders of four nations: Kazakhstan, Mongolia, the PRC, and Russia. Although this means that the Altai has been conceptualised as a cultural contact zone,[11] language barriers and travel restrictions have made researching interaction in prehistory difficult. There are five border checkpoints for non-pedestrian transit in the Altai between the four nations, of which several are restricted to bilateral citizens.[12] These checkpoints have, additionally, been opened to increase trade and tourism, but the same openness toward the movement of foreigners does not apply in academic research.[13]

The lack of nation states – or political/military organisations of comparable size – in the 2nd–1st millennium BCE means that the impediments to movement caused by national borders did not exist. Other factors affecting movement will have been influenced by the social structures, cultures, and economic strategies of the people who were physically moving. These acted to both encourage and inhibit movement—arguably the backbone of connections between groups. Movement can, thus, be considered a salient mechanism for connecting both people and places, contributing to the likelihood and socio-cultural necessity of inter-group interactions.

1.2.2.1 Environmental Context

The Altai Mountains have an average elevation of 2050 m in the north and 2377 m in the south, with Belukha Mountain on the border between Kazakhstan and Russia reaching a maximum elevation of 4506 m.[14] The largest glaciers encompassing areas of

[11] Veretennikova 2014, 26.
[12] Kharlamov and Kharlamova 2014.
[13] Evstrop'eva 2009.
[14] Mani 1968, 357.

12–21 km^2, are located around Belukha, and there are thought to be approximately 1030 glaciers in the Altai.[15] Environmental records from 1952 onward, however, indicate that glaciers have receded in size by 0.18% (approximately 1.44 km^2 per year).[16] This figure indicates the average recession over a 56-year period; the yearly rate would have fluctuated, with some years even seeing minor glacial advance. It is, thus, likely that the 2nd–1st millennium BCE landscape was far more glaciated than at present, particularly at lower altitudes. This is evident in the rock formations visible in the Altai, where repetitive glacial advance and retreat during the Late Glacial Maximum (*c.* 265,000–19,000 BP) has formed dark outer crusts on the rocks, thus grinding the rock crystals to make rock-art leaves a white mark and the bright white of the image forms a striking contrast with the dark panel (Figure 1.6).[17]

The majority of rock-art is present on this type of rock; however, severe weathering and erosion has likely destroyed rock-art made on other surfaces. Variation in temperature between the summer and winter months ranges between -50 and 40°C, which, in addition to high humidity,[18] mean that weathering has a severe impact on the rock-art. This affects the archaeological record available for research. Alternatively, the continuation of pastoralist lifeways in the Altai means that the area is sparsely populated in contrast to places undergoing more extensive urbanisation. This has limited the human impact on rock-art.

[15] These data only include glaciers within Russian territory, so the number is probably greater (Narozhniy and Zemtsov 2011, 577).
[16] *Ibid.*, 586.
[17] Urtnasan Norov *et al.* 2010, 2. This is also the reason rock-art that remains visible today is assumed to postdate the last glacial maxim (*c.* 16,000 BP) (Jacobson-Tepfer 2015, 378).
[18] Maximum precipitation can reach 250–300 mm, with 60% falling in the summer months (Sato *et al.* 2007, 145; Pyankov *et al.* 2000, 15–16).

1.2.3 Time period

The rock-art examined in this study dates to the period 2nd–1st millennium BCE, correlating roughly with the Eurasian Bronze and Iron Ages. These terms are used sparingly, but are common in research on the Steppe, so are retained in some instances. Dates are general, however, as the timing for the appearance of bronze and iron differs between regions. The terms are, thus, used as general time markers without any implication of whether a particular metal is present.

The 2nd–1st millennium BCE in the Eurasian Steppe is particularly interesting for archaeological research, as it encompasses the period preceding the earliest written records from the sedentary Chinese cultures that describe dealings with (semi-mythological) Steppe groups.[19] Often, the information contained in the traditional texts is applied haphazardly to excavated material in regions outside the traditional core of Chinese culture (see 2.1.1 for further details on ancient and modern China). However, due to the geographic and temporal distance between the Altai in the 2nd–1st millennium BCE and historical China, it is rare to find archaeologists willing to apply textual information to this period.

Another factor in making this period significant is that the 1st millennium BCE is when many features now considered typical of Steppe cultures manifested,[20] though the factors leading to their development can be traced to earlier in the 2nd millennium BCE. Such features include: the growth of nomadic pastoralism, including the use of horses in herding animals and conducting warfare, which characterise the division between the

[19] An example of this is the Shanhaijing 山海經, a geographic treatise thought to be based on sources from as early as the 5th century BCE, that describes people in distant lands with three bodies and one head (Wang Deyan 2015).
[20] Masson 1992, 334.

'Steppe and the sown';[21] animals that became corner stones of pastoralism, which appear in assemblages at its eastern fringes;[22] and bronze production that was also underway in many areas of the Steppe, including the Altai.

Although modern perceptions of pastoralism view it as transient, this can be traced to the bias of hyper-sedentary groups, or, what Susan Kent defines as societies that remain sedentary over several centuries. [23] These types of societies are the ones that produce academic disciplines like archaeology, but also an innate bias towards rationalising hyper-sedentary living as the norm means that it is difficult for its members to comprehend the many different forms of pastoralism and sedentism that exist. The two subsistence strategies are not simple binaries – those referred to as pastoralists may remain in one location for weeks, months, or even years.[24] Indeed, it is now thought that the prehistoric residents of the Altai-Sayan mountain ranges lived similar to modern groups – occupying stable winter settlements in valleys, with camps at alpine summer pastures populated seasonally only by the herders.[25] However, people were not solely pastoralists, as the use of large quantities of red deer (*Cervus elaphus*) and sable (*Martes zibellina*) teeth, as well as other wild animals, on clothing excavated from various sites dated *c.* 2700–1800 BCE attests to hunting forming a salient part of both the economy and culture.[26] Furthermore, excavation of non-burial sites dated to the

[21] This term first appeared in 1907 with Gertrude Bell's work in Syria (Bell 1907), and was taken up relatively quickly to illustrate the perceived dichotomy between pastoralist and agricultural societies, namely the Steppe and sedentary societies, including China (Peake and Fleure 1928). The dichotomy persists in current research, with the publication of a 2002 conference on Eurasian Archaeology urging researchers to consider regional variation within the vast area referred to as the Steppe (see Peterson *et al.* 2006). Peter Kohl also discusses the effects of this theoretical dichotomy (Kohl 2008, 496).
[22] Fu Luowen *et al*. 2009.
[23] Kent 1992, 635–636.
[24] *Ibid*.
[25] Jacobson 1993, 7.
[26] A female skeleton excavated from a mound at Karasuk II was interred with 40 red deer canines sewn on her bag, 51 sable molars on her girdle, 137 sable teeth on what was presumed to have been her left shoe, and 123 on her right shoe, whilst red deer bones and sable teeth were scattered throughout the grave

late 2nd millennium BCE sites in the PRC's Jungar Basin (see Figure 2.6) have suggested that plant cultivation may have played a role in the strategies of groups previously thought to be nomadic.[27] It is expected, therefore, that the practice of making rock-art reflects the integration of various subsistence strategies by its creators, or, at least, their knowledge of alternative strategies to ones they employed.

In a similar way, the practice of making rock-art varied in intensity across the time period studied in this thesis. Whilst the 2nd millennium BCE was an era of prolific rock-art creation, the number of images made on rock panels decreased markedly in the 1st millennium BCE, though rock-art was still made. In addition, the subject matter also changed, featuring increased representation of anthropomorphs on horseback towards the end of the 2nd millennium BCE and text, whereas previously non-human animals without anthropomorphic figures accompanying them appeared more frequently. This period is, thus, the richest to study rock-art, but changes in the practise over time need to be examined in greater detail.

1.3 Summary

Rock-art is an archaeological material prevalent throughout the Altai Mountains. This makes it uniquely suited to examining connections within the Altai, as well as between the Altai and its neighbouring regions, as rock-art transcends the borders that divide the region in modern times. The 2nd–1st millennium BCE represents a particularly interesting period for study, both in relation to rock-art and wider archaeological

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fill (Vadetskaya 2015, 8-9). Such quantities of bone suggest concerted hunting of the animals utilised, rather than chance gathering of deceased animal resources. Similar numbers of teeth were found in burials near Kurgan 1 at Uybat V: 242 upper right molars from sable in Tomb 2; approximately 100 sable molars sewn onto a hat in Tomb 4;and 96 molars in Tomb 6 (Vadetskaya 2015, 10-11).

[27] Jia *et al*. identified both wheat (*Triticum aestivum/durum*) and naked barley (*Hordeum vulgare*) in the earliest layer, Layer 8 (1251–1243 cal BCE), at Luanzagangzi in the southern Jungar Basin (Jia *et al*. 2011, 273-274), with later analysis of the same samples also identifying phytoliths of common millet (*Panicum miliaceum*) and foxtail millet (*Setaria italica*) (Zhang *et al*. 2017).

phenomena, as the period sees both a change in practices relating to rock-art and developments in technology. Key themes in current rock-art research, the theoretical perspectives of the four countries dividing the Altai, and theoretical perspectives used in this thesis are outlined in the next chapter.

2 Literature Review

This chapter presents key themes, research, and perspectives relevant to the study of rock-art in the eastern Eurasian Steppe.

2.1 Four nations

Any study of the Altai is characterised heavily by the countries that divide it (Figure 2.1), along with their respective political, historical, and social backgrounds. A broad introduction to prominent factors and themes influencing research on rock-art and archaeology in these countries is provided here. A common uniting feature between them is that they were consolidated as sovereign nations relatively recently – Mongolia and Russia in 1992, Kazakhstan in 1991 and the PRC in 1949 – meaning that the current socio-political entities are younger than the discipline of archaeology in this region. As a result, analysis of the varied theoretical influences on archaeology requires a look at processes further back in each country's history.

2.1.1 Kazakhstan

The Kazakh Altai is located in East Kazakhstan Region (Figure 2.2), which continues to be affected by pollutants from high-intensity industry developed prior to Kazakhstan's independence in 1991. The area became synonymous with former Soviet nuclear programmes after the release of documents in 2012 detailing a 15-year collaborative project between American, Kazakh, and Russian scientists to secure an 18,000 km^2 former test site.[28] In addition to nuclear fallout, the Altai mountains in this region have been widely deforested and minerals extracted, with heavy metals causing high levels of

[28] Between 1949 and 1991, 456 nuclear tests in total were conducted at Semipalatinsk. Of these, 340 were above ground and 116 below ground. During its active period, local residents were subjected to nuclear fallout and high doses of radiation. The full extent of the effect on the local environment and population are still disputed (Duff-Brown 2013; Kassenova 2009).

pollution in the local environment, including in vegetal and meat food sources.[29] Since 1991, East Kazakhstan Region has experienced a dramatic decline in its population due to people migrating to other parts of Kazakhstan, which has not been mitigated by government policies to increase the birth rate.[30]

The socio-economic background may explain why research on rock-art in the Kazakh Altai has been relatively limited. The origins of archaeology and its practice in Kazakhstan are closely linked to Kazakhstan's relationship with Russia, which governed the country from pre-modern times. In 1889, the Russian Empire offered peasants, newly landless with the abolition of serfdom, land in the Asian part of the empire to relieve population pressure in European Russia.[31] This caused massive growth in the number of Russians relative to Kazakhs in Kazakhstan.[32] After the dissolution of the empire in 1917, Kazakhstan became a member republic of what would eventually become the Soviet Union.[33] The development of a discipline exploring Kazakhstan's prehistory was, thus, driven predominantly by Russian researchers, with major surveys conducted by the State Academy of Material Culture (Leningrad) and Institute of the History of Material Culture, both affiliated with the Union of Soviet Socialist Republics (USSR) Academy of Sciences throughout the 1930s.[34] The number of expeditions surveying areas of Kazakhstan increased throughout the 1950s, but a particular interest in rock-art developed in the 1980s, with work on petroglyphs along the Talas River in

[29] Meshkov *et al*. 2009, 92; Farmer and Farmer 2000, 22.
[30] The number of people who migrated out of East Kazakhstan Region 2002–2009 was 66,425, whereas population growth was only 19,294 (Wuzhati *et al*. 2014, 36). In response, the Kazakh government offered financial incentives to couples who have children, including lump sum payments per birth and maternity pay for 12 months (Nazarbayev 2008).
[31] Aldashev and Guirkinger 2012, 403.
[32] In 1897, only 33% of the population of Akmolinsk Region was ethnic Russ, but this grew to 60% by 1916 (*Ibid*).
[33] Artykbaev 2004, 133.
[34] Arkheologiya 2015.

southern Kazakhstan[35] and Irtysh River in the east.[36] These studies incorporated the surrounding context, describing rock-art panels' topographical settings and, in some cases, including photographs of it. Figure 2.3 shows the rock outcrop known as Jaltırak Kash (literally 'shiny stone' in Kyrgyz) near southern Kazakhstan's border. This demonstrates consideration for the surrounding landscape in relation to rock-art, though the quality of photography at the time limited its efficacy in conveying much information beyond the rock's form. More recent publications, however, feature large, high-resolution photos of the landscape, with colour photos of panels accompanying greyscale drawings. An example of this is the international rock-art survey published in 2011 as *Rock Art of Kazakhstan*.[37] This volume was published in Korean, English, and Russian, highlighting the fact that most research is published in languages other than Kazakh. Whilst this makes them more accessible to an international audience, regional studies on rock-art in Kazakhstan remain scarce, with a 'region' oftentimes encompassing an entire mountain range, as in the case of the rock-art of the Eshkiolmes, which is referred to as a singular site, but covers an area over 30 km.[38] Using such sizes as the basis of analytical scales makes it difficult to produce an in-depth description of the material, so research is, from the outset, limited to a cursory overview.

2.1.2 Mongolia

The Altai Mountains are situated in the far west and southwest of Mongolia in the regions roughly corresponding to modern Bayan-Ulgii aimag (Figure 2.4]) Bayan-Ulgii in particular retains a population majority of Kazakhs, which has increased in recent years, despite incentives offered by the Kazakh government during the 1990s for ethnic

[35] Sher *et al*. 1987.
[36] Samashev and Sher 1992.
[37] Samashev *et al*. 2011.
[38] Institute of Archaeology, Ministry of Science - Academy of Sciences 1998.

Kazakhs to relocate to Kazakhstan.[39] The local economy is based on transhumant pastoralism, which involves seasonal movement between two or four set locations, with warmer months usually spent at higher altitudes. This differs from mobile strategies typically employed by Mongolian pastoralists, who migrate between multiple locations that vary annually.[40]

Mongolia received strong Marxist influences during its period as a satellite state of the USSR, but modernism, promulgated in Mongolia by various mechanisms, was limited mainly to elite circles during the early 20th century.[41] After this, propaganda promoting a class struggle ideology dominated, however, not only were key literary works from Moscow ignored by the populace of the newly-formed Mongolian nation,[42] but key economic policies also had to be thrown out due to grassroots opposition.[43] In contrast to the PRC, where the populace proved amenable to mass mobilisation for establishing a Communist ideology, the social response to Marxism in Mongolia was far more muted and driven predominantly by an outside power.

During the 20th century, archaeological surveys were conducted in collaboration with Soviet researchers and those from countries friendly to the USSR, however, the majority of sites were not published.[44] The influence of Soviet methods is evident in the publications that do exist, in the form of meticulous descriptions of artefacts and assigning cultural affiliations according to typologies of style.[45] In recent years, archaeology has gained in momentum and researchers from a variety of countries and

[39] Barcus and Werner 2016, 4–5.
[40] Soma Takuya 2014, 102–103.
[41] Sneath 2003, 40.
[42] Krueger 1959, 29.
[43] Sneath 2003, 41.
[44] Novgorodova 1989, 5; Shackley 1984, 24–25.
[45] An example is found in a brief report of a Xiongnu (*c.*209 BCE–93 CE) burial in Bulgan aimag, several pages of which are dedicated to describing differences between the arrowheads excavated and where their parallels have been found elsewhere (Aseyev *et al.* 1987, 130–132).

backgrounds have conducted collaborative research projects, including: the Mongolian—American—Russian *Altay* Project;[46] the Mongolian—American—Kazakh *Rich Cradle Expedition*[47] and *Khanuy Valley* Project;[48] and the Mongolian—Korean *Research and Conservation of Cultural Heritage in Mongolia 2009-2011*.[49] Rock-art has benefited from this interest, as Mongolian archaeologists include it as a form of archaeological evidence to be recorded alongside other monuments. Many of the publications produced on local, as well as nationwide, rock-art have been written by local researchers, such as K. Bikhumar, Ts. Turbat, and B. Omirbek's *The Historic and Cultural Monuments in Bayan-Ulgii Aimag*.[50] Similar to major publications coming from Kazakhstan, these works are multi-lingual, with the aforementioned volume by Bikhumar *et al*. featuring descriptions of sites in Mongolian, English, Russian, and Turkish. English is not, however, always included, with Mongolian and Russian being far more common.

2.1.3 Russia

The Russian Altai is encompassed by the Altai Republic, though the mountains also extend into Altai Krai (Figure 2.5). The Russian Altai has been influenced by several Central Asian mobile groups, but was incorporated into the influence sphere of western Mongols and Oirats in the mid-15th century CE. The mountains were not brought into the Russian Empire until 1756, when the southern Altai was brought under the tsar's control.[51] Although the official internet portal of the Altai Republic states that this gave

[46] Jacobson and Meacham 2010.
[47] Kortum *et al*. 2005, 7.
[48] Allard *et al.* 2006.
[49] Published in three volumes: BNSU-ïn Soyolïn öviyn sudalgaanï ündesniy hüreelen and MU ShIA-iyn Arhyöologiyn hüreelen 2011; Tongbuga Yŏksa Chaedan and Arkheologiĭn Khŭrėėlėn 2009.
[50] For a summary in English of research on rock-art conducted in Bayan-Ulgii alone, see Omirbek *et al.* 2009, 13–15.
[51] Respublika altay: ofitsial'nyy internet-portal 2017.

'the Altaians' protection from encroachment by Qing dynasty forces,[52] there was only one group in the central Altai Republic[53] that referred to itself as 'Altaian' before 1917.[54] The region was designated the Oirat Autonomous Oblast in 1922, but traditional practices were supressed during the 1930s, when Soviet discourse attacked nomadic lifeways as a cause of social inequality. Soviet leaders also attempted to suppress the social power of tribe elders (*zaisan*), whom they linked to tsarist colonial policies that oppressed the masses.[55] The Altai Republic was created in 1992 after the formation of the Russian Federation.[56] In a 2010 census, Russians made up 56.63% of the republic's population, with Altaians forming 33.94%. The next largest nationalities were Kazakh (6.18%), followed by Telengit (1.9%), Shalgan (0.93%), and Kumandin (0.52%).[57] The census data demonstrates that, despite encouraging Russian migration, there remains a sizeable non-Russian population in the Altai.

Archaeology in Russia has been heavily influenced by Karl Marx's views on history, which emphasise the effect of education and social processes on an individual's nature. [58] Marxism dictates that economies are determining phenomena in the development of any socioeconomic system.[59] The influence of the impetus from the Russian political sphere to adhere to Marxist frameworks of thinking throughout the mid-20th century can be seen in the responses of commentators on Iu. V. Bromlei's article questioning the meaning and purpose of the concept of *ethnos*. Almost every commentator uses the phrase 'we Marxists' emphasising their adherence to establishing

[52] *Ibid*.
[53] Onguday and Ust-Kansky Districts
[54] Potapov 1952, 76.
[55] It is argued that leaders concentrated on undermining the social position of tribe elders, because they threatened their own power (Oktyabr'skaya and Samushkina 2014, 60-61).
[56] Respublika altay: ofitsial'nyy internet-portal 2017.
[57] Of respondents, 1.67% from the Altai Republic did not list a nationality (Federal'naya sluzhba gosudarstvennoy statistiki 2010).
[58] Tegako and Zelenkov 2011, 33.
[59] Bromlei *et al*. 1974, 91.

Marxist theories as indisputable.[60] Such explicit obeisance to an ideology is not seen in publications in the PRC from the same period, where a similar process of ideological reeducation was, nevertheless, taking place. The importance attached to economic factors lent significance to material culture as an indicator of this economy. This focus on the economy served to demonstrate stages of social development that fit with Marxist ideology, whilst the new generation of archaeologists simultaneously sought to reject explanations of the past forwarded by pre-Revolution archaeologists.[61] One of these was the concept of ethnogenesis, which was subjected to rigorous critique, with archaeologists identifying new prehistoric ethnic groups in the material they excavated.[62] An issue with this research is that it resulted in the projection of an '*a priori* model onto the archaeological material.' [63] However, other schools of archaeological thought supported alternative theoretical approaches, including 'descriptive archaeology', wherein strict procedures for categorising material culture were set down. This method sought to avoid pre-emptive interpretations by restricting the researcher to objective description of the material.[64] The method of intricately describing the excavated material persists in publications today, with many describing an artefact's formal attributes, e.g. colour, design, and form, in meticulous detail, which became unpopular in Western research with the advent of processual archaeology.[65] Such treatment of archaeological assemblages persists in nations heavily influenced by Marxist thought, such as Russia and the PRC, even though the theoretical frameworks may have changed.

[60] *Ibid.*, 91.
[61] Post-Revolution archaeologists placed particular emphasis on identifying autochthonous developments, in contrast to their predecessors, who had favoured explanations of migration and diffusion for changes in material assemblages (Bulkin *et al*. 1982, 275).
[62] *Ibid.*, 276–277.
[63] *Ibid.*, 281.
[64] *Ibid.*, 282.
[65] Buchli 2004, 180.

2.1.4 PRC

The PRC's most northwestern province encompasses the Altai and is called Xinjiang Uyghur Autonomous Region (*xinjiang weiwu'er zizhiqu* 新疆維吾爾自治區) (Figure 2.6). This province measures approximately 1,664,897 km² and is divisible between two topographic basins; the Jungar (*zhunga'er pendi* 準噶爾盆地) and Tarim (*talimu pendi* 塔里木盆地), which are divided by the Tianshan 天山 range that runs east-west. The Altai forms the northern border of the Jungar, which conforms approximately to the historical region known as Dzungaria, though this also incorporated parts of eastern Kazakhstan and southern Russia. Peter Weiming Jia *et al.* characterise the Jungar as the easternmost extension of the Eurasian Steppe, whereas the Tarim Basin is described as more akin to the oasis settlements of Central Asia.[66] The Jungar is currently administered by the PRC, so research is conducted and published in Mandarin Chinese, however, the majority of research conducted in Chinese, as well as that by foreign researchers, tends to focus on regions closer to dynastic China, with studies on the PRC Steppe often focussing on the provinces of Gansu 甘肅 and Inner Mongolia (*nei menggu* 內蒙古).[67] Confusion caused by the indefinite delineation between the prehistoric Steppe and what can be considered 'ancient China' is demonstrated by the fact that Chinese archaeologists refer to the provinces of Gansu, Qinghai 青海, Inner Mongolia, and Liaoning 遼寧 as the PRC's Northern Zone; an inherently Sino-centric

[66] Jia *et al.* 2011, 169.

[67] Studies of relations between China and the Steppe tend to focus on Gansu Province (e.g. Linduff 2002). Ursula Brosseder collectively refers to Xinjiang, Dzungaria, Inner Mongolia, Mongolia, and South Siberia as *Innerasien*, whereas *Zentralasien* applies to regions further west, including Uzbekistan, Tajikistan, and eastern Kazakhstan (Brosseder 2013, 90). In general, however, distinctions between Central Asia, Inner Asia and other terms for this area vary depending on the researcher, so must be assessed on a case by case basis.

concept,[68] as it denotes a geographic position in relation to the PRC, but some researchers use it in lieu of a better term to refer to the area.[69] The Jungar is excluded from these geographic terms, thus is in a liminal zone that is neither China nor Central Asia, which affects the research frameworks that include the area.

Specific examples of the Jungar's exclusion include the major work by Jacobson-Tepfer and Meacham of western Mongolian archaeology, who note that no survey has been conducted on the northern Jungar, concluding that exisiting reports show there is little archaeology on the Chinese side of the Altai.[70] However, this impression results from a combination of published Chinese material being often quite inaccessible, particularly for non-Chinese, and an overall much slower rate of publication for archaeology in Xinjiang compared to the rest of the PRC. Xinjiang is largely neglected in narratives of Chinese history; of the 475 pages of Liu Li and Chen Xingcan's comprehensively titled *The Archaeology of China*, only nine pages concern eastern Xinjiang, with western Xinjiang not even mentioned.[71] Similarly, Anne P. Underhill's *A Companion to Chinese Archaeology* does not mention Xinjiang,[72] whilst Cheng Xingcan's *Research on the History of Prehistoric Chinese Archaeology (1895-1949)* mentions discoveries in Xinjiang only because they relate to modern research issues, rather than integrating the province into the macro-narrative of PRC history.[73]

The situation above is not assisted by the fact that archaeology during the 20th century was dominated by perspectives that 'Chinese civilisation' originated in and

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[68] Wu'enyuesitu uses Northern Zone (*beifang* 北方) to denote the part of the PRC currently north of the Great Wall, stating that, 'it does not include Liaodong [Province] and the Hexi Corridor' (Wu'enyuesitu 2008, 1).
[69] Shelach 2009, n. 1.
[70] Jacobson and Meacham 2010, 132.
[71] Liu and Chen 2012.
[72] Underhill 2013.
[73] Chen Xingcan 1997.

around the Central Plain (*zhongyuan* 中原) (Figure 2.7), a lowland area associated with agriculture and several major cities of both early and later dynasties, including Luoyang 洛陽, Xi'an 西安, and Kaifeng 開封. Chinese archaeologists perceived the Central Plain as a core area, from which culture and technology diffused out to neighbouring regions, facilitated by the expansion of dynastic control. A problem with this is that the dynasty canonised by Chinese historiographers as the 'legitimate'[74] dynasty was never the sole political actor in the territory that is now the PRC. During the 8th–5th centuries BCE, as an example, the 'legitimate' Zhou dynasty's power gradually waned and its feudal states gained autonomy, so that even the so-called core area of Chinese civilization was divided between contending powers. This situation illustrates that there were multiple political actors at any time, in addition to what historiographers identify as the 'legitimate' dynasty. As the history of the PRC has, for a long time, been equated with dynastic history,[75] people throughout the country have understood local archaeology in relation to the Central Plain. However, the past decade has seen an increasingly regional perspective promote the concept that there were multiple origin points for the PRC's civilization and the potential for places outside the Central Plain to have developed technologies independently.[76]

Popular media and tourism literature in the PRC refer to the Altai as the Thousand Mile Rock-art Corridor (*qianli yanhua changlang* 千里岩畫長廊),[77] as the southern Altai is characterised by steep valleys that ascend rapidly in altitude, with

[74] A dynasty's legitimacy was perceived as conferred by heaven (*tian* 天) from at least the 1st millennium BCE. Heaven's favour was demonstrated by social stability, good harvests, etc., whereas dynasties that lost this mandate of heaven suffered civil unrest and famine. Zhao describes this as a form of performative legitimacy (Zhao 2009, 420–422) and it was part of a practice of constructing an orthodox history (*zhengshi* 正史) (Chen 2004, 178).
[75] Luo Yuanzhen 1988.
[76] Liu and Chen 2012, 11; Glover 2006, 20; Ge Yan and Kaiselin M. Lindaofu 1991, 76.
[77] Tian Bochuan 2009; Hou Jun and Huang Chuanyou 2004, 50.

rock-art distributed throughout them. This perception of the southern Altai as a 'corridor' has been forged by the lack of permeability of the PRC's borders with other countries, which has created an understanding of the Altai as a natural barrier, further perpetuating the idea that any restrictions on movement are natural and not politically-dictated. However, the valleys of the Chinese Altai are connected with those of the Kazakh Altai, as well as the inter-montane river basins of Russia and Mongolia.[78] Government administration of this area as a border zone presents impediments to surveying the status of rock-art and restricts what information can be published. Information is more often available through popular media, rather than academic publications, for example, the online encyclopaedia Baike 百科 lists major rock-art sites,[79] showing that it is acceptable to publicly identify them. However, academic publications are more restricted, as, in many cases, even if GPS coordinates are provided, they are usually those of a city or mountain near the site.[80] Generic descriptions of the location, such as '25,000 m northwest of Altay City'[81] are equally common and insufficient to locate a site. Maps are politically sensitive in the PRC, predominantly due to continuing border disputes with India, Taiwan, Bhutan, Vietnam, Indonesia, the Phillipines, Japan, and other neighbouring countries,[82] with geographic information viewed with suspicion if authorities cannnot control it. This is particularly the case for Xinjiang Province, where varying degrees of civil disobedience have occurred since 2008, including major riots in the provincial capital of Ürümqi (*wulumuqi* 烏魯木齊) in 2009 and southern Xinjiang

[78] Klinge *et al.* 2003, 288–9.
[79] Hudong Baike 2010.
[80] An exception to this is the article by Changji huizu zizhizhou wenwu puchadui 1993.
[81] Su Beihai 2013, 47.
[82] For a concise history of the PRC's border disputes (resolved and ongoing), see Shen 2012.

in 2011.[83] As a result, there has been heightened sensitivity to any behaviour interpreted as threatening national stability, including foreigners mapping this border region. Three British geology students studying seismic activity were arrested in Aksu County (*akesu xian* 阿克蘇縣) for 'illegal map-making activities' and fined 20,000 RMB[84] in 2009.[85] An American citizen was similarly fined in 2012 for collecting geographic data.[86] Such policies prevent foreigners, such as Kazakhs, Mongolians, and Russians, from conducting research that includes Xinjiang, as their data are automatically restricted and a landscape study of rock-art will find site locations deliberately concealed. The main method of collecting data, therefore, is to use online resources, which can be used to locate the general area of a site.

Rock-art in the PRC is rarely included in archaeological studies or integrated with archaeological research frameworks. Though an archaeological report might acknowledge the presence of rock-art near a site, they are unlikely to contain a substantial section dedicated to nearby rock-art in the same way as they may for surface finds made from ceramic or bronze. Instead, rock-art is mainly restricted within its own field and publications dedicated to the subject have appeared since the 1980s, including Gai Shanlin's study of Yinshan 阴山 in 1986,[87] and, for Xinjiang, Su Beihai's syntheses of 1994 and 2013.[88] Similar to archaeology, these rock-art studies rely heavily on

[83] The rise in violent incidents in Xinjiang is attributed, not to increasing dissatisfaction with Han rule, but to the development of a Uyghur identity. Isabella Côté notes that Uyghur people originally identified themselves as members of their particular oasis town, which preceded any concept of a Uyghur identity till relatively recently. Through classifying all Uyghur as a single ethnic group, therefore, the PRC has assembled a group of people who view themselves as non-Han and, as a result, non-Chinese (Hayes 2016, 63; Côté 2015, n. 1). For a timeline of reported incidents in Xinjiang from 2008 to 2015, see Radio Free Asia 2015.
[84] Approximately £1980 or €2220 at the time (XE 2009).
[85] Wu Feng 2009.
[86] Chen *et al.* 2013, 239.
[87] Gai Shanlin 1986.
[88] Su Beihai 2013; Su Beihai 1994.

constructing descriptive typologies of the material,[89] a method originating in Chinese historiography, wherein historians presumed that the truth of a situation (and the moral message) would become self-evident if the facts were objectively recorded.[90] However, this has created a number of accepted paradigms that prehistoric material is forced to fit into. An example of this is the doctrine that matrilineal societies predate patrilineal societies, a paradigm relied upon to assign a 1st millennium BCE date to rock-art in the Tianshan at Kangjiashimenzi 康家石門子.[91] Such a hypothesis preemptively determines that the researcher look for indicators of female or male dominance in imagery where none is expressed. More recently, an array of interpretative approaches to rock-art have been published, including Zhu Yuan's examination of aesthetics[92] in rock-art throughout the PRC,[93] as well as Shu Xihong and Li Xiangshi's work on nomadism's relationship to rock-art.[94] To date, however, there is no study that has treated rock-art in the Chinese Altai, or even the Jungar Basin, holistically as part of the Steppe and Siberia.

2.1.5 Summary

The countries bordering on the Altai Mountains, though the products of very different historical trajectories, are unified from the aspect that all experienced strong Marxist influences during the formative periods of their modern nation states. Although poor infrastructural development in modern times means that research on the Kazakh side of the Altai is less abundant than in its neighbouring nations, rock-art research typically

[89] Describing the material thoroughly is perceived as a method to then determine absolute stages of development (Olsen 1987, 286).
[90] Von Falkenhausen 1993; Chang 1981, 157.
[91] Wang Binghua 1992, 6.
[92] As discussed in 1.2.1, aesthetics is used in this thesis to denote principles that are expressed outwardly through behaviour, actions, or visual declaration.
[93] Zhu Yuan 2013b.
[94] Shu Xihong and Li Xiangshi 2007.

incorporates the landscape as part of the cultural context. As a Soviet satellite state, Mongolian society was reorganised according to Marxist Soviet principles – into collectivist farms – but ideological propaganda did not take so effectively that this could not be reversed after the withdrawal of the Soviet Union. Currently, Mongolian rock-art research, as well as archaeology more generally, is willing to collaborate with international partners, thus studies tend to consider the trans-national implications of their findings. Historically, the Russian Altai has been home to various different nationalities, but these were reorganised into sedentary, agricultural societies during the 20th century. Since then, there has not been a concerted effort to revert to traditional lifeways, but rock-art research now incorporates what would be termed the phenomenological approach in Western archaeology, in addition to highly descriptive analyses. Finally, the PRC side of the Altai is far removed from the 'core area' of Chinese civilisation, thus is frequently excluded from narratives of the nation's past. Violent civil unrest in the province also means there is political aversion towards foreigners working in the area, which adds another impediment to publishing archaeological data and collaborating internationally. The importance of this information to this thesis is that, though the author aims to create a holistic study of the Altai Mountains, the area is split between four nations that have developed in different ways and operate differently from each other, which influences both the data available, as well as how the rock-art of this region has been and is to be approached.

2.2 Archaeological context

2.2.1 Time period

The period covered by this thesis is approximately 2500–500 BCE, which includes the Bronze Age, as well as the centuries immediately preceding and succeeding it. The reason for this is that petroglyphs are usually assigned quite broad date ranges, such as *Bronze Age* or *Iron Age*, which correspond roughly to the 2nd millennium BCE and 1st

millennium BCE respectively in the region around the Altai.[95] The period prior to the Bronze Age is referred to as the *Neolithic*, however, this covers *c.* 8000–2500 BCE.[96] Such a huge range makes it difficult to talk about the *Neolithic* as a discrete period, instead it is often broken up for convenience into *Early*, *Middle*, and *Late* stages.[97] Rock-art, however, is assigned to the *Neolithic* generally, which is problematic for examining how earlier rock-art relates to or deviates from that of the Bronze Age. Consequently, in the event that a *Neolithic* image can be dated more precisely to the *Late Neolithic* using the techniques of overlay, patina, etc., and is relevant to this thesis' discussion, it will be incorporated.

Archaeology of the 2nd millennium BCE Eurasian Steppe is of particular interest to research, as this is the period when practices now strongly associated with the Steppe crystallised, including mobile herding economies and horse riding. In the eastern Steppe, the earliest indication of pastoralism is identified among Afanasevo cultural remains, dated *c.* 3700–2400 BCE, however, it was not until later in the 2nd millennium, approximately 1700 BCE onwards, that large cultural communities practising various forms of pastoralist-agricultural strategies dominated the Steppe.[98] Additionally, the advent of horse riding remains slightly contentious. Evidence for reliance on horses as livestock has been found in at Botai (3700–3100 cal BCE) in northern Kazakhstan,[99] however, it is not unequivocal that the horses were ridden; support for riding by this time comes mainly from the assumption that it would be difficult to manage a herd of horses without riding.[100] However, most researchers consider riding to have only

[95] Guo Wu 2012, 9.
[96] Li Guoqiang 2015, 93; Chen Youcheng and Qu Tongli 2012, 20.
[97] Chen Zhaofu 2008, 353.
[98] Dergachev 1989, 798–799.
[99] Olsen 2006, 257–260.
[100] Anthony 2007, 221; Olsen 2006, 265.

become a significant Steppe practice towards the end of the 2nd millennium BCE.[101] Prior to this, horses likely occupied very different positions in society from what modern research may anticipate – the modern image of mounted nomads roaming the Steppe and dominating it by military means is retroactively applied to prehistory from characteristics associated with Chinggis Khan's hordes, rather than concrete evidence.[102]

In addition to the above, the development of key technologies and their spread across Eurasia can be traced to Steppe groups. Bronze metallurgy has received the most attention recently, with scholars arguing that it was introduced to China from the Eurasian Steppe through Xinjiang and the Hexi Corridor (*hexi zoulang* 河西走廊),[103] as well as to Southeast Asia by *c*. 2000 BCE along a route bypassing the Central Plain via Sichuan and Yunnan.[104] The Altai mountains in particular have been identified as a possible source of tin for bronzes made by 2nd millennium BCE Steppe groups, as well as those made in the Central Plains.[105] This is but one of several forms of archaeological evidence that implies long-distance connections between the Steppe and Central Plain. Similarly, the tomb at Anyang 安陽 in the Central Plain belonging to Fuhao 婦好

[101] For an outline of the argument regarding whether site assemblages prove horse domestication or riding, see Hanks 2010, 474.
[102] Robert Drews traces this fear of terrifying nomadic hordes to R. L. O'Connell's 1997 work, *Ride of the Second Horseman: The Birth of Death and War*, which characterised the steppe as a source of fearsome nomadic warriors who preyed on peaceful sedentary societies from as early as 4000 BCE (Drews 2004, 5).
[103] Mei *et al*. 2015; Chen Guangzu 2012; Linduff and Mei 2009, 276–277; Mei 2009, 222.
[104] The metallurgical package of Southeast Asia is broadly agreed to have arrived fully developed. Joyce White and Elizabeth Hamilton identify the most likely route of technological transmission to be from Northwest China, through Sichuan and Yunnan, a route that bypasses the Central Plains. This would explain why Southeast Asia's metallurgical tradition was quite similar to that of the steppe (White and Hamilton 2009, 358 & 387–390).
[105] In 2000, Li Shuicheng and Shui Tao suggested the Xinjiang was likely an important locus in the spread of metallurgical technology, however, as, 'no remains clearly dating to before 2000 BCE have been found yet, drawing any conclusions would be reckless' (Li Shuicheng and Shui Tao 2000, 42). Since then, further discoveries have indicated that the tin used for late 3rd millennium BCE Seima-Turbino and Central Plains bronzes originated in the Altai, with some suggesting that the lack of tin sources in other parts of the steppe caused metallurgists to replace it with arsenic (Lin Meicun 2015, 58; Chen Guangzu 2012, 63).

(*c*. 1200 BCE),[106] consort and general of the Late Shang Dynasty (*shang chaodai* 商朝代) (*c*. 1200–1046 BCE) king Wu Ding 武丁, contained many jade pieces, three of which were amphibole jades with microscopic structures matching those from sources in Khotan Prefecture (*hetian diqu* 和田地區), southern Xinjiang.[107] These are just several examples of evidence for long-distance connections between Central Asia and regions further east.

A type of archaeology that has drawn focus to mountainous environments specifically is archaeobotany. Whilst it has long been acknowledged that Steppe groups from the late 2nd millennium BCE practised mixed subsistence strategies comprising animal herding, agriculture, fishing, and hunting at any one time,[108] materials from recent excavations suggest that it may have been relatively common for agriculture to supplement herding economies. As a result, archaeology in the Steppe has become key to discussions on the spread of broomcorn and foxtail millets from East Asia to Western Asia and the reverse process for wheat.[109] This has brought attention to the Jungar, which is postulated to be the most plausible route for wheat to have been taken into China.[110] This scholarly attention has also prompted theoretical developments that are more inclusive of mountain environments. For instance, Michael Frachetti has proposed that an *Inner Asian Mountain Corridor* (IAMC) ran north-south through Central Asia during the 3rd–4th millennium BCE, linking low-altitude settlements by mountain paths. Evidence for this comes from the faunal assemblage at Sarazm (*c*. 3500–1500 BCE),

[106] Analysis of historical sources allowed the initial excavation report to date Fuhao to the reign of King Wu Ding. Details of her tomb and grave goods, including the jades, are available in Zheng Zhenxiang and Chen Zhida 1977, 91.
[107] For a thorough overview in English, see Wang 2011, especially p.682.
[108] Honeychurch and Amartuvshin 2007, 36–37.
[109] The movement of wheat and barley from Southwest Asia to East Asia has been described as, 'one of the key features of food globalization in prehistory' (Liu *et al*. 2014, 662).
[110] Svyatko *et al*. 2013, 3943.

Tajikistan, a site located between mountains to the east and agricultural sites centred on the Zarafshan River. The faunal remains contained a large number of sheep/goat (87%), cattle (10%), and dog (<1%),[111] which is more indicative of a mountain pastoralist economy than an agricultural one, suggesting the site was closer to mountain societies than to the low-land agricultural groups favoured by archaeologists. Additionally, domesticated wheat and millet were found at Begash Phase 1 (*c*. 2460–1950 BCE), Kazakhstan, with no evidence for local cultivation, leading Frachetti to suggest they were brought there along the IAMC.[112] Though this is feasible, an issue is that Frachetti assumes the Altai is part of the IAMC. This is unrealistic, as there are vast differences between 3rd millennium BCE Altai sites and those further south, including ceramic assemblages, metallurgical traditions, and faunal assemblages.[113] The important point, however, is the IAMC theory marks a crystallisation of ideas contesting widely held assumptions that mountain environments are barriers to movement and interaction. In Anglophone literature, in most disciplines, it is common to find either direct references to mountains acting as barriers,[114] or *a priori* assumptions that mountains are impermeable.[115] Similarly, Aleksei A. Tishkin has observed that Gryaznov's 1955 hypothesis of no advanced technology or bronze reaching high-altitude mountain environments continues to inform archaeological research today, even if the assumption is framed differently.[116] More recently, however, researchers have questioned these claims and there is now a large amount of work being done that targets mountain

[111] Frachetti 2012, 13.
[112] Frachetti suggests millet and wheat were transported to Begash for ritual use (*Ibid.*, 15).
[113] Anthony 2012.
[114] Kwang-Tzuu Chen and Fredrik Hiebert characterise the Junggar as 'bounded on the north by the Altai mountains and on the south by the Tianshan range […] massive mountains interspersed with depressed valleys form natural passages between China and former Soviet Union [sic].' The language used implies that the Junggar is cut off from the steppe by the mountains and can only be accessed through lower-altitude passages (Chen and Hiebert 1995, 248).
[115] For example, Korisettar 2007, 69; Mahaney *et al*. 2007, 803; Ballantyne and Dawson 1997, 30.
[116] He cites work from the 1990s up to recent work by Shul'ga in 2008 (Tishkin 2011a, 274).

environments specifically.[117] The work of Lynne Rouse and Barbara Cerasetti at Ojakly (*c.* 1600 BCE), Turkmenistan, not only supports the concept that peri-montane communities were more closely linked than with their immediate lowland neighbours, but also indicates that this pattern continued further into the 2nd millennium BCE.[118]

Key changes during the period examined in this thesis include the appearance of practices later considered typical of Steppe cultures – pastoralism and horse-riding. In addition, the movement of raw materials from the Steppe to the ancient Chinese states is indicative of a wider pattern of cultural exchange and interaction, though metallurgy has attracted the most attention, due to it becoming such a major part of ancient Chinese cultural practices. Finally, archaeobotanical finds in locales connected by mountain ranges in Central Asia have pushed researchers to reject assumptions that mountains are boundaries and examine the role of these environments in human interactions during the 2nd millennium BCE in particular.

2.2.2 Cultures

The geographic and temporal scales under investigation in this thesis mean the archaeological context is quite vast. Due to increasing interest in Steppe archaeology, the amount of data available has also become quite large, however, it is beyond the confines of this study to give a satisfactorily thorough overview of every age and aspect. Consequently, this section utilises the socio-evolutionary concept of archaeological cultures, prevalent in Steppe archaeology, solely for the purpose of organising the evidence and presenting concise summaries of the archaeology. Whilst the utility of

[117] V. D. Kubarev argued that the Altai, far from being a division between modern nations, actually unites and connects them (Kubarev 1999, 198).
[118] The inhabitants of Ojakly likely traded extensively with lowland societies, as indicated by the ceramic assemblage. However, their own subsistence strategy does not appear to have involved any agriculture, instead they were primarily pastoralist hunters (Rouse and Cerasetti 2014, 47).

archaeological cultures as a concept is hotly debated,[119] the usage of culture names here merely refers to groupings of artefacts determined by stratigraphic, temporal, and typological relations, without any assumption about social or political structures other than what can be inferred directly from the archaeological remains.

2.2.2.1 Afanasevo

This is a particular style of material culture concentrated mostly in the foothills between the Altai and Sayan mountains. The first tombs were excavated at Afanaseva Gora in 1920 and were observed to be markedly distinctive from anything seen previously, thus the excavators designated it the Afanasevo culture.[120] By the late 1960s, 19 cemeteries comprising hundreds of tombs had been discovered in the Minusinsk Basin and eight in the Altai.[121] One suggestion for the location of Afanasevo sites in these areas was that there are many sources of copper ore and the land would have been more amenable to nourishing livestock and/or crops.[122]

The material assemblage referred to as Afanasevo has 28 radiocarbon dates that situate it between 3705 cal BCE and 1883 cal BCE, though 24 of these are within the range 3700-2400 BCE.[123] These samples are published in Svetlana Svyatko *et al*., however, all are for sites within the Minusinsk Basin. Additionally, this thesis has excluded dates with extensive ranges, such as the one from Maliye Kopeny II, Kurgan 2, which covered nearly 1000 years between 3625–2679 cal BCE. Additionally, some samples appear to be more recent artefacts mixed in with older contexts, whereas the

[119] Attempts throughout the 1930s–1960s to define *archaeological culture* were met with little success, as all failed to meet the criteria of a scientific definition – a requirement important to Soviet archaeology at the time. However, this did not prevent archaeologists from using the term, with some, like Mikhail P. Gryaznov, loosely conceptualising a culture as something distinct from its contemporaries, predecessors, and descendants (Kitova 2015, 44).
[120] Gryaznov 1969, 46.
[121] *Ibid.*, 47.
[122] Naumov 2006, 17.
[123] Svyatko *et al*. 2009, 247 & 266.

possibility of old wood effect cannot be excluded for samples returning much older dates.[124] As more recent, calibrated radiocarbon dates for Afanasevo sites in the Mongolian Altai, such as Huuray Govi in Ulan-hus sum, have returned dates towards the end of the 3rd millennium BCE,[125] it appears that some of the much older dates may indicate a lack of calibration, thus this study will take Svyatko *et al.*'s results of *c*. 2900–2400 BCE as the most reliable chronology.

Settlements are small and appear to have been short-lived,[126] indicating that the form of pastoralism practised likely involved a degree of mobility and that Mikhail P. Gryaznov's hypothesis that Afanasevo communities included no more than 10 families is tenable.[127] Faunal remains indicate an economy reliant on herding livestock (sheep, cattle, horses) and some arable cultivation, as well as hunting and fishing.[128] A hearth excavated at the settlement of Tensey in 1968 was 1 m in diameter and 20 cm deep surrounded by stone slabs, suggesting it was adapted to contain a layer of hot embers. Ceramics excavated from tombs often have traces of burnt deposits only appearing on the upper part of the vessel, which indicates that it could have been buried in hot embers for cooking purposes.[129]

Burials were constructed with a square pit as the central feature, usually larger than 4 m², orientated northeast-southwest and covered with a single layer of logs. The grave is covered by a mound constructed of soil and an external stone layer. A circular enclosure anywhere between 3 to 12 m in diameter and built of small stones surrounds the mound. It is most typical to find that the enclosure above-ground has been destroyed,

[124] *Ibid.*, 247.
[125] Taken from human bone, wood, and charcoal excavated from Kurgan 2 (Kovalev and Erdenebaatar 2007, 80).
[126] Dergachev 1989, 798.
[127] Gryaznov 1969, 49.
[128] Naumov 2006, 17.
[129] Gryaznov 1969, 48–49.

leaving what are known as 'Afanasevo rings' (Figure 2.8).[130] Enclosures can contain several graves and there can be several sets of human remains in one grave. Subsidiary burials are found in the space between the main grave and enclosure wall. Whilst these can contain both adults and sub-adults, sub-adults below roughly two years old are most common.[131] Those interred in the grave are usually placed on the southeast side of the pit. The northwest side is filled with grave goods, which can include ceramics, stone, and metal objects. It is also likely that wooden artefacts and organic materials were placed with the deceased.[132] There are rarely more than 20 tombs in a cemetery, but the largest cemeteries are Karasuk III and Afanasyevskaya Gora, which have 58 and 70 burials respectively.[133] Gryaznov argued that this indicates the Afanasevo lived in small groups of only a handful of families,[134] however, using structures of death as direct for practices of the living is highly problematic.

Remains of non-human animals that are found in tombs include domesticates (cattle, horses, and sheep), as well as wild species (bison, roe deer, fox, and chipmunk) and fish (pike). Gryaznov suggested that it was the practice to lay a piece of whatever meat one had available by the grave of the deceased,[135] however this does not take into account what meat sources were available at the time when the individual was buried, which would have been strongly influenced by seasonal factors and animals that were common to the locale.

Stone arrowheads are sometimes found in tombs, though usually in a position that indicates they were embedded in the flesh of the deceased. For instance, one

[130] *Ibid.*, 47.
[131] *Ibid.*, 48.
[132] *Ibid.*, 47.
[133] *Ibid.*, 48.
[134] *Ibid*.
[135] *Ibid*.

individual excavated in the Altai had one stuck in the thoracic vertebrae.[136] Excavated vessels are made from either ceramic or wood though it has been suggested that other containers were made from animal skins or plants. Knowledge of Afanasevo decorative strategies is limited to a few metal and bone items with simple patterns that are also found on their ovoid vessels with pointed bases (Figure 2.9).[137].

Although the Afanasevo made use of metal, this was hammered and not cast. Additionally, stone was still the primary material for many implements, such as axes, spearheads, arrowheads, and knives.[138] Copper was obtained in native form and cold forged to make small ornaments,[139] as well as needles, awls, small knife blades and fish hooks. There are also some cases of arsenical bronze – i.e. copper with >1% arsenic – and silver or gold.[140] However, metal is most often excavated in the form of copper bindings and plaques added to wooden vessels, namely for repair. Cracks in vessels were patched with copper wire or strips and the edges could be decorated with plaques. This gives the impression that metal had a predominantly decorative function and was used to augment objects made from other materials that had significance.

2.2.2.2 Khemcek

In English publications, this culture has been referred to alternatively by its Kazakh name – Shamirshak – an adaptation of the Mandarin Chinese version of its Kazakh name – Qiemurqiek (*Qiemu'erqieke* 切木爾切克) – the older Mandarin version of the Kazakh – Ke'ermuqi 克爾木齊– or its Mongolian name – Khemcek (Хэмцэг). Despite the fact that the type-site for this culture in located in the Altai Region (*Aletai diqu* 阿勒

[136] *Ibid.*, 49.
[137] *Ibid*.
[138] *Ibid*.
[139] Naumov 2006, 17.
[140] Gryaznov 1969, 50.

泰地區) of the Jungar, where Kazakhs currently form the majority, Tsagaan Turbat has pointed out that Shamirshak as a word does not exist in the Kazakh language, but is an adaptation of the Mongolian name.[141] This thesis will, thus, use the Mongolian designation for the culture.

The site of Khemcek was excavated in 1963 by the Archaeology Group of the Ethnic Research Institute of the Xinjiang Uyghur Autonomous Region (*xinjiang weiwu'er zizhiqu minzu yanjiusuo kaoguzu* 新疆維吾爾自治區民族研究所考古組). The brief report giving an outline of the cemeteries and tombs was not published until 1981.[142] Although the publication was limited to a general overview, it is the primary source for details of the Khemcek site, as tracing excavation records and the original notes is extremely difficult. Burials here and at other Khemcek sites in the Mongolian and Russian Altai are rectangular stone enclosures with the long sides orientated east-west. Large stone slabs are placed in the ground to form a rectangular burial chamber, which is reinforced with stone mounds, but these do not cover the grave (Figure 2.10). Grave goods are not frequently discovered, but bronze earrings have been excavated, along with ceramics (Figure 2.11).

Wang Mingzhe, one of the excavators of the original Khemcek site in the Jungar, has argued that parallels between the pottery and the site of Sidaogou 四道沟 in Mori County (*mulei xian* 木垒县), eastern Jungar, indicate that they belong to the same period. As Sidaogou has been radiocarbon dated to 1060±105 BCE,[143] Wang suggests that the earliest burials at Khemcek should also be dated to *c*. 1200 BCE. However,

[141] Turbat 2014, 115.
[142] Yi Manbai notes that Wang Binghua and Wang Mingzhe were also involved in the 1963 excavation of the Khemcek site (Yi Manbai 1981).
[143] Wang Mingzhe 2013, 75.

other researchers have shown that the graves at Khemcek are easily divided into two phases – Phase I comprising graves with only bronze artefacts and Phase II graves with only iron artefacts. The tomb layouts and burial styles in these two phases are also distinct from each other. Based on pottery and metal artefacts that have parallels with remains from Okunevo sites (see 2.2.2.3), as well as sites in Xinjiang and Gansu, Peter Weiming Jia and Alison Betts suggest Phase I of the cemetery is dated to the early part of the 2nd millennium BCE,[144] approximately 2000–1700 BCE. This correlates with some dates for Khemcek sites in western Mongolia, eastern Kazakhstan, and southern Siberia.[145] However, three radiocarbon dates from bone excavated at the burial Iagshiin Khödöö 3 in Khovd aimag, Mongolia, returned even earlier dates of 2470–2150 cal BCE,[146] which puts Khemcek-type material closer to Afanasevo remains. However, as discussed above, more recent radiocarbon dates for Afanasevo sites suggest it may have existed alongside the Khemcek culture for a substantial period of time. Indeed, this is the attitude of many researchers working in the Mongolian Altai, where the two cultures are considered to be quite spatially and temporally integrated.[147]

2.2.2.3 Okunevo

Similar to the Afanasevo culture, Okunevo is found in the Minusinsk Basin, but is not limited to it. Archaeological remains affiliated with the Okunevo are found in the western Altai, as well as the Tuva Republic.[148] The burial layouts and artefact assemblages in Okunevo sites are markedly different from those found at Afanasevo site.[149] Based on 48 samples from the Minusinsk Basin, the Okunevo culture has been

[144] Jia and Betts 2010, 302.
[145] Kovalev and Erdenebaatar 2009, 155–158.
[146] Kovalev 2012, 122.
[147] Terent'ev 2014, 58–59; Kovalev and Erdenebaatar 2007, 81.
[148] Gryaznov 1969, 66.
[149] *Ibid.*, 51.

dated here to *c*. 2700–1800 BCE,[150] though it has been suggested that this should be narrowed to *c*. 2200–1900 BCE due to issues with calibration.[151]

Okunevo cemeteries are composed of groups of square enclosures with walls of stone slabs. Cemeteries contain a much greater number of burials than their Afanasevo counterparts, for instance there are 105 at Syda V and 185 at Chernovaya VIII.[152] The average area of each enclosure can be between 100–200 m² and contain anything from five to 20 tombs ordered haphazardly within the enclosure.[153] The tombs are small cist graves constructed from layers of horizontal stone slabs covered over with more slabs. The interred were placed supine, knees flexed, with the head and feet often pushed against the sides of the grave. Graves were often reused for multiple secondary burials. When this occurred, the earlier remains were either moved aside or possibly removed. For instance, one grave contained only one articulated skeleton, along with supernumerary long bones (MNI = 2) and skulls (MNI = 8).[154]

A wide variety of artefacts were included in Okunevo burials, including copper needles, awls, knife blades and fish hooks, as well as stone axes and arrowheads. Metal seems to have taken over from stone for many artefacts, such as blades and axes.[155] There are also bone harpoon heads that could have been used to catch fish. Along with the fish hooks, this indicates that hunting and fishing were still significant parts of subsistence strategies, which is further substantiated by finds of knuckle bones in tombs

[150] Svyatko *et al*. 2009, 249–250; Görsdorf *et al.* 2001, 1116.
[151] Molodin *et al*. 2014, 145.
[152] Gryaznov 1969, 61.
[153] *Ibid.*, 51.
[154] *Ibid.*, 52.
[155] *Ibid*.

from roe deer and sheep.[156] Stone stele depicting pairs of oxen harnessed to four-wheeled vehicle also indicates that cattle were used as draught animals.[157]

The distinctive decorative and artistic style of the Okunevo has attracted particular attention, as artefacts like the stone stele in Figure 2.12 are unprecedented. The stele figures were attributed to the Okunevo culture after discoveries in graves of stone and bone batons with female heads incised at one end that were similar to some faces on stelae.[158] On these stelae, the face is most typically shown, though sometimes other parts of the body are included such as the chest and arms. The face is often surrounded by animals' horns and ears.[159] The design is either linear (silhouette) when on slab face with pigment in the lines (Figure 2.12), or on the edge of the stone slab with the facial features are carved in relief (Figure 2.13).[160] Individuals in tombs are, additionally, more richly decorated than in previous periods, with colourful stone beads and a variety of plaques used to decorate clothing. There are also finds of wild animal teeth processed to make pendants (bears, deer, wolves, foxes, sables), again, suggesting hunting. Sable teeth are most commonly found and it's always the third upper molar, which are found in large numbers in tombs. One female adult had 250 sable teeth sewn onto her footwear. The pottery, however, is not decorated any more spectacularly than among the Afanasevo material remains.[161]

[156] *Ibid.*, 52 & 61.
[157] *Ibid.*, 61.
[158] Jacobson-Tepfer 2015, 68.
[159] Gryaznov 1969, 63.
[160] For a history of research on these stele, see Belokobyl'skiy 1986.
[161] Gryaznov 1969, 52 & 61.

2.2.2.4 Elunino

Elunino-type remains were initially dated 1800–1500 BCE using a relative chronology based on bronze artefacts found in burials.[162] However, a total of 41 radiocarbon dates taken from the settlement at Berezovaya Luka, Aleysky District, and the cemetery of Teleut Vzvoz-1, Pavlovsky District, were calibrated using OxCal version 3.10. These dates were then assessed alongside archaeological finds to give a date range for Elunino sites between *c*. 2500–1800 BCE.[163] The main publication on this culture is Sergei P. Grushin's doctoral thesis, which does not detail the results from the radiocarbon dating, instead he provides his own chronology, dividing Elunino into Early (2500–2200 BCE), Middle (2200–2000 BCE) and Late (1900–1800 BCE) periods, of which Berezovaya Luka belongs to the Middle and Teleut Vzvoz-1 belongs to the Late.

Excavated settlements attributed to the Elunino culture are located in the western Altai and include Kostenkova Izbushka, Ozerki Vostochnyye, Lyapustin Mys and Korov'ya Pristan' 1, 2 & 3.[164] Grushin divides Elunino settlements into two groups based on faunal assemblages: those with assemblages composed mainly of cattle bones, indicating reliance on a pastoral economy with supplementary hunting (<1%)[165] and fishing, likely semi-mobile pastoralism; and those with faunal assemblages comprising mainly wild animals and fish, with some cattle.[166] The first group includes the sites of Berezovaya Luka, Chernoozer'e-IV, VI and Kolyvanskoe-I, which are located at lower-altitudes in forest-Steppe ecosystems. In contrast, the second group comprises sites such as Kostenkova Izbushka and Korov'ya Pristan'-III, which are in the forest and forest-Steppe, far more suited to hunting and fishing. Elk were particularly favoured—of the

[162] Grushin 2013, 22.
[163] *Ibid*.
[164] Muzei arkheologii i etnografii Altaya 1995.
[165] Grushin 2013, 29.
[166] *Ibid*., 27–28.

total number of wild animal remains, 88.7% were elk, though wild boar, deer, wolf, bear, fox beaver, hare and birds were present.[167] Grushin notes, however, that settlements like Berezovaya Luka and Chernoozer'e-IV and VI likely used the cattle for secondary products, as consumption of cattle meat only accounted for 30.3% of the diet, whereas nearly 50% of meat consumed seems to have come from horse. This ratio is the inverse for Kolyvanskoe-I, where it was notable that only 3.7% of meat came from sheep, but most came from hunted game, including ibex, deer, argali, wild boar, elk and sable.[168] Grushin does not state how domestic animals were identified as having been used for primary or secondary products,[169] though he deduces that Kolyvanskoe-I's position in the mineral-rich foothills of the southwestern Altai means cattle would have been invaluable for transport,[170] thus uses other than meat were likely significant in the rearing of livestock.

Houses were built below ground level in pits and post holes show that wood was used in constructing the building. The entrance is typically set in the eastern wall and the main room would have had a large hearth, with smaller pits around it that Grushin postulates were used to spread warmth throughout the structure and bring heat closer to the sleeping area. The area for sleeping would be along one wall, with raised beds made of wood and animal skins. The average size of the houses excavated so far are 160 m^2, which Grushin estimates could have harboured 20–25 people.[171] From Grushin's thesis, it is unclear exactly how much of this thorough reconstruction is based on excavated materials or assumptions reliant on ethnographic parallels.

[167] *Ibid.*, 28.
[168] *Ibid.*, 29.
[169] *Ibid.*, 28.
[170] *Ibid.*, 29.
[171] *Ibid.*, 40.

Well-known burial complexes include Eluninskiy Gruntovyy Mogil'nik 1, Staroaleyska 2, Tsygankova Solka and Volchiy Mys.[172] Burials are typically located near rivers on high terraces. The graves are sub-rectangular in shape and orientated east-west. The interred is usually found in a flexed position on their left side, with their head orientated east or northeast, but, in all cases, this is perpendicular to the river.[173] A vessel is typically found placed by the head and the bones of domestic animals are also found, such as sheep, cattle, and horses. Although in one instance an entire sheep skeleton was unearthed, usually only the teeth and mandibles of horses are found. Traces of red ochre and burning have been found on the bottom of some burial pits and sometimes even the bones show signs of burning, though there is no indication that the intention was to cremate the deceased. Graves usually contain one adult, but hardly any sub-adult burials have been discovered, suggesting their remains were disposed of elsewhere. Paired and collective burials are also rare. In contrast to previous times, there are many graves where the interred were buried with damaged weaponry and their skeletons show signs of martial violence.[174]

Large numbers of stone artefacts were excavated, such as blades, arrowheads, awls, clubs, and fishing rods (Figure 2.14). Many arrowheads were found, suggesting that bows and arrows were a major tool for hunting.[175] Copper artefacts found are similar to those of the Seima-Turbino tradition and comprise cast bronze knives, spearheads and celts. The most distinctive artefacts include spearheads with a single hook on the socket. These have been discovered as chance finds, not only in burial

[172] Muzei arkheologii i etnografii Altaya 1995.
[173] *Ibid*.
[174] *Ibid*.
[175] Grushin 2013, 30.

contexts.[176] The copper typically contains lead and/or zinc.[177] As of 2013, 23 bronze (tin-copper alloy) artefacts had been excavated, including the so-called knife seen in Figure 2.14: 6. Additionally, lead has been found used only for earrings, mainly in children's graves.[178] Ceramics were tempered with sand, grit, grog, or bone, shaped with paddles, and decorated with incised or combed patterns (Figure 2.14: 4 & 5). The bones of both domestic and wild animals were carved as ornaments or used as tools (Figure 2.14: 1-3). Alongside stone scrapers, these indicate people were processing animal skins that could be used for clothing or as containers.[179] Decorative representations of non-human animals are found on metalwork, stone artefacts and on bone. Grushin notes that the horse is found most commonly, however there are other examples of ox, bear, and birds (Figure 2.15).[180]

2.2.2.5 Andronovo

Andronovo cultural remains in the middle Yenisei have been dated within the range 2100–1500 BCE.[181] However, Andronovo material does not appear at sites in the Minusinsk Basin with Andronovo until 1400 BCE.[182] Additionally, Andronovo artefacts in the western Jungar are mainly dated *c*. 1300 BCE, though samples from three graves at Aduun Chuluu (*adunqiaolu* 阿敦喬魯), Arixang County (*wenquan xian* 溫泉縣), in the Alatau mountains have returned carbon dates of 1743–1574 cal BCE.[183] Markedly fewer remains are found in eastern Xinjiang, suggesting that the scattered finds

[176] Muzei arkheologii i etnografii Altaya 1995.
[177] Grushin 2013, 37.
[178] *Ibid.*, 38.
[179] *Ibid.*, 34–35.
[180] *Ibid.*, 36–37.
[181] Svyatko *et al*. 2009, 251 & 267.
[182] Svyatko *et al*. 2013, 248.
[183] Cong Dexin *et al*. 2013, 31–32.

composing the body of evidence for Andronovo in the Jungar are evidence of cultural interaction rather than widespread presence of Andronovo material culture.[184]

Tombs consist of square stone enclosure and an earth mound covering the burial. Enclosures are often built up next to each other to form an associated group,[185] or multiple graves are built next to each other (Figure 2.17). The graves are stone cists made of large slabs or horizontal flat stones that are then covered by one or many large slabs.[186] Peoples of the Yenisei and Ob valleys substituted timber burial chambers (four courses of stout logs and roofed with logs) for the stone cist.[187] Burials are either cremations or inhumations, with Li Qi arguing that earlier Andronovo burials are cremations and the later burials of the complete body.[188]

In burials, the interred was laid on their left side with limbs flexed and the head orientated south-west. A variety of bronze ornaments accompanied the dead – beads, pendants, earrings, or plaques, as well as copper and bone artefacts. Birch bark vessels and woollen fabrics have also been excavated from cemeteries in the Minusinsk Basin.[189] It is likely that ceremonial feasts were held prior to entombing the dead, as bones from sheep and horse are found in tombs, as at a cemetery beside Lake Alakul in the valley of River Mias and Bylkyldak II, Central Kazakhstan.[190] It is quite uncommon for very young sub-adults to be found in Andronovo cemeteries. If present, they are

[184] Shao Huiqiu and Yang Jianhua 2013, 77.
[185] Gryaznov 1969, 89.
[186] *Ibid*.
[187] *Ibid.*, 90.
[188] Li Qi 1996, 91.
[189] Gryaznov 1969, 90.
[190] *Ibid.*, 91.

typically interred alongside an adult.[191] Two cemeteries for infants were discovered at Bolshaya Rechka in the valley of the River Ob and another in the Zmeevka valley.[192]

Andronovo settlements are concentrated around the lower reaches of rivers and typically comprise 10–20 circular or rectangular pit buildings with partition walls and hearths. Buildings constructed at ground level have also been found in Central Kazakhstan.[193] Remains of domestic cattle, sheep and horse have been excavated,[194] indicating a predominantly livestock-based economy. Carbonised wheat has also been discovered, along with bronze sickles and stone grinding sticks, which indicate that Andronovo were also engaged in agriculture.[195]

In contrast to earlier cultures like the Afanasevo, where metal was predominantly used for small ornaments, Andronovo used arsenical and tin bronzes for most tools.[196] The trumpet-shaped earring shown in Figure 2.17 is associated most strongly with Andronovo and its presence in regions much further east than discoveries of its cemeteries has prompted lively debate of the extent of Andronovo.[197] However, this is just one of many things that hints at broad connections between people in and around the Eurasian Steppe, rather than the physical presence of invading peoples.[198] This theme will be explored further throughout this thesis.

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[191] *Ibid.*, 96.
[192] *Ibid.*, 97.
[193] Li Qi 1996, 91.
[194] Legrand 2006, 846.
[195] Li Qi 1996, 89.
[196] Shao Huiqiu and Yang Jianhua 2013, 3.
[197] Li Shuicheng and Shui Tao 2000, 37.
[198] Assumptions that the presence of distinctive material culture that is not commonly found in a region indicate a military invasion by an outside power is often implied in researchers' interpretations (e.g. Han Jianye 2007, 105).

2.2.2.6 Biyke

Sites assigned to the Biyke culture are concentrated along the Katun River and its tributaries. The sites and artefacts are dated to approximately from the end of the ninth century to middle of the sixth century BCE. The majority of sites are, however, concentrated between *c*. 750–650 BCE. The Biyke culture is a relatively recent designation. Researchers only agreed that archaeological material found around the Katun for this period is significantly distinct from contemporary remains in the western foothills of the Altai in 1999.[199] This made the Biyke and Mayemirsk cultures (2.2.2.7) separate entities, whereas previously it had been assumed that the two forms of material culture could be grouped together.

Sites include two groups of kurgans[200] excavated in 2006 on the northern bank of the one of the Katun's lower tributaries, the Tytkesken, in addition to the so-called royal tomb of Kur-Kechu II and various find-spots further up the Katun.[201] The type-site of Biyke comprises 20 kurgans and is located up the Katun River between the villages of Elanda and Kuyus. The following description is of Kurgan 7 specifically, which illustrates the general burial style. Kurgan 7 is a large stone mound packed with gravel and loam approximately 7.5 m in diameter (Figure 2.18). The interred was a female between 20–25 years old at death. She was positioned flexed on her left side with her head orientated west.[202] Bronze earrings were found near the cranium, as well as beads at the chest and textile fragments (Figure 2.19) The textiles have been subjected to two different series of analyses, which clarified that the yarn was twisted in a Z-direction.[203]

[199] Tishkin 2011a, 272.
[200] A mound of earth and/or stone that covers a burial chamber. Similar to an English *barrow*.
[201] *Ibid.*, 286.
[202] Tishkin 1996, 24.
[203] *Ibid*.

2.2.2.7 Mayemirsk

The Mayemirsk culture is dated *c.* 800–600 BCE. It is approximately contemporary with the Biyke material assemblage, but, in contrast, Mayemirsk is found more in the lower altitude western foothills of the Altai.[204] Mayemirsk is a prominent example of how defining cultures creates the illusion of a true and solidified cultural bloc, which does not exist in reality. Since the term *Mayemirsk culture* was coined in the 1940s,[205] its usage has been inconsistent and it is now used most often to form the label *Arzhan-Mayemirsk*, as in Aleksei A. Tishkin's work, where it is used as a temporal marker for a period of archaeology in the Altai and Sayan mountains.[206] This causes some confusion, however, as the purpose of Tishkin's article is to argue that the Biyke and Mayemirsk cultures are distinct from each other, which seems counter intuitive when *Mayemirsk* is simultaneously being used as a general time label alongside *Arzhan* – the archaeological remains of which are located even further east than Biyke. This highlights some issues with culture labels, as researchers do not use them consistently, even within the same publication.

Major sites include Mashenka and Gilevo-10. Burials are typically stone mounds, i.e. kurgan burials, surrounded by either one or two stone fences. The interred are found in either stone cists immediately below the mound or earth pits cut several centimetres below ground level. There are often subsidiary pits outside the grave containing horse remains or tack.[207] Horse remains are usually limited to mandibles or vertebrae,

[204] Arkheologicheskii Web Muzei 1999.
[205] Both Kiselev and Gryaznov's articles were published in 1947 and, though Gryaznov had published previously on the Mayemirsk in 1939, his article expanded upon the Mayemirsk as a cultural entity, not simply a periodisation of what was considered the early nomadic period at the time (Kiselev 1947; Gryaznov 1947).
[206] Tishkin 2011a.
[207] Tishkin 2011b, 80.

alternatively sheep remains are placed in these subsidiary pits.[208] The burial of horses with deceased individuals has been identified as an indication that horses had risen in social significance, likely due to utility in warfare.[209] The interred is usually laid supine with the head orientated north or northwest.[210]

Mayemirsk material assemblages include distinctive horse bridle pieces, where the leather of the cheek-piece divides into two sections, with the bit either attached to the leather cheek-piece or only to the reins (Figure 2.20).[211] Another form of material culture used to identify Mayemirsk sites are bronze mirrors with loops on the back.[212] An artefact that marks the Mayemirsk as a low-altitude cultural type is boar tusks – these have been found at Chernova and Kok-Su 1 – used as bridle cheek-pieces, to fix the leather straps into place. Other than this, it has been noted that material assemblages of Mayemirsk sites are extremely similar to those of Tagar sites in the neighbouring Minusinsk Basin – ceramics, bronze artefacts and ornaments all closely resemble their Tagar variants.[213]

2.2.2.8 Arzhan

Arzhan 1 refers to a large kurgan *c*. 120 m in diameter in the Tuva Republic that was excavated by Mikhail P. Gryaznov in the 1970s. Arzhan 2 is a separate burial that was excavated by a Russo-German expedition during seasonal excavations beginning in 1999.[214] Despite the attention these two burials have received, there are a string of kurgans distributed west and east of the village Arzhan in the Tuva Republic.

[208] Gryaznov 1947, 13.
[209] *Ibid.*, 14–15.
[210] Tishkin 2011b, 80.
[211] Unfortunately, Gryaznov does not mention the provenance of the cheek-pieces that inspired the reconstructions (Gryaznov 1947, 9–10).
[212] *Ibid.*, 10–11.
[213] Kuznetsov 2016.
[214] The Institute of Archaeology and Ethnography of the Siberian Branch of the Russian Academy of Sciences in Novosibirsk collaborated with the Department for Eurasian Studies of the German Archaeological Institute (Chugunov *et al.* 2001, 39).

Gryaznov's map of the area (Figure 2.21) marks three large kurgans (1, 2 & 8) – the smallest with a diameter of 80 m – and groups of between three to 13 smaller kurgans (Numbers 3-4) – with diameters no greater than 75 m.[215] Parzinger posits that the amount of attention dedicated to this site is because so-called 'royal' tombs have not been found in the neighbouring, archaeologically-rich Minusinsk Basin for the same period.[216]

Arzhan 1 is dated to the late 9th–8th century BCE.[217] It is a large kurgan *c*. 120 m in diameter, constructed of a wooden framework that forms multiple sections, the sizes of which differ depending on their position and the amount of weight from the stones piled atop (Figure 2.22). Larch logs were stripped and placed directly onto the earth, but over time these have sunk under the weight of the stone up to 30 cm in some places.

Arzhan 2 has been radiocarbon dated using 65 samples taken from seven burials, which returned a date range of 770–560 cal BCE. Further calibration using dendrochronology allowed the researchers to assign Grave 5 specifically to the period *c*. 620–600 BCE.[218] Arzhan 2 was initially selected for excavation because it was large (*c*. 80 m in diameter) and externally similar to Arzhan 1 in the way that its mound was formed from piled stone slabs, thus was presumed to belong to the same era.[219] The kurgan was surrounded by rows of concentric stone circles, some of which were excavated to reveal ash and pieces of calcinated bone.[220] Multiple graves were found

[215] Gryaznov 1980, 3–4.
[216] Parzinger 2011, 200.
[217] *Ibid.*, 193.
[218] The majority of radiocarbon samples came from Grave 5 and issues with the calibration curve led the researchers to choose *wiggle-matching* – matching carbon dates with tree rings – to achieve greater accuracy. They used the wooden beams excavated from Grave 5 (*Ibid.*, 194).
[219] *Ibid.*, 192.
[220] *Ibid.*; Chugunov *et al.* 2001, 40.

under the kurgan, including Grave 5, which contained one female and one male skeleton, as well as an abundance of gold artefacts (Figure 2.23).

2.2.3 Summary

This section has presented several groupings of archaeological assemblages in and near to the Altai Mountains over the 2nd and 1st millennium BCE. These groupings are commonly referred to as cultures, which is used in this thesis as a shorthand method for referring to particular groups of material culture.

The archaeology of the time prior to this thesis' period, namely the 3rd millennium BCE, is characterised by the remains of the Afanasevo culture (*c.* 2900–2400 BCE) in the northern Altai and Sayan Mountains, the Khemcek culture (*c.* 2400–1700 BCE) in the southern to central Altai, and the Okunevo (*c.* 2700–1800 BCE) in the western to eastern Altai. The remains of this period indicate that domestic cattle were utilised, both as food (Afanasevo) and transport (Okunevo), as well as sheep and horse. Wild animals were hunted, for food and materials, whilst fishing also occurred. Stone was utilised as a building material for burials, but was also used in apparent ritual contexts without burials. Stone and bone were popular materials for tools, with copper used mainly for adorning other objects or the human body. This situation appears to have changed with the Okunevo culture, however, as copper becomes increasingly frequently used for tools.

The 2nd millennium BCE is represented by the cultures of Elunino (*c.* 2500–1800 BCE) in the western Altai and Andronovo (2100–1500 BCE) that encircle the Altai. Andronovo denotes quite a large collection of material culture, however, thus its earliest appearance in an area relevant to the Altai is in the Alatau Mountains *c.* 1743–1574 cal BCE and the Minusinsk Basin slightly later in *c.* 1400 BCE. Elunino subsistence strategies appear to have varied depending on the environment, with faunal

remains suggesting reliance on herd animals, whereas there seems to have been increased dependence on hunting at higher altitudes in the Altai. The Andronovo remains suggest a dependence on herd animals, though tools excavated suggest the incorporation of some agriculture. Settlements feature structures built below ground level. Tools were primarily made from stone or bone at Elunino sites, whereas Andronovo sites typically feature tools of arsenical and tin bronzes, though some tin-copper alloyed metals were made at Elunino sites.

Cultures of the 1st millennium BCE include the Biyke (*c.* 750–650 BCE), concentrated along the Katun River and its tributaries, Mayemirsk (*c.* 800–600 BCE) in the Altai's western foothills, and Arzhan (*c.* 900–560 BCE) in the eastern Altai and Sayan Mountains. The archaeology of this period is heavily characterised by burials – all three regions feature stone mounds over burial pits cut into ground-level. Mayemirsk and Arzhan burials often have secondary pits containing remains of horses and/or horse-riding equipment, which indicates a change in the position of horses in society – whereas once they were mainly a food source, they became an animal of significance to human society through riding. Bone and metal ornaments have been found at sites of all three cultures, though Arzhan in particular has attracted researchers with the large amount of gold artefacts excavated at its sites.

Prior to the 2nd millennium BCE, the Altai seems to have been home to low-population density societies, who hunted, fished, and herded livestock. During the 2nd millennium BCE, the presence of settlements suggests a type of semi-mobile transhumance was practised, with certain members of the group taking herd animals to find pasture away from the settlement. Hunting would have been a major source of resources simultaneously and, during this period, alloyed copper appears as a common material for ornaments and tools, particularly among the Andronovo. A major

development among the early 1st millennium BCE cultures is the large size of burial architecture and the dominance of stone for constructing it. The frequent excavation of horse and horse-riding equipment in related deposits also suggests that society was re-orientated according to the social significance of riding, which would have allowed people to tend larger herds, itself prompting changes in the structure of societies. The ubiquitous use of bronze for all types of artefacts at this point also demonstrates the strength of supra-Steppe networks of exchange.

2.3 Rock-art

Rock-art in the Altai has been the subject of much research over the past centuries. Early research on rock-art in the four nations dividing the region has been covered briefly (2.1), whereas this section presents the different ways that rock-art has been interpreted.

Some of the earliest research presumed that rock-art, as a universal phenomenon, could be interpreted universally. This is seen in Tallgren's description of Central Asian rock-art as being similar to the, 'rock pictures in Africa, Spain, Arctic Scandinavia and among all primitive hunting nomads in general.'[221] The assumption of a universal quality to rock-art permeates much early scholarship, though the 1930s Sino-Swedish Expedition to Xinjiang related the rock-art at Quruq Tagh (Figure 2.24) to the spread of Buddhism, i.e. placed it within a Central Asian context.[222] Interpretations were considered to be transferable across international borders, with fertility magic and sympathy magic proving popular explanations for why rock-art was created.[223] Such perspectives focussed on the large number of animals depicted as evidence that rock-art

[221] Tallgren 1933, cited in Bergman 1939, 190.
[222] Estimates for a date range at this time assumed that most rock-art production could only have occurred between 500 BCE–800 CE (Bergman 1939, 191). This covered the same approximate period as the development and spread of Buddhism, which, therefore, became an attractive interpretation.
[223] Lewis-Williams 2002, 2.

was created from a preoccupation with food and subsistence (Figure 2.24). This view stemmed from a Cartesian understanding of human-animal relations, in which the two entities were dichotomous and humans were superior.[224] The artificial image of rational versus irrational behaviour that exists in Western academia is something to overcome,[225] as reasons people made petroglyphs in a certain place will combine tangible and intangible reasons that contradict perceptions of 'rational' behaviour.[226] Arguably, attempting to understand them through the modern lens of 'rational' thought will only lead to misplaced judgement of past behaviours.

Alternative frameworks for interpreting rock-art that came to the fore, particularly in the mid-20th century, include the cultural-historical approach. This perspective associates material culture with social evolution and approaches it as a direct reflection of the people who created it – pots were literally equated with people. Additionally, artefacts were divorced from their cultural contexts to fit into grand narratives of evolutionary processes.[227] An example of this is how petroglyphs in the PRC are conceptualised as the prehistoric version of 'texts'[228] or 'histories'.[229] Although western research may see similarities between this perspective and structuralist or semiotic approaches,[230] the Chinese archaeologists do not consider rock-

[224] The dominance of the dichotomous, Cartesian ideology can be seen in Giamattista Vico's 1975 treatise, which divides humanity into a period pre-reason and post-reason. Prior to reason, humanity explained the world in terms of imagination and feelings, whereas they later relied on rational explanation (Vico 1948, 104). This assumes that people in modern times operate according to reason, not emotion, which is highly ironic when considering that politicians in 2017 were reliant on irrational feelings and emotion to support their campaigns (see d'Ancona 2017).
[225] Brück 1999, 317–318.
[226] Glenna 1996.
[227] Buchli 2004, 180.
[228] Zhuang Hongyan 2013, 149.
[229] The most prolific researchers to debate this aspect Tong Yongsheng and Hui Fuping, who published throughout 2010–2011 on this subject, though their articles are broadly similar in content (Tong Yongsheng and Hui Fuping 2011a; 2011b; 2010).
[230] For example, Maria Cecilia Panizza presumes that rock-art was used to communicate, thus she identifies attributes in the figures that could be interpreted as formalised, many of which are geometric

art to be composed of definite elements, ordered by formal rules.[231] However, the substitution of rock-art for texts results in similar issues, where researchers over-interpreting deeper meanings behind their production, particularly regarding abstract images.[232] For instance, whorls and concentric circles are commonly interpreted as astronomical symbols.[233] Such arguments touch upon the issue that rock-art motifs may not indicate what the researcher observes, as it has been suggested that a petroglyph of a hoof petroglyph may have been used to represent a goat – the part represents the whole.[234] In some cases, however, researchers utilise this possibility to make claims that exceed the limits of the rock-art's context. An example of this is the theory that the Sanskrit epic poem *Ramayana* (*c.* 1st millennium CE), which contains a reference to horses as fertility symbols, can be used to date Kangjiashimenzi, because the site has a horse petroglyph surrounded by anthropomorphs.[235] A connection across such a spatial and temporal distance, however, seems unlikely, thus it is important to justify the reason why a figure references to a different idea or subject than the one it appears to depict.

It should be acknowledged that modern researchers cannot pretend to ever know the intentions of the rock-art's creator, though they can hazard a guess at the image's purpose.[236] Although petroglyphs in the Eurasian Steppe, as part of societies and their cultures, were shared in the sense that they were observed by various people throughout

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forms (Panizza 2011, 390). The problem with this approach is that it assumes there is an underlying message that can be decoded.

[231] Rozwadowski 2001, 156–157.

[232] Marila 2014, 11.

[233] Zhu Yuan 2013b, 153.

[234] Pang Yaoxian and Pang Ping 2010, 13.

[235] According to Wang Binghua, the anthropomorphs are dancing around the horse, celebrating it, which demonstrates the panel's relationship with Indo-Iranian mythology, further allowing him to make this connection with Vedic texts (Wang Binghua 1992, 52).

[236] This is referred to as the phenomenological approach, which accepts that the research is limited, as the researcher can never understand the context the petroglyphs were made in (McDonald and Veth 2012, 58).

time, ideas cannot be directly shared.[237] Though attempts are made to communicate ideas, each human actor will interpret these ideas differently, depending on their cultural and temporal background. As a result, the rock-art's creator understood the image slightly differently from their contemporaries within the same group, whilst observers from other groups and later times were even further removed. Observing a petroglyph, therefore, was an act of 'agential intra-activity'[238] whereby the image was created anew each time it was observed, conveying different ideas that were formed from a bilateral intra-action with the entity observing it. The complexities of ideas, therefore, make interpreting rock-art as the product of ritual behaviours attractive, as evidence of shared actions is easier to identify in the archaeological record than shared belief.[239] Rock-art is the material remainder of people's shared actions, as many rock-art sites in the Steppe have petroglyphs made using different tools (stone or metal),[240] techniques (direct or indirect percussion), and were made at different times. The shared action could, thus, include anything from multiple people creating the rock-art to multiple people observing the images to someone observing a much earlier image – these few scenarios are all shared actions. This illustrates how even the popular interpretation of making rock-art as 'ritual' does not necessarily mean that it was religiously motivated, which the word implies in English, but was an event used to construct social identities and for individuals to express connection with others;[241] rituals are thus behaviours that build solidarity. An approach acknowledging the issue of disconnect between the modern

[237] Earle 2004, 153.
[238] 'Intra-action', as opposed to 'inter-action', emphasises the interlinked becoming of entities as a result of other processes and other agents – no single entity is external to other entities or phenomena, as all are created by continuous engagement with each other (Barad 2007, 140).
[239] DeMarrais 2014, 157.
[240] For tests on which types of tools and techniques would have produced the marks in petroglyphs of the Russian Altai, see Zotkina 2013 and Zotkina *et al.* 2014. Their findings indicate that local stone would have been unsuitable as it is too fragile, also producing uneven percussive marks. Additionally, only indirect percussion was used.
[241] Kertzer 1988, 75.

researcher and the rock-art, referred to as phenomenological by Jo McDonald and Peter Veth,[242] is to explore how rock-art was perceived, produced, positioned, and added to throughout time. This focusses on the process behind producing rock-art, without presuming to know the precise ideas held by their creators.[243]

Peter Kohl has argued that the past should be reconstructed only on the basis of evidence for which archaeologists can control,[244] i.e. they should only infer from tangible remains. The nature of the material record means that such an approach emphasises technologies, environments, subsistence-exchange economies, and, potentially, social organisation. In short, it advocates focussing on non-ideological aspects of past lives. Whilst this seems reasonable, it is problematic for rock-art as a form of archaeological evidence. When researchers concentrate on more tangible aspects of rock-art, they typically focus on the subject matter, leading to conclusions that naturalistic non-human animal figures reflect the subsistence strategy of the time,[245] but anthropomorphic faces that appear abstract to the modern observer must be spiritual,[246] because they have no modern parallel in tangible space. This approach thus misses the broader question of why people were compelled to make rock-art in the first place – what does rock-art as a practice show about these societies? As an example, many 2nd millennium BCE sites in the Eurasian Steppes feature petroglyphs of caprine species (goats, ibex, sheep etc.), so this has been characterised as the 'rock-art of stock-breeders'.[247] However, herding animals does not necessitate the creation of rock-art, as shown by rock-art throughout the world created by people who also hunted or cultivate

[242] McDonald and Veth 2012, 5.
[243] *Ibid*.
[244] Kohl 2008, 498.
[245] The implicit assumption that rock-art reflects production or subsistence is, in many parts of the Steppe, influenced by the socio-evolutionary interpretative framework used (Chen Zhaofu 2008, 204).
[246] Researchers often assume an implicit link between abstract representations and religion or spirituality (Chen Zhaofu 2008, 206; Shu Xihong and Li Xiangshi 2007, 48).
[247] Samashev *et al*. 2011, 42.

cereals.[248] In addition, Eurasian Steppe groups during the 2nd millennium BCE often practised mixed subsistence strategies, incorporating hunting, foraging, and plant cultivation into otherwise predominantly pastoralist diets.[249] Focussing on subsistence strategy in rock-art thus overlooks social and cultural factors influencing the subject the individual selected, as well as ones they chose not to. In addition, reasons for creating rock-art in the first place are not explained by a group's subsistence strategy – the practice more likely relates to ideas and ideology.

An alternative approach to petroglyphs is, thus, to avoid forcing images to coincide with subjects or concepts that are familiar to the researcher. Instead, discussing aspects of their materiality, production, and aesthetics can illuminate how the images embody past ways of doing and thinking.[250] A significant obstacle to this view is that archaeologists are often too preoccupied with identifying what petroglyphs depict and how accurate the depiction is,[251] which reduces study of petroglyphs to a search for recognisable things from our modern world.[252] Some have argued that archaeologists seek the truth when interpreting the past, thus they should not strive for creative interpretations reliant on intangible aspects of material engagement.[253] However, the rock-art in the Altai often does not correlate with entities recognisable to the modern researcher. When considered that the past is further obscured by our own cultural and temporal distance from rock-art, the researcher cannot search for things that are only recognisable to the modern world, as this separates the imagery from the context it was

[248] Bradley 1997, 91-92.
[249] Frachetti *et al*. 2010b, 1006.
[250] Back Danielsson *et al*. 2012b, 4.
[251] *Ibid*.
[252] *Ibid*.
[253] Hesse 1995.

made in and any later events in its life.[254] Examining rock-art as an archaeological material will enable more thorough investigations of what its content was intended to represent, in addition to what the practice of making images signified. Researchers must be cautious of perspectives so entrenched within their own cultures that the almost seem 'common-sense'.[255] Whilst this may seem obvious, appeals to 'common knowledge' or 'obvious truths' in modern academic writing demonstrates how attractive culturally-specific knowledge is as an interpretation, even in instances where it has no place. There is no universal 'common-sense', however, as what one culture calls 'common-sense' another may call insanity. Compelling researchers to explain their theories in detail is a good step towards combatting this attitude.

A salient issue in rock-art studies is that the English term 'rock-art' links images made during prehistory with the modern concept of 'art' before any analysis has been conducted. Modern understandings of 'art' in an Anglophone context, is typically something that has high aesthetic value, but no practical use.[256] Although creators of rock-art may have simultaneously found it aesthetically pleasing, rock-art served active ideological, spiritual, or social agendas, thus it cannot be considered 'art' in the Anglophone understanding. Additionally, in some cases, the act of creating the rock-art may have been more significant than what was produced. However, referring to the images as 'art' projects a sense of passivity onto them from the outset, even though there is no evidence to suggest that the creators made divisions between the aesthetic,

[254] Material objects progress through various stages during their existences, thereby manifesting different statuses depending on their location, the lived time, and their contexts (Kopytoff 1986, 66). They can also be said to 'live' through the relationships they form with other entities (Joy 2009, 540).
[255] Karen Barad highlights how entrenched representationalism is in Western culture, illuminating the varying strata that contribute to our cultural perspectives. Whilst research has become adept at searching out and critiquing biases, there remain some that often slip under the radar, due to the positions they occupy within the culture as common-sense or a perceived state of being 'natural' (Barad 2003, 806).
[256] Researchers have argued that using the term 'art' to refer to things from other cultures or times periods is not an issue, provided its meaning within the context of analysis is discussed (Moro-Abadía and González Morales 2007, 702; Yang Chengyin 1990).

the symbolic, and the utilitarian in the manner of the Anglophone term.[257] The issue is, saliently, not limited to Euro-American research, but appears in studies conducted by Chinese archaeologists, many of whom analyse the artistic merit of rock-art.[258] Consequently, it is common to find critiques of the poor level of execution of the image,[259] or highly romanticised descriptions of figures, such as the 'fair and graceful bearing' of female anthropomorphs.[260] This description was applied to the female anthropomorphs of Kangjiashimenzi (Figure 2.25), however, it is purely subjective – there is no way to quantify an image's grace. A result of such descriptions has been a situation where rock-art is marginalised in archaeological research, not being considered 'acceptable evidence.'[261] Referring to these material remains as 'rock-art', therefore, may compound the problems, where the remains are implicitly associated with modern perceptions of 'art'. Arguably, however, any terminology used to describe archaeological remains is somehow anachronistic, as modern researchers cannot completely understand their context.[262] As a result, this thesis uses 'rock-art' as a term recognised internationally as denoting visual or tactile phenomena that have been

[257] Some Euro-American research argued that conceptualising rock-art as 'art' was an attempt to imbue these images with aesthetic value and differentiate them from other artefacts, allowing researchers to see rock-art as part of the grand evolutionary narrative of Western culture, i.e. the origin of Western artistic tradition. Whereas the evolutionary narrative for the development of human societies has been critiqued, the connotations of 'art' in 'rock-art' persist (Soffer and Conkey 1997, 2).

[258] One example is Jiang's argument that paintings on rock or carvings show the development of ancient people's artistic skills, as well as their aesthetic judgement (see Jiang 1991, 4).

[259] Carving techniques are regularly described as clumsy or sloppy (Changji huizu zizhizhou wenwu puchadui 1993, 27; Wang Mingzhe 1993).

[260] *Yaotiao enuo* 窈窕婀娜 (Lin Yiwu 2013, 27). This is particularly common for descriptions of supposed female subjects, who are routinely characterised by language pertaining to their physical or sexual characteristics. For instance, Wang refers to the 'characteristic female grace' (*nüxing de xingxiang tezheng* 女性的形象特征) in petroglyphs (Wang Binghua 1992, 6). This stems from the researcher's perception of gender, however, as male figures executed in similar styles are not described with such language.

[261] Conkey 2012, xxx–xxxi.

[262] Moro-Abadía and González Morales argue that whilst the term 'art' is not inherently problematic, flippant use to refer to paintings and carvings in rock can lead to the researcher unthinkingly projecting modern perspectives back onto the past, without justification (Moro-Abadía and González Morales 2007, 698 & 701–702).

painted or carved into rock, though efforts are made throughout to explore its prehistoric function and context, instead of examining it as 'art'.

Although the predominant type of rock-art in the Altai Mountains and its neighbouring regions is petroglyphs, i.e. images carved, scraped, or pecked into rock, there are also examples of images made from pigment. PRC scholarship, however, persists in categorising rock-art into either carved or painted compositions,[263] a habit developed by conceptualising the rock-art of the PRC as being either northern or southern – southern rock-art is typically made with pigment, northern rock-art is pecked or carved.[264] This division between painted and pecked rock-art is arbitrary, however, as rock-art made with pigment has been recorded at several sites in Xinjiang, part of the northern region, including one in Qaba County (*habahe xian* 哈巴河縣) and Altay City.[265] They are also considered to be broadly contemporary with the petroglyph tradition of rock-art of the region.[266] Researchers on the Russian side of the Altai, additionally, have found cases where pigment is added to petroglyphs. A haematite-based pigment, for instance, was used to fill in the carving on an anthropomorphic stele at Iibat-Charkov, Minusinsk Basin.[267] Similarly, petroglyphs of deer augmented with red pigment were discovered on a boulder near the Satakular River, Altai, which, the researcher notes, is not an unheard-of discovery – the 5th–1st millennium BCE sites of Turochak I and II, Kaltak, and Kuraman-Tau in the Altai all show signs of pigment use.[268] Despite the prevalence of petroglyphs in the Eurasian Steppe, therefore, people also utilised paint, often to augment pecked images. This has implications for another

[263] Wang Dafang 1999, 55; Pan Ling 2005, 124.
[264] Jiang 1991, 5.
[265] Zhao Yangfeng 1995, 45.
[266] *Ibid*.
[267] Esin *et al*. 2014, 87.
[268] Matochkin 2011b, 110.

common attitude towards pigment-based rock-art in the region, as the perceived rarity of pigment-based rock-art means that its presence has been used to infer cultural connections and attribute dates. Matochkin draws links between the Satakular petroglyphs and red pigment use in the southern Ural Mountains,[269] however, it seems that pigment was used sufficiently frequently around the Altai that this cannot be used alone to infer cultural connections or date the images.

An interpretative framework that is particularly dominant in rock-art research is shamanism. Although there are many criticisms of shamanism being applied to rock-art in other parts of the world,[270] the theory has been popular in Russian research for decades. This is due to the fact that interpretations of archaeological material have been formed based on ethnographic testimonies by Siberian groups regarding their ritual practices or worldviews. This has provided invaluable information and, indeed, V. M. Mikhailovskii's descriptions of different rituals and functions in the variant forms of shamanism across Siberia published in 1892 remains highly useful for research on religious systems in Siberia and the wider Steppe.[271] However, the ready availability of ethnographic data means researchers sometimes rely overly on modern parallels. For instance, Natalia Fedorova refers to Siberian peoples exhibiting a 'slow pace of cultural change' and having a 'cultural continuity which can be traced back for at least five or six millennia.'[272] This simultaneously justifies the use of ethnographic material to explain archaeological remains that are several thousand years old, whilst also being

[269] *Ibid*.
[270] Demattè 2004.
[271] The 1895 translation was published in two parts in *The Journal of the Anthropological Institute of Great Britain and Ireland*. In it, Mikhailovskii details the particular ceremonies of the Yakuts, Buryats, Mongols, Altaiains, and other groups who utilise a shamanic figure for social and/or religious reasons (Mikhailovskii 1895).
[272] Fedorova 2001, 56.

reliant on the idea that modern cultural minorities are directly linked to the people who lived in Siberia at the time; it is thus a particularly precarious piece of circular logic.

Whilst claims of shamanism in the archaeology of some regions have been queried in recent years,[273] the fact that there are still practising shamans in parts of Eurasia today has meant that it remains a viable and feasible explanation for apparent ritual contexts.[274] In many cases, however, this results in uncritical detections of shamanism that neither justify the theory's application nor explore alternative explanations.[275] Doing so is important, when considered that attitudes towards shamans can vary, along with the vocabulary that describes their function. L. P. Potapov describes how the word *shaman* was only ever used to refer to a religious figure by Tungusic-speaking[276] groups, whereas the Turkic-speaking peoples of the Altai referred to such individuals as *kham*.[277] It should, thus, be difficult to speak of *shamanism* as a general phenomenon when the term comes from a specific group, however, researchers rarely make this distinction. The quantity of publications dedicated to the discussion of shamanism — both supporting and refuting its presence — has created a general sense that all rock-art conveys explicit ritual meaning. This is problematic, as ritual significance identified by a researcher is subject to their personal socio-cultural biases; these typically accentuate certain features or divert attention from others depending on

[273] One example is in the rock-art of northern China, see Demattè 2004.
[274] The repression of traditional shamanic practises during the Soviet era has created a general scepticism among the general population that the rituals modern shamans perform will be effective. In short, participants do not trust the shaman to understand the ritual properly and, quite often, the participants themselves fail to adequately fulfil their roles (Delaplace 2014; Buyandelgeriyn 2007).
[275] Researchers often leap into discussions of the evidence, without first giving the reader an explanation of why shamanism is an appropriate interpretation (e.g. Devlet 2001, 43).
[276] The Tungusic language family takes its name from the Tunguska rivers in Eastern Siberia, although several languages in use by peoples located near the Amur River also belong to this family. The language of the Manchu, who invaded China and founded the Qing Dynasty (1644–1911 CE), belongs to this family (Janhunen 2005, 37–39).
[277] *Kham* is even now used by Tartar peoples to denote a religious figure, despite the fact that the dominant religion is Islam (Potapov 1991, 117).

the researcher's background. However, not all rock-art can be considered to have been produced as part of shamanic ritual.

2.3.1 Summary

This section has highlighted a common theme in rock-art research: that researchers draw links between individual motifs to demonstrate temporal and spatial connections. Regardless of the aims of the interpretative frameworks used over the past centuries, identifying similarities between rock-art motifs and sites appears in much of the literature. Overarching issues with the frameworks highlighted above include a tendency to situate rock-art within global interpretations, as opposed to ones that are regionally appropriate. This has compounded difficulties researchers have encountered developing methods to explore the intentions of the rock-art's creator, leading some to conclude that archaeologists should restrict themselves to reconstructing more tangible aspects of past lives. This has contributed to the marginalisation of rock-art, a situation exacerbated by the association of rock-art with Western and Chinese perceptions of 'art'. Though steps have been taken to examine rock-art as an archaeological material, current interpretations focus predominantly on the image's subject, rather than its life cycle and multiple roles in human societies. Consequently, this thesis moves the analytical focus onto rock-art as an archaeological material embedded within cultural practices that enabled its production across the Eurasian Steppe, whilst also being specific to the Altai and the surrounding regions. More explicit examination of regional trends will enable this thesis to situate the rock-art of the Altai within wider patterns in Eurasia. Additionally, exploring rock-art's role as an integrated social practice will facilitate understanding how rock-art was understood by the people who interacted with it in different periods.

2.4 Dating methods

This section outlines dating methods most widely employed in research on petroglyphs. Although the broad dates typically assigned to rock-art have been cited as a reason for their exclusion from archaeological studies,[278] radiocarbon dating has been conducted on rock-art from as early as 1984.[279] This relies on the presence of organic materials in the pigment. Not only is the use of pigments rare in the eastern Eurasian Steppe, but any pigment is predominantly made from ferrous oxide.[280] As a result, is has been impossible to obtain viable samples for radiocarbon dating.[281] In some cases, petroglyph parallels have been found in dateable contexts, such as graves. Within cist graves at Tamgaly II, several petroglyphs were found on the inside of the stone slabs. The grave was radiocarbon dated to the 13th–11th centuries BCE,[282] which gives at the very minimum a *terminus post quem* for these petroglyphs. The more common method for dating rock-art panels, however, is similar to that employed for archaeological sites – the site is dated relatively based on the excavated assemblage.[283] Dating petroglyphs relies on various deductive methods that compare the assemblage on the panel with information that is already known. It is important to acknowledge that the methods described below are rarely used in isolation – it is more common to utilise multiple methods to complement each other.

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[278] Conkey 2012, xxxi.
[279] Radiocarbon dating has been conducted in many different parts of the world from approximately 1987. Whilst some of these dates have since been questioned (e.g. Nelson 1993.), there are now many studies that have successfully dated rock-art complexes with accelerator mass spectrometry using calcium oxalates (Ruiz *et al.* 2012.), as well as carbon-based pigments (Aubert 2012, 574–575.). For a summary of techniques, see Steelman and Rowe 2012, 573–576.
[280] There are, however, instances of charcoal having been used to make black pigments in the Altai, though these are rare (Kubarev 2010, 49).
[281] Steelman and Rowe 2012.
[282] Shvets 2010, 78.
[283] An example is the material culture excavated from multiple sites in eastern Xinjiang. Many sites lack radiocarbon dates, so are dated using artefact parallels from other sites (Zhang Feng 2010). Material culture assigned to the Shanma 騸馬 culture in the Hexi Corridor, for instance, is used to relatively date Shanma sites, which have no radiocarbon date (Li Shuicheng *et al.* 2010, 262).

A prevailing method for dating petroglyphs relies on the subjects depicted: rock-art featuring herd animals is presumed to date predominantly after 2000 BCE;[284] carts and chariots are dated to the same period, as this is the earliest they appear in the archaeological record;[285] anthropomorphs riding horses are dated after 1000 BCE;[286] and clothing (mostly headwear) on anthropomorphs is typically indicative of the Turkic period (*c*. 500 CE).[287]Alternatively, there are more distinctive motifs that can be used to narrow date ranges, such as the short, composite bow, which became prevalent from the late 2nd millennium BCE. The presence of this bow in rock-art is, thus, presumed to indicate a date after the 2nd millennium BCE. Another example of subject matter useful to dating includes a petroglyph of an archer with a longbow (Figure 2.26). The longbow suggests that the figure pre-dates the 1st millennium BCE, as, after this point, shorter bows suited to use from horseback become far more common[288] (Figure 2.27).[289] This form of motif-based dating is more discriminate than the former method of dating based on subject matter, which is quite general. Particularly as subsistence strategies incorporating pastoralism existed in the Altai from the 3rd millennium BCE (2.2.1), the presence of herd animals is not sufficiently discriminant to date all rock-art.

[284] 'V etot period proslezhivaetsya rastsvet naskal'nogo izobrazitel'nogo isskustva u skotovodov' (during this period, the flourishing of the rock-art of stock-breeders can be observed) (Samashev *et al*. 2011, 42). A caveat is that the lack of evidence for commensurate reliance on goats, sheep, and cattle prior to this can be explained by a general lack of archaeological sites from the early–mid-3rd millennium BCE (Outram *et al*. 2011, 118).
[285] Devlet and Jang 2014, 119.
[286] Shu and Li 2007, 190.
[287] Yatsenko 2013, 70.
[288] The earliest composite bow in Eurasia to date was excavated near the village Serovo near Lake Baikal in Siberia. It is dated from the late 4th millennium to early 3rd millennium BCE, which would make this the earliest instance of a composite bow. However, the dates for the bow, the site and culture are quite confused, due to inconsistencies between scientific dating methods and typologies used (Rizhskii 1965, 47–48). The most well-known, visually distinctive composite bow has been excavated from 1st millennium BCE burials in the Altai and Mongolia. This type of bow is, overall, thought to have come into widespread use from the late 2nd millennium BCE (Bittl *et al*. 2009, 30–34).
[289] The rider in this petroglyph appears to be a later addition to the horse, as there is a marked distinction between the patina colours of the horse, the hunter, and other animals with that of its rider, as well as the human pecked to appear as if pulling its tail and the other horse.

Additionally, it is not always clear whether an animal is domestic or wild, which introduces an obstacle to identifying herd animals.

Another dating method is stylistic analysis. Style in the context of dating denotes the attributes of a petroglyph's form – the image's overall configuration, size, texture, colour, and spatial relationships.[290] This can include how the images are spaced, the image shape, image components, and the use of the stone's form. It is considered to be a 'way of doing'[291] that is relational to the individual's socio-cultural background. Dating using style works through a process of exclusion. For instance, the period after *c*. 1000 BCE is delineated by changes in aesthetic representation of animals, both for petroglyphs and excavated artefacts. Prior to 1000 BCE, non-human animals are considered to be depicted quite naturally. As seen in Figure 2.28, the key features of the animal are depicted, often with their legs splayed as if galloping. In contrast, animals became increasingly stylised after this time. Figure 2.29 shows an ox typical of this style depicted with a contorted body and elongated muzzle. The deer inside the ox have similarly arched bodies with their antlers running parallel to their bodies. Whilst Esther Jacobson-Tepfer describes this 1st millennium BCE style as 'tense,'[292] meaning that the animal does not appear to be in motion, this style actually seems to convey extreme movement – the animal is either braking rapidly or depicted at the moment of galloping where all four legs are bent beneath it. However, the method of showing movement contrasts with the preceding period, as it is expressed through contortion of the legs and body. There are, alternatively, many petroglyphs found on Bronze Age panels that do

[290] Sepúlveda 2014, 2839. The word *style* is here used as an analytical concept, however, for a discussion of the theoretical implications of the term, see Conkey and Hastorf 1990, 4. Generally, style is understood as a manner of expression that is culturally structured, but it is often used to denote decoration or surface embellishments (Rice 1987, 244–245). Similar to other theoretically problematic terms, therefore, style can be used, provided it is first defined.
[291] Hodder 1993, 45.
[292] Jacobson-Tepfer 2015, 377.

not communicate movement, in addition to depictions of animals in motion alongside immobile animals. This suggests that a variety of ways of depicting an animal can exist simultaneously and, whilst some styles may be restricted to one period, many transcend periods defined by archaeologists.

The ever-changing nature of petroglyph sites is a salient issue for other methods of dating, as palimpsests, or the imposition of more recent petroglyphs atop older ones, are so prevalent that this can mask the rock-art. However, some researchers attempt to use this superimposition as a type of stratigraphy.[293] Another example of this process is seen at Tamgaly in eastern Kazakhstan, where Baypakov *et al*. found that the figure of a horse rider had been created from a previous image of a bull. Re-carving one petroglyph to represent something different highlights the additional possibility that the petroglyph's original creator(s) may have altered it as well. Hu Xiaohui highlighted the implications of this for dating panels in 1993. He provided two examples where surveys on previously known petroglyph sites discovered additions had been made by modern people. One was in Zhaosu County (*zhaosu xian* 昭蘇縣), where the initial 1973 survey recorded only one goat carved into a Qing Dynasty memorial, however, the number of goats had increased to 10 two decades later. Similarly, comparison of the photographs of Quruq Tagh taken in 1929 and those taken in the 1970s showed additions had been made within this time period.[294] For Hu, this meant that reliance on style for dating was very problematic, as rock-art could be augmented by later people. The practice of discerning what petroglyphs were made first in relation to other images within the panel provides, at least, a chronology that is relative within the panel so the researcher can reconstruct the process of creating the earlier images, then making later additions.

[293] *Ibid*.
[294] Hu Xiaohui 1993, 4.

Petroglyph chronologies can also make recourse to parallels found amongst artefacts from dateable contexts.[295] An example of this includes standing stones, alternatively known as deer stones, in Mongolia and Siberia (Figure 1.4).[296] The presence of burial mounds or pits containing organic materials near these monuments has facilitated dating them to 1200–700 BCE, enabling researchers to relatively date petroglyphs made in similar styles.[297] Another example of associating rock-art figures with those identified in archaeological contexts is the horse with a protruding mane and stocky muzzle (Figure 2.30). These features have been linked with those found on bronze daggers and knives with horse-shaped pommels, such as the one in Figure 2.31. I. V. Kovtun notes that these artefacts are mainly excavated from contexts dated to *c*. 1300–1000 BCE and the way the horse is presented is similar to the petroglyphs.[298] It should be remembered, however, that panels with multiple carvings could represent several overlapping periods of rock-art creation. Thus, a single figure cannot be used to date an entire panel – the researcher must consdier that panels are complex artefacts that have not been protected by a sealed deposition.

Patina (*rock varnish* or *desert varnish*) is the accretion of mineral deposits over the carved image, as well as alterations in the colour of the lines caused by chemical reactions between the rock and environment.[299] The basic assumption behind patina as a dating method is that patina on older carvings is thicker and the colour of the exposed

[295] Several examples of parallels between Bronze Age excavated materials, specifically Seima-Turbino artefacts and deer stones, and petroglyphs is provided in Samashev *et al*. 2011, 54–58. Petroglyphs dated in this manner are often used as parallels to date other petroglyph sites (Baypaqov *et al.* 2006, 67).
[296] This style of representation is closely related to the well-known, and much-discussed, *animal style* of the steppe. For a discussion of this style and its geographic range, see Francfort *et al.* 1999; Bruneau and Vernier 2010, 27.
[297] Fitzhugh 2009b, 183. Though Tsagaan Turbat suggest that deer stones may have been made as a late as 500 BCE (Turbat 2015).
[298] Kovtun refers to the pronounced mane as 'forelocks' and observes similarities between this type of horse image on a vessel from Taip-Depe 1, Margiana, and sites in Southern Iraq. These are relatively dated to 1300–1000 BCE (Kovtun 2012, 97).
[299] Jacobson-Tepfer 2015, 378.

rock will be closer to that of the original rock surface. In Figure 2.32, the Cyrillic text carved after the 19th century CE is a bright, white colour, whereas the elephantine-type[300] petroglyph is much darker, suggesting that the rock crystals of the Cyrillic text were crushed more recently. This demonstrates the relational dating nature of patination and that it is most useful forcomparing petroglyphs on the same panel.[301] It is harder to compare patination between different panels, however, as the formation of patina is highly dependent on weather; factors, like a panel's angle and orientation, can grossly alter the amount of patina an image accrues.[302] Additionally, the rate of patina accumulation could only be considered a reliable dating method if environmental conditions remained constant from the moment the image was first made.[303] This way of estimating dates for petroglyphs is, similar to the others listed above, currently most useful when used in conjunction with other methods. V. A. Gorodtsov was the earliest to develop many of the dating methods that are now recognised as core to archaeological practice. He critiqued I. T. Savenkova's early study of petroglyphs along the Yenisei River for ignoring salient factors that could be used dating, including patina. On this basis, he also dated a site in Turgay, arguing that it appeared synchronous with sites along the Yenisei.[304] Gorodtsov's use of patina, however, was paired with

[300] Despite what appears to be a trunk, this figure cannot conclusively be labelled a mammoth or elephant, as many of its features are indicative of other species. For instance, its thin, long legs are usually seen in depictions of elk. Additionally, the figure's physiology is atypical of an elephantid. This author is mindful of publications that have discovered unusual motifs in rock-art and, on this basis, immediately suggested re-dating dinosaurs from the Mesozoic Era (*c*. 252–66 million years ago) to the Holocene (*c*. 11,700 years ago–present) (Jihgel 吉戈爾 1993, 21). This author will, therefore, reserve judgement on the duration of mammoths in southern Siberia till more evidence is available.

[301] Samasehv *et al*. describe the degrees of patina on different petroglyphs across a panel, as well as their overlay, as an 'intra-petroglyph chronology' (Samashev *et al*. 2011, 54). An outline of the formation of patina is also found in Ferrandi 2010, 75.

[302] Liu and Broecker 2000.

[303] Some progress has been made with establishing rates of patina accumulation in the South-Western USA, with promising results (Liu and Broecker 2000). The first author of the study joined a survey team to Biluut, Mongolia, in 2017, where he took samples from rocks and petroglyphs, with the aim of building a rock patina stratigraphy for the region. Results are, however, extremely preliminary (Liu Tanzhuo, pers. comm.).

[304] Devlet and Devlet 2011, 53.

examination of the image's style and content, highlighting the need to use multiple methods for dating.

The final method is assigning dates to rock-art according to associating with nearby archaeological sites. The majority of nearby sites in the Altai are in the vicinity of panels with rock-art, not immediately in front of them. In the Eurasian Steppe, archaeological sites nearby are most likely to be mounded tombs (kurgans) or anthropomorphic stone stele.[305] It is also useful when archaeologists note the presence of rock-art near their excavation, as in the case of a pastoralist winter settlement in eastern Kazakhstan that was noted to have 1st millennium BCE-style petroglyphs nearby.[306] Researchers can be quite indiscriminate when drawing links between rock-art and other forms of archaeological evidence, however, oftentimes not examining the likelihood of the rock-art's creators being the same people who made the graves or camps. Overall, however, finds to date suggest an agreement between the subsistence practices (and presumably cultures) of those creating burial sites and those creating rock-art. Consequently, it is assumed that groups in the Altai during the 2nd–1st millennium BCE were making rock-art, though the precise identities of those creating rock-art remain unknown.

2.5 Theoretical approaches

This section outlines the theoretical perspectives that underpin this study of rock-art. Way of interpreting rock-art have been many and varied (2.3), but this section focusses on the ways of understanding the past used to inform the wider questions explored in this thesis.

[305] Cheng Zhenguo and Zhang Yuzhong 1984, 79.
[306] Frachetti *et al*. 2010a, 633.

2.5.1 Connections

Relations or *links* between entities form the basis of many archaeological interpretations, which are then extrapolated to show *relations* between people, animals, their societies, etc. Archaeological interpretation is, therefore, a process that reconstructs the past in a way similar to the philosophical concept of relational theory. Relational theory is generally understood as a constructive ontology reliant on exchange between people, i.e. the *a priori* assumption is that there is relatedness between humans.[307] Whilst archaeology arguably focusses on reconstructing the human past, regardless of the material being studied, researchers have long acknowledged that *relations* are not limited to human interactions, but exist between all entities. For example, typologies of objects are formed by assessing levels of *relatedness* between non-human entities, which are then used to show *relations* between regions, time periods, people, etc. Archaeology is often focussed on reconstructing the human past, and the focus of this thesis is to demonstrate connections between people in different geographical regions. However, links between rock-art may not reflect the exact connection that existed between the people who made them. As per Barad's argument that all entities are formed from the entanglement of intra-acting agencies, only gaining boundaries and meanings through contact with other phenomena,[308] rock-art only manifests as a material through various intra-actions with other entities (not solely humans). Understanding all entities as undefined until the moment they interact with another entity alleviates the emphasis on the human actor's experience, allowing archaeologists to consider the full process of intra-action that created the remains left today. Rock-art, therefore, is an entity in a continuous process of becoming, which should be

[307] Gergen 1995, 35.
[308] Barad 2007, 139. This will also be explored more thoroughly in section 2.3.

acknowledged. Instead of making links between rock-art across great distances and relying on *only* the motif to explain these links, therefore, this thesis understands connections as having been forged on the basis that rock-art was an appropriate material culture to express these links. In addition, its appropriateness was constructed by the social and cultural meanings attributed it by the groups who made, observed, and interacted with it.

This holistic perception of rock-art implies that, behind each image, there is a rich story of social and cultural interaction, as well as human and non-human interaction. Rock-art is particularly suited to expressing these stories, as it is located in places typically lacking other archaeological remains. Additionally, the majority of archaeological evidence in the eastern Eurasian Steppe is burial archaeology, whereas rock-art is not explicitly linked with death. This is important to how archaeologists reconstruct the past, as we cannot rely on the accoutrements of the dead to tell us about the living. The stories behind rock-art, therefore, are the actions of the living – most importantly, rock-art's presence demonstrates the movement of living people to marginal locations.

Movement is a mechanism that humans use to order their landscape.[309] By creating links between locations, humans create a method to observe, understand, and interact with the landscape. By so ordering it, social rules can be enacted within the landscape. For example, approaching certain locations may necessitate specific behaviour at certain times.[310] These rules were not necessarily a purely human phenomenon, however, as the humans' interactions with the landscape and places within it forged the practice of creating rock-art. Rock-art is, therefore, a product of intra-action between landscape,

[309] Llobera *et al.* 2011, 843.
[310] *Ibid*.

place, human, and non-human, as well as a means for its creator and observer to order their world.[311]

2.5.2 Landscape

Landscape has been defined as human-made features in the natural environment, i.e. houses, monuments, grave markers and so forth.[312] From this perspective, it is constructed by humans. Petroglyphs in the Altai represent the most visible form of archaeological evidence – in many cases, there is no other feature nearby that has been explicitly made by a human. The focus on *landscape* in this thesis forms part of an attempt to expand rock-art research outside of the motif to include the rock, place, and other topographic features. A propensity toward excluding natural features from analysis has constructed an image of the past as lived within a wholly human-made landscape. Problematically, however, divorcing petroglyphs from the surrounding environment makes it difficult for the researcher to imagine the sensual aspects of creating them, such as the effort involved in reaching the location, the effect of weather, and how the materials felt. In essence, excluding the landscape actively removes most of a petroglyph's content. Over-reliance on the content of an image to demonstrate relationships between entities was highlighted in the previous section (2.5.1) as ignoring much of the information conveyed by rock-art. Whilst the previous example focussed on the relations between people, non-human entities, and the landscape that could be missed by focussing solely on the visual aspect, it is important to appreciate that even 'visual' media communicate through other sensory channels.[313] Edwards notes, for instance, that it takes people a concerted effort to exclude particular senses, thus a piece

[311] Wilson and David 2002, 1.
[312] Earle argues that local groups and leaders constructed landscapes with specific characteristics to fashion emergent social facts, such as hierarchical power (Earle 2004, 155).
[313] Edwards 2012, 228–229.

of archaeological evidence cannot be approached as appealing to only one sense.[314] Instead, the object was created and observed, not only within contexts of entangled socio-cultural ideologies in various periods, but also within contexts where the senses (vision, audition, olfaction, gustation, and somatosensation) merged to create an overall experience. For this reason, all aspects of the landscape, including non-human animals, locations of shelter, the sky, weather, etc., played roles in the creation of rock-art. These aspects of the world would have been observed and interpreted at both the individual level, as well as the macro-social level.

Conceptualising rock-art as made within complex webs of intra-action enables a break-down of the Cartesian division between a human-made world and natural world. This allows the research to accept that humans create places imbued with socio-cultural significance, regardless of the presence of human-made structures, which highlights an alternative way of examining human relationships with the landscape. From this ontological perspective, a division between humanity and the landscape does not exist, thus the sensory and socio-cultural processes involved in the creation of rock-art occurred at a different level of engagement with the world. The contributions of sensory factors are evident in the relationships can people form with natural features. For instance, folklore traditions often concentrate on pertinent natural features in the landscape,[315] as they are connected with known places, thus they are attributed an endurance that will outlast generations of humans. Human constructs of place are, therefore, considered to be extremely subjective, dependent on emotional, spiritual, and

[314] *Ibid*.
[315] Tyuleneva 2014, 35; Ryden 1993, 56–60. Angela Bourke has noted that the durability of faerie legends comes (amongst other things) from their connections to real places in a known landscape (Bourke 1999, quoted in Black 2008, *lxi–lxii*).

social factors that influence an individual's experience.[316] However, natural features, such as rivers, mountains, and unusual rocks, formed these places and occupied roles in cultural and social practices. It is, additionally, important to acknowledge the agency of landscape in interactions with humans, particularly in the way that it led to the creation of rock-art, instead of simply casting it as a passive backdrop against which humans conducted their lives.

The issue with considering factors like sense or experience is that researchers who do are often accused of subjectivity.[317] This has led to a situation where *landscape* is most often examined from the aspects of distance and its surface form. Jenny Nord refers to these as the first and second dimensions of landscape, respectively. However, Nord further highlights third and fourth dimensions of *landscape* that are equally, if not more salient, to human engagement with the world: the weather, view, sights, scenery, and passage of time.[318] These factors have significantly influenced human engagement with the landscape, though they are extremely difficult to record. In order to include these as considerations, however, photographs of rock-art, as opposed to greyscale line drawings, are included wherever possible to ensure that as much of the surrounding landscape is included as possible. A method of examining features like sight and scenery, meanwhile, can be conducted through starting with the simple step of assessing rock-art's location in relation to distinct topographic features (watercourses, obvious landmarks, the form of the rock outcrop, mountains, rock colour), then examining these features through human experience (auditory and visual stimuli, places particularly suited to hunting/pasture, communication routes, ritual places, nodes within the

[316] Riley 1992, 15–22.
[317] Many works that call for increased appreciation of human experience are critiqued for extreme researcher subjectivity and the non-replicable nature of their results (Ljunge 2010, 92).
[318] For further details, see Nord 2009, 32.

landscape).[319] This does not divide nature from culture, as it is understood that both overlap. Though this may not necessarily be how the creators or prehistoric observers of rock-art understood the images, it is a useful analytical tool for modern researchers to use, as it compels the researcher to examine rock-art from a different angle.[320] This approach was outlined and utilised in Jan Magne Gjerde's thesis on Scandinavian rock-art, and the analytical concepts he uses will be employed in this thesis. These concepts are referred to as macro-landscape and micro-landscape. The macro-landscape denotes a petroglyph's location in relation to human-constructed remains and topographic features. The micro-landscape, in contrast, is the relationship between natural features on the rock panel and the imagery that expresses the landscape. A panel, therefore, is a miniature landscape,[321] as the natural variations in its shape, orientation, weathering cracks, veins of different coloured rock, etc., are the topographic features. Additionally, micro-landscape includes internal relationships between the images and figure groups.[322]

2.5.3 Place

Analysing petroglyphs as monuments in the landscape is useful to ensuring petroglyphs are approached as salient artefacts within the landscape, instead of being judged only on what their content passively reflects about humanity. The definition of monuments used in this thesis is set out by Sarah E. Jackson and Joshua Wright; monuments are enduring structures that embody a set of practices and serve as ongoing reminders of the events, and even individuals, that led to their creation.[323] From this perspective, the intentions

[319] These features are listed in Gjerde 2010, 152–153. Similar methods are utilised by Christie 2008; Demattè 2015.
[320] Gjerde 2010, 152–153.
[321] Keyser and Poetschat 2004, 118.
[322] Winter 2005, 135.
[323] Jackson and Wright 2014, 117.

of the monument's original creator are only one part to defining it; the perception of its durability comes from the observer. Earle identified this durability as the most important aspect of a monument, arguing that its power lies in its ability to survive the generations and define relationships of those social groups to places.[324] Although studies often conceive of monuments as demonstrations of power,[325] monuments are active participants in the landscapes and social systems around them.[326] More significantly, monuments play this role continuously, as they embody multiple interpretations of the past, which change dynamically throughout time.[327] This dynamism is an actor in the creation of place. Place, however, is dependent on the monument's relationship with its human observers, thus place, 'is [both] personal and political.'[328] Petroglyphs of the 2nd–1st millennium BCE have the quality of monuments, as they outlasted several human generations. Additionally, rock-art would have played a significant role in shaping places and constructing human perspectives of the landscape. In addition to the initial creators, later individuals observed and interacted with petroglyphs, sometimes adding new glyphs, or even commenting on the earlier imagery.[329] Both types of interaction with petroglyph sites exhibit how different people engaged with them depending on their own cultural contexts, yet the petroglyphs themselves were also active in constructing their cultural landscape.

[324] Earle 2004, 155.
[325] Bradley additionally argues for power having been demonstrated through, 'control over the meanings of the rock-art,' however, this cannot be proven unequivocally (Bradley 2013, 73).
[326] Jackson and Wright 2014, 117.
[327] *Ibid.*, 119.
[328] Rubertone 2009, 13.
[329] This was observed at Quruq Tagh, where petroglyphs of animals were accompanied with a line written in the Torghut dialect of the Mongolian Oirat language reading 'burxat cakgŭn zuruk' (pictures from the time of the Buddha) (Bergman 1939, 186). Additionally, the petroglyphs at Jiyanjian had been much damaged by carvings in both Chinese characters and minority languages (Changji huizu zizhizhou wenwu puchadui 1993, 35).

The idea that non-human agents can be active in interactions with humans brings up the concept of agency. Alfred Gell's work on the subject conceived of two types of agency; primary agencies and secondary agencies. The latter allowed consideration for the fact that inanimate objects can influence people. Primary agency, however, is a human characteristic, stemming from their capacity to have intention.[330] Even at the time, Gell noted that the issue of the relationship between beliefs, intent, and external events leading to the action is problematic.[331] As a result, though agency is often perceived as a human attribute,[332] many researchers not only question the importance of intent in agentic relationships,[333] but also reject the idea that independent objects exist prior to the interaction that creates an effect.[334] Bruno Latour argues, alternatively, that conceptualising non-human entities as actors is preferable to relegating them to the side-lines of archaeological analysis under the pretence that they had no effect on constructing humanity or the socio-cultural landscape.[335] This coincides with a major role attributed to monuments by Jackson and Wright, which is their contribution to humans' understanding their own identities.[336] Through active interactions with people, therefore, rock-art would have acted as a focus for them to build identities of self, whilst also facilitating processes of constructing and deconstructing collective identities. In this way, rock-art was an agentic being embedded in the landscape.

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[330] Gell 1998, 36–37.
[331] *Ibid.*, 16.
[332] Dobres and Robb 2005, 164.
[333] Jones and Boivin are particularly critical of arbitrary dichotomies and boundaries, particularly that of subject and object, which they see as reinforcement of the idea that agency is gained through intent, though humans frequently do not exhibit intent when causing effects (Jones and Boivin 2010).
[334] Barad 2007, 139.
[335] Latour 2000, 117.
[336] Jackson and Wright 2014, 119.

2.6 Summary

This chapter has introduced the reader briefly to the theoretical perspectives of the main four nations conducting research in the Altai Mountains (2.1), the broader archaeological context of the Eurasian Steppe and local Altaian region in the 2nd–1st millennium BCE (2.2), some of the major trends in rock-art research over the past centuries (2.3), and methods for dating rock-art (2.4). An overview of three major theoretical angles that the author will revisit and utilise throughout this thesis – rock-art as a proxy for connections, landscape, and monumentality – was also provided (2.5). Although the processes leading to the creation of rock-art were many and varied, the aim of this thesis is to demonstrate how rock-art played an active role in forming human perceptions of the world. Multiple threads of agency can be intertwined at any one point, but only in some cases will intra-action between certain agentic entities lead to the creation of rock-art, or engagement with it. This allows factors, like the landscape, to be considered part of rock-art, rather than a backdrop that rock-art was enacted against. Whilst this chapter has focussed on this thesis' contextual and theoretical underpinnings, the tangible ways in which these will be explored are outlined in the next chapter, the methodology (3).

3 Methodology

3.1 Introduction

Connections between the Altai Mountains and its neighbouring regions will be examined from two angles. First, the relationship between rock-art and human movement will be explored using the landscape as a focus by assessing the possibilities for movement in that landscape. Second, individual motifs will be assessed for similarities and/or differences with imagery in rock-art at other locations. Comparison will, additionally, be made with images on portable art in different regions, as this form of art can be moved, often across larger distances than even small fragments of rock-art. Due to limitations imposed by both the duration of this thesis and the size of the study area, three regions within the Altai were chosen to serve as case studies: Tsagaan Salaa/Baga Oigor, Mongolia; the valley of the Katun River, Russia; and the area surrounding Altay City, PRC. The reason for examining an area of the Mongolian Altai in detail is that the author was able to visit the region in July 2015 and experience the landscape first-hand. Regarding Russia's Altai Republic, there is a plethora of data on rock-art sites that has either been published or made accessible online, making it the area most amenable to research. As for the PRC, Xinjiang province is routinely marginalised due to language barriers and other issues discussed in 2.1.4, so the opportunity to focus on this region and incorporate the material into wider archaeological narratives is taken by this thesis.

3.2 Placing rock-art in the world

As was mentioned in 2.5.1 and 2.5.2, a common approach to rock-art in the Altai has been to examine the human-made image in isolation from its surrounding context. To ensure that features like the surrounding environment and rock panel are incorporated into the analyses, this thesis utilised the concepts of macro-scale and micro-scale

landscape analysis, adapted from Jan Magne Gjerde's thesis completed in 2010. Both are outlined in greater detail below.

3.2.1 Macro-scale

Features that belong to the macro-landscape comprise those not immediately related to the rock-art panel, but that could have been of significance in the decision-making process to make rock-art in a place. These include:[337]

- *water*
- *distinct topographic landmarks*
- *shape of the rock outcrop*
- *economic area*
- *good hunting places*
- *mountains*
- *central places in the landscape*
- *other contemporary archaeological remains*
- *shoreline/shore bound*
- *inter-visibility between sites*
- *audio-visual*
- *communication lines*
- *accessibility*
- *rock colour*
- *ritual places*

[337] Gjerde 2010, 152–153.

Economic area originally referred to regional distinctions in the main subsistence strategy – agriculture or hunting.[338] During the time period discussed in this thesis, however, the economy was based mainly around pastoralism, though hunting would have occupied a significant auxiliary position. As a result, this feature for the Altai is related less to distinctions between geographic areas and more to which activity the creator of rock-art chose to emphasise in that instance. The above list incorporates many features traditionally dichotomised as either nature or culture, prompting a more integrated analysis that appreciates the cultural role of the natural.

As the experiential approach to landscape can be somewhat objective, this thesis mediated the issue by employing mixed methods, incorporating computer analyses. Geographic Information Systems (GIS) was used to examine the hypothesis that rock-art locations correspond to accessible routes. Although this relied predominantly on topographic factors, there will be thorough discussion of other variables that may affect the human decision-making process to create rock-art in certain locations that cannot be input to a computer model.

3.2.1.1 Least-cost pathways

The first stage of analysis utilised GIS to explore patterns in the distribution of known rock-art sites. The software used was Esri's ArcGIS (versions 10.2.2 and 10.4). This GIS software was selected mainly because the author had access to it. Moreover, despite the ever-increasing number of open-source alternatives, none seem to radically improve on the ArcGIS package for simple functions and more complex processing.[339] It was determined that the best method to test the relationship between rock-art sites and human movement was to create an accessibility map of the Altai. The least-cost

[338] *Ibid.*, 152.
[339] A detailed comparison between GIS packages can be found in Donnelly 2010, 148.

pathways tool in ArcGIS can detect the best path between a source and destination point according to the parameters inputted (typically terrain elevation and aspect). Multiple least-cost pathways can be merged and the number of paths per cell calculated to produce a map that will visually represent the routes that the software calculates would have been most frequently used. To calculate routes of movement using rock-art sites as the points of departure and arrival, however, makes it impossible to independently test whether their locations are related to movement, as the map produced would be a map of movement between rock-art sites. An alternative to this is suggested by Devin A. White and Sarah B. Barber, who use a regularly-spaced sampling grid of points to run least-cost pathways between.[340] This means that the non-existent human agent 'travelling' between points along the least-cost path is not presumed to be solely moving between the sites of archaeological interest. This is important, as it is necessary to build a picture of how rock-art fit into wider lived experiences that would have involved many other points in the landscape (human-made and natural). For a region the size of the Altai, a grid of 272 regularly-spaced points separated by 95 km was sufficient to build a picture of movement, considering that the starting or end points could be either within or outside the Altai.

The huge area covered by these analyses comprised approximately 1,051,300 km^2. This scale made it preferable to use 90 m SRTM data – or three arc seconds – for the data elevation model (DEM) (Figure 3.1). [341] Despite the lower resolution, this scale was suitable for the Altai, where earthquakes are relatively common. As a result, the earth has shifted and least-cost pathways cannot mark exact routes used in prehistory. One tremor in 2003 with its epicentre near the Chuya Steppe

[340] White and Barber 2012, 2687–2688.
[341] The Shuttle Radar Topography Mission created 3D models of the earth's surface that are available online through CGIAR-CSI (Jarvis *et al*. 2008).

measured 7.5 on the Richter scale. Approximately 500 low-level tremors were recorded from this point until 2011, when another large earthquake of magnitude 6.5 occurred in the neighbouring Tuva Republic.[342] If it is presumed that this frequency of major seismic event – once every eight years – has been constant since the end of the 1st millennium BCE, then there have been more than 250 major tremors since.[343] As a result, landslides and other changes to the topography have almost certainly occurred, which means that calculating least-cost pathways using 90 m SRTM data will be reliable to the extent that the software can detect terrain more amenable to movement, but it would not be advisable for an individual to use them as precise travel routes. Analytical cell size was approximately 115 pixels. Calculations for slope and aspect were derived from the DEM. The slope and DEM were then used to calculate Tobler's hiking function:

$$Cost = \left(60 \div \left(1000 \times 6e^{-3.5|\tan\theta + 0.05}\right)\right)$$

This produced an accumulated cost surface that was used to calculate path distance between each of the 272 sample points (source) to every other point (destination). The cost surface was used as the friction surface, the DEM as the input surface raster, aspect as the horizontal factor, and the DEM as the vertical factor. Least-cost pathway and backlink rasters were created for every sample point as the source. The analysis ran in four batches on three different computers. The total processing time was approximately 564 hours, i.e. 23.5 days, for this one step.

The least-cost pathway rasters were converted to polylines to facilitate representing the path visually. In total, the analysis produced 295, 988 features, so

[342] Kats *et al*. 2012, 126.
[343] Numbers for the period 2003–2011 represent the most thorough, published data on seismic activity in the region. Prior to this, only sparse records are available.

further processing was necessary to make the data more manageable and enable interpretation. In order to produce a clear mode of visual representation, the path distances of each of the 272 points were combined. To account for the edge effect, or, specifically, the weighted centrality of the graphic, the Euclidean distance was calculated for a point at the centre of the study area. The result was inverted, then subtracted from the collated accumulative path distance file. The values for density of movement were then standardised to between 0 and 1, with the resultant accumulated cost surface essentially representing an accessibility index (lower values are more accessible, higher values are less accessible). Originally, the lowest values were garnered for the regions surrounding the Altai. This was unsurprising, as these low-altitude areas require less energy expenditure for a human to move through. However, as the focus of this study is movement through the mountains themselves and not around them, cost values below 0.75 were removed, leaving only places with values between 0.75 and 1.00. Accounting for this edge effect ensured that the focus remained on the central part of the Altai.

The least-cost pathways were processed using the merge tool, which combined multiple datasets of the same data type into a single dataset. Due to the amount of RAM required to process pathways between 272 points, the merge was run from Python shell, as running the ArcGIS programme consumed too much RAM. Additionally, it took four attempts before ArcMap successfully merged the least-cost pathways into a single dataset. The merged dataset was then dissolved into a single feature, however, similar problems with memory occurred. The least-cost pathways thus had to be merged, once again, in batches, this time of 25,000 features. These smaller datasets were then dissolved into single features, which were merged with each other to create one dataset for all least-cost pathways.

The line density tool was run on the merged dataset to produce a density estimate of the number of polylines. The search radius was first set at 1 km, then 10 km to identify underlying patterns more clearly and remove any background noise. The 10 km search, however, produced a density image that suggests the most common route across the Altai was to go around it, which contradicts the archaeological data showing that people definitely moved through the Altai. The search radius was, thus, changed to 5 km, which better represented the extent of movement through cells. The planarize lines tool[344] was then run on the dataset to split the polylines where they intersected other polylines. This function was initially operated within Python shell to ensure the program could make use of most of the computer's 8 GB RAM. There was still insufficient memory, however, and the data were transferred to a computer with 36 GB RAM. Planarizing the polylines created a vector file with values ascribed to unique parts of the lines and overlapping lines, which allowed the symbology to be altered to highlight higher and lower density areas. The spatial join tool[345] was then used to combine the lines and produce a file where the lines (routes) that are most used could be ascribed different values, allowing them to be highlighted in different colours and the accessibility of the area demonstrated visually. This completed the steps for depicting the accessibility of the Altai Mountains as a graphic that could then be compared with a distribution map of rock-art sites.

To produce a distribution map of rock-art sites, a database of GPS coordinates for known sites was collated using published works. Although 437 discrete site names were identified in the literature, only 263 were published with either GPS coordinates or sufficient descriptions of their locations that coordinates could be calculated. For the

[344] Planarize Lines splits lines where they intersect, creating new features (Esri 2016b).
[345] Spatial Join marries the attributes of different features based on their spatial relationship (Esri 2016a).

latter type of site, mapping applications that use satellite data, including Google Maps, Google Earth, and Yandex Karta, were used to identify the site's probable location and generate GPS coordinates. This resulted in 169 sites (64.3% of total) falling within Russia's borders,[346] 37 sites (14.1%) in the Chinese Altai, 35 sites (13.3%) on the Mongolian side of the border, and 18 sites (6.8%) in the Kazakh Altai. Though it seems that a saliently high number of sites are in the Russian Altai, this corresponds roughly to the proportion of the Altai's area that Russia controls, which is approximately 49%.[347] Mongolia controls the second largest part of the Altai (31%), Kazakhstan the third (12%), and the PRC the fourth (8%). The numbers of sites with GPS coordinates that could be identified, thus, seems biased in favour of Russia and the PRC, as the PRC controls the smallest area, but more sites with GPS coordinates were identified within its borders. Additionally, Russia covers nearly half the Altai, but 64.3% of sites with coordinates were located there. The dominance of sites from Russia and the PRC may be attributed to the prevalence of these languages in comparison to Mongolian or Kazakh, which may facilitate the accessibility of literature from these two countries. Alternatively, archaeology is a relatively nascent subject in Mongolia and Kazakhstan, in contrast to Russia and the PRC, so the current distribution of sites may be a product of political support and funding (or lack thereof). Another factor contributing to the high distribution of sites on the Russian side of the Altai could also be that researchers designate much smaller sites than, for example, Kazakh researchers, who, in some cases, refer to an entire mountain as one 'site'.[348] After collecting the locations of rock-art sites,

[346] Including the Altai Republic, Republic of Khakassia, and Tuva Republic.
[347] Estimated using area calculator on Free Map Tools (https://www.freemaptools.com/area-calculator.htm, accessed 6 September 2017). Total area of Altai, including Western Sayan, estimated as 524,216 km^2, error calculated as approximately 1.8%.
[348] As in the case of the Eshkiolmes rock-art 'site' (actually a mountain) (Rogozhinskiy 2011, 20–22).

their distribution was imposed over the graphic of the spatial join. Their proximities to apparent hubs of movement were then analysed visually.

3.2.2 Micro-scale

The second level of analysis conducted on the landscape was the micro-landscape. James Keyser and George Poetschat describe this as the relationship between natural features and rock-art, such that a panel can be a landscape in miniature. Additionally, it includes internal relationships between the images and combinations of figures.

The micro-landscape refers to aspects of the rock-art panel that express features of the larger landscape. These can include:[349]

- *striation marks*
- *layering in the rock*
- *cracks*
- *small water collections (representing lakes)*
- *running water (representing rivers)*
- *damage to the rock surface*
- *rock colour*
- *changes in the rock type*
- *elevation – edges, crevasse, 'hilltops'*
- *inclination of the rock surface*
- *other topographical features*
- *views of lakes*
- *sound (acoustics)*

[349] Gjerde 2010, 164.

The list above focusses heavily on how the larger landscape is represented through natural features on the rock panel. In addition to landscape, relationships between figures across the panel are of use to understanding the cosmologies and ideologies of their creators, as well as what the 'final' rock-art panel what have looked like to them. Examining the *orientation of figures* within the panel will add another layer of interpretation, elucidating how the figures were perceived to move through the landscape by their creators.

3.3 Motifs

A motif is a combination of markings identifiable as forming an image discrete from others. It is, thus, an analytical entity within the greater rock-art panel. A motif can be any form of representational or non-representational image, including abstract symbols that can be shown to repeatedly appear in the same formation. Using the motif as a proxy to examine cultural interaction emphasises rock-art's visual qualities, instead of aspects that were possibly more important to its creators, including the location or qualities of the rock. However, for the purposes of exploring relations between regions, visual analysis is suitable. In addition, there is a large quantity of motifs made independently from any scene in the Altai's rock-art, thus the region is well-suited to this kind of analysis.

Three areas within the Altai were selected to be case studies for varying forms of relationship between motifs. Such relations may include the following:

- Similarities in choices of aesthetic expression for parts of a motif, e.g. level and mode of stylisation in deer antlers
- Similarities in rock-art content, but distinctive styles
- Rigid adherence to a particular style of expression for certain motifs

Whilst the scale of this study is quite large, it is necessary to select points of departure from which to assess these overarching patterns. To facilitate comparisons of motifs in different locations, a database of rock-art motifs and panels was created in Microsoft Access 2016. The reason for choosing this database software was that it was made accessible to the author through her university. Photographs and drawings of rock-art panels, as well as individual motifs, were collated in this database. Each motif was categorised according to subject, date (if known), and location. During the development of this thesis, new and more specific labels were added to assist in searching for related motifs, including ones that described the peculiar style of the animal, such as 'tree-like antler' for deer (Figure 3.2). This facilitated examination of the case study regions, as similarities between motifs could be tagged and checked, rather than the author having to sort through folders of images.

3.4 Summary

The methodology employed in this thesis supported a thick contextual approach to rock-art, despite the scale of the study area. Consequently, an analytical spotlight was shone on certain case study regions, to highlight the differences and similarities between rock-art practices. Each case study region was first examined in relation to the results of the ArcGIS least-cost pathways analysis. The location of each near to major routes of movement was assessed, before moving on to the relationship of each to features in the macro-landscape, as well as evidence for the micro-landscape shown on the panel. This approach highlighted the experiential qualities of rock-art locations, whilst simultaneously assessing how these qualities impacted movement through the Altai Mountains. Finally, the database described above was utilised to identify distinctive motifs in each case study area with parallels at other sites or on portable art. This further showed, not only that movement was possible, but that people in the Altai were part of

wider networks of connections. The findings from each case study were then summarised and salient conclusions expanded upon in the discussion chapter (8).

4 Paths Through the Altai

4.1 Introduction

It has been argued at a general level that, far from being a barrier to movement, there are a multitude of accessible routes through the Altai that mean inhabitants were likely connected throughout prehistory and history (Figure 4.1).[350] Over the past decade, a plethora of works have explored the theme of traversing boundaries, with national borders viewed as often arbitrary divisions overtly influencing research aims.[351] The practical difficulties of crossing borders are salient issues for the Altai region, as modern political boundaries dictate how archaeological surveys are conducted (thus influence the study's theoretical basis), how researchers of different countries communicate, and how easy it is for local and non-local archaeologists to conduct research (Figure 4.2). In recent years, the governments of the four countries around the Altai have facilitated an image of accessibility through opening border crossings between PRC – Kazakhstan (Maikapchagai/Jeminay, Druzhba/Alashankou, Khorgos/Khorgas), PRC – Mongolia (Takashiken/Bulgan, Dayan/Hunshanjin, Baitag Uliastai), Kazakhstan – Russia (Ridder/Ust' Kan) and Mongolia – Russia (Tsagaan nuur/Tashanta, Mohmoron Gol, Mugur-Aqsa/Harig-Gol).[352] The majority of these are bilateral crossings, i.e. only nationals of the respective countries can cross, and they are not open reliably.[353]

[350] Kubarev 1999, 198.
[351] These range from studies of border formation to examining how political borders intersect with identity (Glover 2006, 17; Kolossov 2005, 614–616; Meskell 2002, 287).
[352] Steven and Saule 2011. Though Jacobson and Meacham (2010, 130–131) note a greater number of viable passes, these are not open to travellers who are not members of the government or army.
[353] Engineers reported that nowhere along the 54.57 km Russo-Sino border would be amenable to building a direct road (Pomorov *et al*. 2014, 149).

Xinjiang, in particular, has been highlighted as an area where authorities are uneasy about non-Chinese conducting activities related to geographic information.[354] This presents an issue for rock-art studies, as this academic environment means Chinese authors typically give geographic coordinates for prominent landmarks nearby, rather than the site itself.[355] Alternatively, a description of the site's location in relation to a nearby landmark is given.[356] This is likely an extension of the fact that geographic information used in ways the government cannot regulate is viewed as damaging to the state, regardless of its actual usage.[357] Whilst Chinese magazine articles fervently espouse the growth of domestic and international tourism in the Altai, there is a general lack of enthusiasm for visitors not attached to large tour groups – particularly foreigners.[358] Less restrictive, though, similarly placing restrictions on research, the Russian government issued a ban on describing the exact locations of archaeological sites in autumn 2015, as a means of preventing illegal excavations.[359] Such regulations indicate respective governments' desires to control activity and movement in the Altai.

Movement in prehistory was not controlled in this way, and it has been suggested that the transit routes used by past peoples are the ones that have petroglyphs in their vicinity. This has been shown on the Scandinavian peninsula and V. D. Kubarev has suggested petroglyphs in southern Siberia are similarly carved along pathways used

[354] Three British students were arrested in Xinjiang in 2009 and one American in 2012, as the geographic information they collected was perceived as posing threats to national security (Chen *et al.* 2013, 239).
[355] Su Beihai 2013, 227 & 343. Though a notable exception to this is Changji Huizu Zizhizhou Wenwu Puchadui 1993.
[356] Su Beihai 2013, 47.
[357] The production of international and national-level maps within China is centralised in one organisation; SinoMaps Press. Regulations stipulated by the State Bureau of Surveying and Mapping include: maps must have a general accuracy scale of 1:500,000, meaning that smaller geographic features (streams etc.) are often excluded; the exclusion of coordinates, latitude lines and longitude lines from maps drawn to larger scales; and administrative borders drawn to match China's territorial claims (Chen *et al.* 2013).
[358] Naga Terbayir, pers. comm. For examples of efforts to boost the Altai's image for tourism, see Aletai shi 阿勒泰市 [Altay City] 2013; Liao Hongwei *et al*. 2012.
[359] Pirumov 2015.

by pastoralists moving between summer settlements and winter camps.[360] Such an assertion is supported by strong links between archaeological remains of the 2nd and 1st millennium BCE found throughout the Altai.[361] First millennium BCE burials in north-western Mongolia (Altai and Sayan Mountains) are similar to kurgan burials at Pazyryk and Uyuk (Tuva Republic). In the same way, a 5th–3rd century BCE at Ulangom (Uvs aimag) was identified with the later stage of the Uyuk culture due to the timber grave structures, bronze and iron artefacts, bronze ornaments, and ceramics.[362] Standing stones with a variety of decorative features dated late 2nd–early 1st millennium BCE are similarly found in northwestern Mongolia, as well as the Altai Republic and Tuva.[363] Artefacts associated with the earlier 2nd millennium BCE Khemcek culture are distributed in the southern and eastern Altai. These examples illustrate that people traversed the mountains extensively enough throughout the 2nd and 1st millennium BCE to create large quantities of material culture that survives to now.

GIS is a tool suited to testing whether rock-art sites cluster near viable transit routes, as well as to visualising accessibility. Whilst it is relatively simple for a researcher to write that movement is possible through the Altai and rock-art is found along prehistoric pathways,[364] it can be difficult for readers to accept these arguments when there is no tangible evidence to support this. The use of GIS to visualise archaeological data has been critiqued, as this has sometimes facilitated

[360] Gjerde 2010, 49; Kubarev 2009b, 12.
[361] Volkov observes that, throughout the 3rd–1st millennia BCE, archaeological remains in the Mongolian Altai bear close resemblance to those found in Kazakhstan and southern Siberia. In contrast, the Great Lakes Depression just to the east of the Altai frequently serves to demarcate the boundaries of archaeological cultures, such as the Slab Grave Culture (*c*. 700–200 BCE) (Volkov 1995, 320–330). A similar example is the 2nd millennium BCE Khemcek Culture, present on both the Mongolian, PRC, and Russian sides of the Altai (Turbat 2014).
[362] Volkov 1995, 324.
[363] Kubarev 2009a, 34–35; Fitzhugh 2009a, 405; Volkov 1995, 325.
[364] This is informed by modern pastoralist practices (Kubarev 2009b, 12).

environmentally determinist models.[365] However, David Wheatley and Mark Gillings argue that the use of GIS should 'be carefully shaped around specific archaeological questions, themselves embedded in an explicit body of archaeological questions.'[366] In this chapter's analysis, the application of GIS is wholly informed by questions raised from studying the archaeological material (rock-art), with the understanding that GIS cannot incorporate many aspects of past lives in its analyses that were salient to rock-art as a practice.

An example of such aspects is seen in the modern distribution of sites. Modern major roads run along some of Altai's rivers, such as the Chuyskiy track (M52), making it more probable that large-scale and/or formal surveys have been conducted here, as opposed to isolated locations seen rarely, even by ibex. Alternatively, it cannot be presumed that every individual who made petroglyphs did so with the same intentions and for the same purposes; a discrete concentration of hundreds of images likely represents a very different overall process from a single image on an isolated boulder. Gjerde points to the different locations selected for Scandinavian rock-art, showing that petroglyphs were created for different reasons contemporaneously.[367] From an analytical perspective, therefore, rock-art sites are not the result of one practice, such as transit or spirituality,[368] but were likely created as the result of an agglomeration of factors, including the human's own mindset, attitudes of their wider society, as well as their immediate situation. Human intentionality cannot be measured by GIS but,

[365] Van Lanen *et al*. 2015, 202; Verhagen *et al*. 1995, 188.
[366] Wheatley and Gillings 2005, 211.
[367] Gjerde 2010, 61–63.
[368] Religion, or cult, is particularly favoured in Chinese research as an interpretive framework for rock-art, as rock-art is perceived to be the manifestation of spiritual activities in the context of 'primitive religions', such as shamanistic or animistic practices (Demattè 2004, 9).

provided the analyses' outputs are examined with such issues in mind, GIS can still be a very useful tool to examine and visualise the point of an argument.

This chapter conducted least-cost paths analysis on the Altai and parts of the Western Sayan. The utility of identifying communication routes by attributing 'cost' to different aspects of the landscape has been demonstrated in other studies, such as that by Tyler Bell *et al.*, where the authors discovered a path to a hillfort previously thought to be difficult to access.[369] The aim of using the cost path tool in ArcGIS is to identify points where past peoples were likely to have travelled. The desired picture is far more general than identifying a single, unknown path, but is a more realistic aim for a region as large as the Altai. Additionally, it is already known that past peoples travelled through the mountains – the focus of investigation is on which routes were most likely taken and whether the rock-art data support this.

Similar attempts to detect such routes have been made further southwest in the mountains of southern Xinjiang, Kazakhstan, Kyryzstan, and Tajikistan. Frachetti *et al.*'s 2017 study uses flow accumulation instead of cost paths, as they argue that 'ease of travel' was not the dominant factor influencing mobility through mountain environments.[370] Whilst this is a fair assessment, any overemphasis on low altitudes can be alleviated by confining the study area to higher altitudes. In addition, they alter the flow accumulation tool's attempt to locate the lowest point, i.e. to act like water, by using vegetation categories to produce the flow direction raster.[371] A weighted vegetation raster could, however, also be used in cost paths,[372] as 'cost' refers generally

[369] Bell *et al*. 2002, 181.
[370] Frachetti *et al.* 2017,193.
[371] Frachetti *et al.* 2017, Extended version: methods.
[372] There are various examples of communication or travel routes mapped using the terrain type rather than slope or elevation as the cost distance raster, including Howey (2007) and Gietl *et al*. (2007), to name but a few.

to any variable that causes friction, which could be elevation, the presence of certain vegetation, water, snow-cover in winter, etc. In addition, cost paths premise the existence of a traveller with the intention to move somewhere. This is demonstrated by the optional parameter to calculate the build-up of fatigue in the traveller, which is exacerbated by slope, distance, or any other resistance. In contrast, the vegetation-based flow accumulation model of movement ignores the fatigue of either the human or animals, relying mainly on the presence of good pasture. Though animals' needs were important to the herder, it would have been the human's intentions, influenced by considerations of shelter, food, water, and various other socio-poltical factors, that determined their direction. This chapter, therefore, maintains the use of cost paths to map movement, with the aim of identifying major transit arteries through the Altai. Though the analysis is not capable of mapping *all* routes for *all* reasons, the results will demonstrate that the Altai region was accessible and a locus for human activity.

The often-incomplete nature of the archaeological record makes the method for least-cost pathways analysis outlined by White and Barber attractive. In order to alleviate the software's focus on creating pathways for a single site, due to having to input a start and finishing point in ArcGIS, they advocate placing a regularly-spaced grid of points over the DEM and calculating least-cost pathways from each point to every other one. They present the results as an accumulated cost surface, or a 'travel probability surface.'[373] The advantage of this method is that the results may highlight areas archaeologists have neglected but should survey. In addition, the From-Everywhere-To-Everywhere (FETE) model, being not dependent on the archaeological record to create paths, does not rely on only one type of site, such as mortuary sites, which represent only one aspect of human life. In a similar way, it is improbable that

[373] White and Barber 2012, 2687.

past peoples travelled between rock-art sites, as they may only represent the endpoint of movement. Additionally, rock-art could have been made during an extensive journey between multiple points, which makes it inappropriate to use the sites as start and finishing points. Though it would be optimal to run multiple iterations of the model with the grid points in different locations, as done by Frachetti *et al*. in their model of Central Asian routes,[374] the size of the study area and duration of this project rendered this unfeasible. The FETE results can then be examined in relation to the distribution of rock-art sites to see whether they coincided with highly accessible areas.

The methodology for this analysis has been outlined in 3.2.1.1.

4.2 Results

Preliminary observation of the study area identifies several areas where movement could have been channelled in the high-altitude mountain range (Figure 4.3). These include the I-shaped Lake Teletskoye in the north, the Katun River, and the Bukhtarma River Valley in the western Altai. Additionally, the valley of the Khemchik River leads through the Western Sayan, south of the Minusinsk Basin.

The results of the accumulated cost surface are shown in Figure 4.4. This is a depiction of the agglomerative values of the cost surfaces generated in addition to the least-cost pathways. The darker areas indicate low values, where it should take less effort for a human agent to traverse the landscape, whereas the lighter areas have higher values and, thus, present greater impediments to movement. Several hotspots particularly conducive to movement are evident, including Lake Teletskoye, the Bukhtarma River Valley and the Chuya Steppe. These areas correlate well with what appeared to be accessible valleys on the map (Figure 4.1). It is interesting, however, that

[374] Frachetti *et al*. 2017.

some low value areas in (Figure 4.4) do not stand out as strongly as the elevation might suggest they should. The clearest example of this is the Katun River – specifically the lower and middle reaches. The entire river valley maintains a persistently lower elevation in contrast to its surroundings (see 3.1), however the cost surface assigns it a high cost to movement. On the other hand, there are several points with lower costs to movement that are not as prominent on the DEM, such as the Koksa River Valley and the River Ursul. The lesser impediment to movement in these locations tentatively indicates that past humans either used them as paths through the Altai or arrived here at some point, thus may have left archaeological remains. It seems that more accessible routes are orientated northwest to southeast in Figure 4.4.

Overlaying 2nd–1st millennium BCE rock-art sites on the accumulated cost surface displays an interesting pattern (Figure 4.5). For greater clarity, only sites within the 0.75 and 1.00 value area are shown; all sites outside this range have been removed. Rock-art locations correlate well with several lower cost areas, with concentrations in the Chuya Steppe, as well as along the upper reaches of the Katun and Ursul (compare Figure 4.3). However, there are also notable concentrations of sites in areas that present higher costs to movement, such as the long line of sites that correlates with the position of the middle and lower reaches of the Katun. Although the cost surface did not identify this as a favourable area for movement, it should be remembered that the lower Katun was particularly distinctive when only elevation was considered. The opposite is true of Lake Teletskoye in the north of Figure 4.3, which is highlighted as presenting minimal impediment to movement, however, the only site nearby lies to its south on the Chulyshman River. In general, however, the majority of sites are located along valleys, or nearby, that the software identified as presenting minimal impediment to movement. This suggests that transit was a factor in the placement (and thus a reason for the creation) of rock-art sites, however, the lack of sites in certain areas considered

particularly amenable to movement needs to be examined, as this implies that ease of access was not the only factor governing site placement.

A spatial join of the planarized least-cost pathways is presented in (Figure 4.6). Paths that should experience the most traffic are indicated in gradated colours. The highest category, 153–609, shows all routes that have between 153 and 609 least-cost pathways passing through that cell (total paths shown in Figure 4.7). The primary impetus for humans moving through this region, however, was not simply to get from one point to another. Whilst computer software can intelligently identify the best routes to take across the area defined for analysis, humans have inhabited the Altai throughout time for a variety of reasons not related to movement, which the software cannot consider, such as subsistence strategies –inherently entangled with cultural practices – as well as the procurement of natural resources. Though ArcGIS identified the low-altitude edges, particularly the west, as better places to travel, this contradicts what is shown by the archaeological evidence. It is known there was activity and movement within the central area of Figure 4.6, so the focus will be put on this part of the map and points of accessibility within it.

There are quite a few routes in the main mountainous area that appear to be particularly accessible. High values were returned for paths along Lake Teletskoye, the Sayan Canyon, the Bukhtarma River Valley in eastern Kazakhstan, and several valleys in western Mongolia. The Bukhtarma River Valley and Sayan Canyon (where the Khemchik River flows), in particular, seem to serve as core regions for several highly accessible pathways. Additionally, several routes to the north of the distinctive Bukhtarma River Valley appear to be the primary access points from the lowlands into the western Altai. These purple and dark blue lines coincide with the valleys of the rivers Charysh, Anuy, and Peschanaya. The central part of the Altai shows a more

complex picture, as there are fewer consistent lines of high value, making it seem that movement here is more difficult and the area may be less connected. However, this makes the parts of the graphic with higher accessibility values even clearer. One of these is the Chuya Steppe (Figure 4.3). Several lines with values oscillating between the 153–609 and 82–89 categories. The Chuya Steppe, thus, seems a likely locus of movement in the Altai's higher altitudes. This does not mean that people would have only used this area as a route from A to B, but suggests that they were more likely to have travelled through here even if their destinations were to be found along less accessible paths.

When rock-art sites are superimposed on the generated pathways (Figure 4.8), it becomes clear that rock-art is found throughout the mountains in places that the ArcGIS did not identify as favourable to movement. Although these data by no means represent the entire corpus of sites, they are as exhaustive a sample as is possible to gather from published material, academic, and non-academic internet resources. They can, thus, be considered sufficiently representative as to enable some examination of the significance of location. A cursory glance at Figure 4.8, therefore, shows that rock-art is concentrated in the centre of the mountains, illustrating the assertions of many researchers that humans moved freely and widely through this terrain during prehistory. It is of note, however, that the site locations do not coincide perfectly with all of the high-accessibility routes identified in ArcMap. Of the aforementioned regions that are particularly likely to have been favourable to movement, there are sites found in the upper reaches of the rivers Charysh, Anuy, and Peschanaya (Figure 4.9). However, there are markedly fewer sites in the Sayan Canyon than anticipated. Similarly, though the Bukhtarma River Valley has four sites, these are concentrated close together and there are apparently none further up the valley. This is despite the fact that the large, 1st millennium BCE, pastoralist cemetery at Berel' is much further up the valley, to the

extent that it is close to the upper reaches of the Katun River.[375] Additionally, this seems quite a small number when considered that the least-cost pathways identified this valley as a key access route leading from multiple, low-altitude paths to the centre of the Altai. It is interesting that there are a similar number of sites further to the southeast of the Bukhtarminsk Reservoir.

For the Altai's higher altitudes, rock-art sites are predominantly found along the valley of the Katun River and its tributaries – the Chuya and Ursul – as well as on the Chuya Steppe (Figure 4.9). There are also many sites distributed to the south and east in what is now Mongolia's Altai National Park. Overall, the locations appear to run northwest-southeast. It is improbable that this pattern can be attributed solely to differential survey interests amongst the four countries. As shown in Figure 4.9, much of the area lacking rock-art north of the Bukhtarma River Valley lies within Russian territory and should, thus, have been subjected to the same research tradition and its interest in rock-art as the surveys that found the sites along the Katun. In a similar way, the Bukhtarma River Valley in eastern Kazakhstan has not been neglected by archaeological research, as demonstrated by the discovery and excavation of the burials near the village of Berel,[376] as well as several publications on rock-art.[377] It is possible, however, that this apparent dearth of sites is caused by them being less visible in research. To clarify, the Altai Republic is very popular amongst Russian tourists and their enthusiasm for writing blogs with geotagged[378] photographs of their travels has produced a relatively accessible medium for disseminating the locations and contents of

[375] Ochir-Goryaeva 2014a, 51.
[376] Myl'nikov 2011, 159; Parzinger 2006, 588. For images of the finds, see Samashev *et al*. 2000.
[377] Marsadolov and Samashev 2000. This publication focusses mainly on Ak-Baur – a site that gained fame due to claims that it is the world's earliest 'observatory' – located to the northwest of the Bukhtarminsk Reservoir.
[378] This is the act of assigning a geographical location to a photograph uploaded on the internet.

rock-art sites that have never been published. This has increased academic awareness of these sites and made them more visible to researchers. Such open advertisement of sites is significantly less common in Kazakhstan, Mongolia, and the PRC. Additionally, Russian approaches to defining sites can mean that one petroglyph on an isolated boulder is a site, as exemplified by the strategy taken for Kubarev and Matochkin's *Petroglyphs of the Altai*.[379] In contrast, A. E. Rogozhinskiy refers to a concentration of 10,000 petroglyphs in the Eshkiolmes of eastern Kazakhstan collectively as a site.[380] The significance of this is what may be presented as multiple sites on a map by a Russian scholar, may be designated as one site by someone else. This means that one of the site points in Figures 4.8 and 4.9 may indicate an extremely large area – what would be called a complex in this thesis – depending on the researcher. The overall effect of these factors is that rock-art in Kazakhstan could be significantly less visible in both the literature and other media. This does not explain the similar lack of sites on the Russian side of the border, however, suggesting this region indeed has fewer sites, though future investigation of these issues would be beneficial.

Closer investigation of areas with particularly dense concentrations of sites include the valley of the River Katun (Figure 4.10). The sites in Figure 4.11 are distributed clearly along the valley, which the spatial join did not identify as a favourable route. The number of pathways along this valley is less than 50, contrasting markedly with the valleys of the Peschanaya, Anuy, and Charysh to its west. This is surprising, as the elevation map (Figure 4.12) suggests that the locations of sites correlate perfectly with the distinctive low-altitude river valley that gradually ascends into the heart of the Altai. The GIS analysis demonstrates, however, that it is possibly

[379] Kubarev and Matochkin 1992.
[380] Rogozhinskiy 2011, 20–22.

easier to travel between the Peschanaya, Anuy, and Charysh to the Ursul River basin and, from here, along the upper Katun. The variation in altitude along these routes is less severe than between the valley of the Katun and surrounding area. As a result, the density of rock-art sites in this area may have been caused by movement being channelled up the Katun valley, whereas movement from and to the west was more dispersed.

A quite different situation is evident in western Mongolia (Figure 4.13), where the overall distribution of sites seems far more dispersed. Many of the sites in the northern part of the image are located in and around the Chuya Steppe – an area favourable to movement. However, in addition to the dispersed distribution of sites for western Mongolia, they are located slightly away from main routes, contrasting with the distribution seen around the Katun. An accessible pathway running along the Sino-Mongolian border in Figure 4.14 has a few sites, but there appear to be few rock-art sites along the route running from the lower left corner of Figure 4.14 towards the Russo-Mongolian border. The marked decrease in numbers of sites towards the less severe elevations of the eastern Altai and southwestern Sayan implies that creating rock-art was more common in higher, mountainous regions. This suggests that creating rock-art can be associated, not only with pastoralists, but particularly those travelling to higher elevations. This would most likely have comprised those moving seasonally with herds. As there are many rock-art sites visible in the southeast, still concentrated in the Altai's upper altitudes, this shows that creating rock-art was not a practice divisible by region, but had more to do with social (and related cultural) practices in uplands and lowlands.

There is an interesting pattern for both the least-cost pathways and site distributions when the Chinese side of the Altai is brought into focus (Figure 4.15). In

the northern part, a major route runs northwest-southeast along this part of the Altai, providing access to the surrounding areas. This is of interest, because this route runs through high-altitude parts of the mountains, as opposed to circumventing the mountains along low-altitude areas. The southeastern end of the path does not disappear into an area lacking major pathways, instead the area around Khurgan Lake and Dayan Lake appears to be a hotspot of highly-accessible, viable routes between various paths in the mountains (Figure 4.16). The modern Chinese Altay City lies to the south of here and sits on a large tributary of the River Irtysh. The area around Altay City seems to be similarly highly accessible, as ArcGIS identified multiple pathways in the vicinity amenable to movement. It is significant, however, that there appear to be fewer rock-art sites along these routes. As previously discussed, it is probable that political sensitivities regarding access to and description of border regions has played a large part in the outcome of site distribution in China. From the perspective of modern borders, this particular area has several viable routes that cross the international borders. These include a major pathway running north-south via Kanas Lake (*kanasi hu* 喀納斯湖), which is connected to the west through quite significant routes leading to Lake Markakol in Kazakhstan. A similar situation is evident in the northern area of Figure 4.16, where the modern Sino-Russian border is located. The highly accessible pathway from Kanas Lake meets here with another route from the southeast. These then merge with the pathways running south from the Altai Republic. Of the five passes over the Sino-Mongolian border that Jacobson-Tepfer and Meacham suggest were used throughout prehistory,[381] the paths correlate well with them (Figures 4.14 and 4.16), but further indicate that the passes most used were likely the one north of Altay City, which connects to a dense network of paths in the highest categories, in addition to the one that

[381] Jacobson and Meacham 2010, 131.

traverses the border northwest of Khurgan Lake, leading to other high-value paths that run south into the PRC or north into the heart of the Altai.

4.3 Discussion

The GIS analysis demonstrates that there are multiple accessible routes through the mountains, indicating that the Altai are accessible, traversable, and were likely highly-interconnected in the past, in contrast to modern divisions. Regarding the relationship between the locations of rock-art sites and movement, however, visual assessment shows that many areas of the Altai with accessible routes have few rock-art sites. For instance, the Bukhtarma River valley stands out as a major route amenable to movement (Figure 4.9), however, there are only four sites along the route, in comparison to a much greater number of sites evident over the border with Russia. Though the significance of the relationship between rock-art sites and paths in the highest category (153–609 polylines per cell) was not tested, simple visual analysis is sufficient to identify that there are fewer sites in the vicinity of the Bukhtarma River path. This suggests that an area's being accessible was not sufficient to determine that rock-art sites would be made there.

An alternative explanation for the distribution of rock-art sites in relation to the landscape is that there had to be some significance attributed to a place before rock-art was created. Whilst a more typical interpretation of the GIS results—that would likely find support among the research traditions of the four nations dividing the Altai—[382]is that the people travelling along the Bukhtarma River valley did not belong to socio-

[382] Bulkin *et al*. note that cultural diffusion and migration became key explanations for changes in the archaeological records among Soviet archaeologists, predominantly as a way to position economic factors as the driving force of change in accordance with the concept of a pre-class society (Bulkin *et al*. 1982, 275). The prevalence of clashes between cultural groups and migration as an explanation for change also persists in the archaeology of the northwest and northern PRC, e.g. Li Shuicheng *et al*. 2010, 261; Pang Yaoxian and Pang Ping 2010, 13; Han Jianye 2007, 103–105.

cultural groups that made rock-art, there is no way to demonstrate that rock-art was a practice limited to one Eurasian group. Consequently, a different explanation is required to account for the broad distribution of rock-art throughout the mountains. One such explanation is that it was necessary for a location to first be significant in people's minds before they made rock-art there. The distinction between an accessible area and a place is that the latter are created through human experiences,[383] thus are by definition foci of significance. These experiences can range from pre-existing historical associations, to group/personal trauma, to individual memories of enacting relationships with others.[384] An assumption regarding long-lasting monuments, such as rock-art, is that they represent a concerted decision to recognise a particular experience in such a way that the representation becomes an actor in later human socio-cultural activities, whilst also playing a continuous role in forging the landscape.[385] Rock-art, therefore, is less a pictoral representation an object than it is a signification of a process enacted to recognise an experience, meaning that it will not simply be found next to a major route unless people recognised something worth acknowledging.

The requirement that a place should be significant in some way before rock-art can be created there is implied by the presence of other archaeological remains among the Bukhtarma River valley that attest to people's presence, despite the fact that rock-art wasn't being prolifically created. These include multiple large kurgans at Berel' (*c.* late

[383] Though this description of place, used summarily here, stems from a concept of a *cultural* landscape in contrast to a *natural* one, the chapter this comes from makes a concerted attempt to show that the *natural* can appear *cultural* depending on the position of the social actor. In essence, it tackles the Cartesian dichotomy head-on. See Arsenault 2004, 72.

[384] *Place* in contemporary studies is often represented on a sliding scale of size, from the macro-scale (national) to the micro-scale (individual) (Saar and Palang 2009, 6–12). An alternative to this kind of magnitudinal hierarchy would be a theoretical framework that presumes a heterarchical production of place.

[385] Jackson and Wright 2014, 117–119.

4th–early 3rd century) and scattered finds dating from *c.* 1500 BCE,[386] in addition to some rock-art near the modern settlements of Mayemer, Soldatovo, Katon-Karagai, and Novoberyozka (*terminus post quem c.* 1000 BCE).[387] These remains indicate that people travelled through the Bukhtarma River valley, but the lesser quantity of rock-art, in comparison to sites like Tsagaan Salaa/Baga Oigor in the Mongolian Altai, suggests that something was lacking to prompt extensive creation of rock-art, though the few sites demonstrate that this was neither cultural ignorance of the practice nor a lack of suitable materials to make it. Instead, rock-art was, similar to the other monuments created in the valley, likely connected to particular types of human experience that necessitated its creation as a means of acknowledging that experience. The possible types of experience that could facilitate the creation of rock-art are examined further in the Discussion (8.4–8.5).

The need for a particular experience to create a place, which was then acknowledged through rock-art, does not preclude movement having been a pertinent factor influencing the locations of sites. Most rock-art sites in western Mongolia are located on or near to routes of the top five categories, i.e. have more than 82 paths running through a cell (Figure 4.14). In particular, two large rock-art complexes—Aral Tolgoi and Biluut 1-3—are located on a major route running parallel to the Sino-Mongolian border. Similarly, to the north of Aral Tolgoi, the petroglyph complex of Shiveet Khairkhan is located on a route composed of lines of at least the medium category (60-66) and above. The complex of Tsagaan Salaa/Baga Oigor is not

[386] One of these is a horse-headed staff, which has parallels in Seima-Turbino assemblages. As no detail is given for its find spot, other than 'Bukhtarma', its provenance is presumably unknown. See Kovtun 2012, 96.

[387] Marsadolov and Samashev 2000. The date given for Mayemer 1 is 8th-6th centuries BCE, whilst Mayemer 2 is described as no earlier than 1000 BCE. Though the authors do not publish any images of the rock-art at Katon-Karagai, Soldatovo, and Novoberyozka, they refer to them as contemporary with the Mayemer petroglyphs, presumably meaning that similar stylised animal imagery is present. There is, however, no mention of earlier figures.

immediately surrounded by lines indicating major routes, however, several paths comprising high-category sections appear to converge on the site from the south, east, and northwest (Figure 4.14). The path running over the Russo-Mongolian border from Tsagaan Salaa/Baga Oigor belongs to the lowest category (only 50–53 lines), but it converges with several highly-ranked paths leading into the Dzhazator Valley and Ukok Plateau (further discussion in 5.3.1). This suggests that large rock-art complexes are more likely to manifest at points that people can access, though an impetus in the form of a significant experience was necessary before rock-art was made. Similarly, most site points marked on the Russian and PRC sides of the Altai (Figures 4.11 and 4.1) appear on major pathways; the area highlighted in Figure 4.11: 4 corresponds to the Katun River valley and is an exception discussed in detail below.

Overall, the results correspond well with previous research on movement and connectivity within the Altai. Not only do cross-border routes match with known passes that would have likely been used in prehistory, but they go one step further by highlighting routes that were likely to see more traffic. For instance, there are five viable passes over the Sino-Mongolian border, but two in particular were identified as particularly conducive to movement—Dayan/Hunshanjin[388] north of Altay City and one closed as of late 2017 that heads northwest from Mongolia's Khurgan Lake. The Dayan/Hunshanjin pass connects a large concentration of rock-art sites around Dayan Lake with another concentration around Altay City. In their regional survey of Bayan-Ulgii, Jacobson-Tepfer and Meacham identified substantial archaeological remains from the 2nd through 1st millennium BCE around Dayan Lake, but concluded that there were no archaeological monuments over the border.[389] Incorporating the Chinese data,

[388] Referred to as Irmegtiin Davaa in Jacobson and Meacham 2010, 131.
[389] Jacobson and Meacham 2010, 88.

however, highlights several rock-art sites[390] located immediately on or near the major route running through Dayan/Hunshanjin. In this case, both the GIS model and incorporation of Chinese-language sources has contributed to a more thorough understanding of connections and archaeology in the Altai.

Alternatively, whilst Jacobson-Tepfer and Meacham's survey mapped archaeological remains dating to the 2nd–1st millennium BCE around Dayan Lake, as well as the valley which forms the major pathway running northwest on the Mongolian side of the Sino-Mongolian border (Figure 4.14), a far larger number of archaeological remains was identified in the upper reaches of the Oigor Gol drainage.[391] This area corresponds approximately to the rock-art complex of Tsagaan Salaa/Baga Oigor, which, as discussed above, is not located on a highly-accessible path, but several high-category pathways converge on it. The quantity of rock-art and other archaeological remains was not predictable based on the model—it is not located on a major route. Instead, the sites of Shiveet Khairkhan and Aral Tolgoi would have seemed more probable foci for such quantities. More recent surveys of the area around Aral Tolgoi (Figure 4.14) conducted by both Mongolian and international teams, [392] however, have identified more archaeological remains since Jacobson-Tepfer and Meacham's work. This demonstrates that Aral Tolgoi was still a major place on an accessible route, but the massive amount of evidence for human presence at Tsagaan Salaa/Baga Oigor simultaneously indicates that the model used in this chapter cannot be relied upon solely to identify site locations. Reasons for archaeological remains may be found along less accessible routes are discussed in 8.3.

[390] Though three of the Altay City sites were published in 2013, the others had been previously published in 1993, so were known when Jacobson-Tepfer and Meacham conducted their large-scale survey. Their view was likely influenced by either the language barrier, access to publications, or both.
[391] Jacobson and Meacham 2010, 134.
[392] These include the surveys led by William Fitzhugh *et al*. (2013, 36–39).

Despite a large number of rock-art sites being present along the valley of the Katun River, the GIS did not identify a path along it (Figure 4.11). Although lines in the higher categories diverge along the river's tributaries, there is not even a line from the lowest category of paths (50–53) running along the valley (Figure 4.12). This is surprising, as the valley is prominent on the DEM and looks, theoretically, like it should provide an optimal route between the Altai's northern foothills and its heart. The large number of rock-art sites, in addition to a variety of other archaeological remains ranging from burials and stele from the 3rd millennium,[393] to substantial kurgans and settlement occupation in the later 1st millennium BCE,[394] all demonstrate that people lived in the valley—moving up, down, and across it—throughout the period examined in this thesis. Considering the few parameters that the model had to consider, it is possible that there were pull-factors in the valley that were not considered by the GIS, i.e. reasons for people to travel through the area cannot be accounted for based simply on elevation and a desire to move from A to B. Other factors, such as vegetation cover and water sources, could have rendered an area attractive or played a more signficiant role than accessibility, depending on the season and a group's needs. This does not, however, account for the GIS programme's apparent refusal to acknowledge a feature on the DEM that should fit all the specifications of the model. It is possible, therefore, that an error exists in the model; potentially in the resolution of the DEM. The reason for suggesting that the DEM is the issue is based on a comment made in Wheatley and Gillings' influential 2002 work that, 'inaccuracies [in the DEM] will lead to erroneous

[393] Examples include the occupational remains excavated from Bike 1 and 2 (Kubarev *et al*. 36–37), as well as stele located near the mid-Katun village of Inya (Soyonov and Trifanova 2013, 92).
[394] Examples include Ak-Koby 1 (*c*. 6th-5th centuries BCE). The Ak-Koby 1 kurgans are located on the northern bank of the Katun near the village of Ak-Koby. They were identified during a survey conducted 2002-2004 investigating areas likely to be affected by development and road-building. The survey notes that kurgan 6 has already been cut by a road, but the other kurgans appear undamaged, despite probably being waterlogged. No excavation was conducted, but they were suggested to belong to the Pazyryk culture (Soyonov 2007, 32). Evidence for settlement has also been found at settlement at Elekmonar 4 (*c*. 4th century BCE) (Shulga 1995).

generation of slope estimates and therefore friction values,' with the further note that such errors means that, 'there is a real danger that cost surface results will bear no resemblance to values that would be obtained by practical methods.'[395] Though it was noted in the methodology (3.2.1.1) that the scale of the study area necessitated a low resolution so that the model would complete within this thesis' timeframe, it is possible that using 90m SRTM data caused excessive smoothing of the elevation model to the extent that impediments to human movement were not accurately represented by the friction surface. Herzog's observation that increasing cell sizes correlate with decreasing slope incline highlights an issue with using slope as the determinant friction factor for a study on this scale.[396]

The importance of slope to the model comes from the fact that the algorithm used to produce the cost surface, Tobler's Hiking Function, computes slope, elevation, and distance. Consequently, it presumes these are the most important factors influencing a person's decision to choose a route, however, this immediately favours routes with fewer slopes and lower elevations. In addition to being affected by inaccuracies with the DEM, this has implications for mapping the movements of people who lived in and were, presumably, familiar with mountain environments, as elevation and slope steepness would likely not have been the deterrents they are to sedentary people. An alternative would be to create the cost surface from elevation and a watersources dataset, for example, with cell values increasing the further one goes from water, and weight this so that it plays a greater role in the cost surface. The same could be done for other variables that represent pull-factors for an area, such as vegetation cover, seasonal snowfall, etc. Although this would alleviate the model's slope bias, it is uncertain,

[395] Wheatley and Gillings 2002, 158.
[396] Herzog 2014, 5.1.1.

however, how much it would remedy whatever caused the Katun River valley to be completely ignored as a viable route. Another option is to reduce the size of the study area to the Katun River basin, which would compel the model to acknowledge the valley. Running the model on only a subsection of the current area would, additionally, mean that higher resolution SRTM data or larger analytical cell sizes could be used, which may solve the issue. Although this solution is relatively basic, it would be the ideal starting point for any future tests to isolate the problem.

4.4 Summary

The ArcGIS analyses – accumulated cost surface and least-cost pathways – were processed to facilitate presenting the results visually. Only parts of the accumulated cost surface with cost values between 0.75–1.00 were shown, with the result that differences in the centre of the Altai were clearer and emphasis was taken away from the study area's edges. The densities of the least-cost pathways were measured, denoting high-density pathways in darker colours and less-used paths in lighter colours. Several areas of high accessibility were identified traversing the modern borders, including one crossing the border between the PRC and Mongolia. This is of interest, as the PRC has one of the more obstructive access policies, however, the analyses demonstrate that interaction across the Altai's southeastern spurs is feasible.

The resultant maps highlight the fact that not all highly-accessible routes have many rock-art sites located nearby—the Bukhtarma River valley in eastern Kazakhstan is a prime example. The creation of rock-art, therefore, though facilitated by accessibility to a location, likely occurred only after some significant human experience drew attention to a particular point in the landscape, thus creating a place. Concentrations of rock-art are also found near to high-accessibility routes, such as in Mongolia, but they indicate a process enacted to recognise a particular experience,

rather than a discrete representation of an object. The enduring quality of rock-art also means that certain places continued to be acknowleged over protracted periods of time by the addition of new images.

The GIS model, additionally, chose to ignore a major river valley—the Katun—despite the fact that it cuts a deep path through the Altai. Moreover, various archaeological remains and rock-art sites along the valley attest to the presence of people throughout the 2nd and 1st millennium BCE. This has highlighted a potential flaw in the model, potentially in the DEM, which may have been subjected to excessive smoothing. Though the time constraints of this project make it impractical to rerun the analysis, it would be worthwhile to run the model on a subsection of the current study area, meaning that higher resolution terrain data could be used, and determine if this resolves the issue.

Overall, the results of the GIS analyses demonstrate that the Altai Mountains have various accessible routes running through them, but that rock-art was created, predominantly, at significant places. Despite potential issues with the algorithm used to calculate the cost surface, it seems that many rock-art sites were created on or near to accessible routes. The following chapters thus examine sites in Mongolia, Russia, and the PRC (Kazakhstan has been covered briefly in this chapter), and what their locations and content demonstrate about connections within and without the Altai.

5 Case Study – Mongolia

5.1 Introduction

This chapter presents a case study of a rock-art complex in the Altai of western Mongolia (Figure 5.1). The aim of examine the salience of the landscape to rock-art as a form of archaeological evidence, as well as explore connections between people, as demonstrated by rock-art's subject matter and motifs. The rock-art complex of Tsagaan Salaa/Baga Oigor is an optimal starting point for examining these issues, as it is one of the more well-studied complexes that is known and published internationally. The author also conducted fieldwork to the complex in June 2015,[397] thus photographs are used to highlight the relationship between the figures, rock, and surrounding environment. An outline of research on the complex is first presented below.

5.2 Background

Tsagaan Salaa/Baga Oigor is a rock-art complex located in Altai Tavan Bogd National Park, Bayan-Ulgii aimag, in the west of Mongolia (Figure 5.2). It is one of the three largest rock-art complexes in the Mongolian Altai and was made a UNESCO area of outstanding universal value in 2011.[398] Tsagaan Salaa/Baga Oigor is referred to as a rock-art complex, because it covers approximately 21 km^2, thus is too large to be a site. It is named after two rivers that meet in the centre of the complex: the Tsagaan Salaa, which flows from the Russo-Mongolian border to the north; and the Baga Oigor, which flows from the west (Figure 5.3). The petroglyphs are predominantly distributed along the northwest bank of the Tsagaan Salaa and northern bank of the Baga Oigor, with a

[397] Thanks are due to: Professor Tsagaan Turbat of the National University of Mongolia, who arranged for the author to visit the area; Omirbek, who drove the author to the site and acted as guide; and Medinah, who accompanied the author while she photographed rock-art, ensuring that she did not miss a single panel.

[398] Along with Upper Tsagaan Gol and Arai Tolgoi (Urtnasan Norov *et al*. 2010; UNESCO 2012).

major concentration of images centred around the confluence of the two rivers. The complex was surveyed as part of a major project led by the University of Oregon, which documented surface archaeology in the Mongolian and Russian Altai over 18 field seasons to construct a 'cultural landscape'.[399] A two-volume multi-lingual publication of the site was produced in 2001; *Répertoire des Pétroglyphes d'Asie Centrale: Tsagaan Salaa/Baga Oigor*.[400] The researchers divide the complex into 10 areas: Tsagaan Salaa I–V and Baga Oigor I–V (Figure 5.4). There are no modern settlements within the complex, but there is a border guard outpost at the western end, in addition to several houses that are occupied seasonally, some with extensive stone fences for holding livestock (Figure 5.5). Depending on the season, herders and their gers may also be dispersed alongside the Russo-Mongolian border road that crosses the Tsagaan Salaa. This is not a populous area and the lack of human development means that the preservation conditions for rock-art are better those nearer human settlements. However, the rock panels are subject to extreme variations in temperature and weather,[401] which has caused peeling and erosion of rock surfaces. Despite the good preservation, therefore, it seems that many images have been lost over the millennia since their creation.

5.2.1 Dates

Jacobson-Tepfer *et al*. conclude that Tsagaan Salaa/Baga Oigor featured imagery created as early as the late Pleistocene, as mammoths and aurochs appear in the rock-art, but likely no longer existed in the area by at least *c*. 8000 BCE.[402] These images also had markedly darker patina (2.4) than other images, though it is difficult deduce a more

[399] The projects website is available at University of Oregon 2009a.
[400] Tsagaan Salaa/Baga Oigor is published in Jacobson, Kubarev, and Tseevendorj 2001, vol. 1 & 2.
[401] The author visited the site in June for nine days, when the weather oscillated between snow, thunderstorms, and sunny days with temperatures over 30°C.
[402] Jacobson *et al.* 2001, vol. 1, 9–10.

specific *terminus ante quem*, or to even suggest a *terminus post quem*. Fortunately, this thesis' concern is predominantly with the 2nd and 1st millennium BCE, with the 1st millennium in particular featuring such a distinctive form of aesthetic expression that it provides a reference point by which to infer the dates for other images (refer to 2.4). Figure 2.29 shows an ox typical of this style: it has an elongated, beak-like muzzle; arched back; defined haunches; and its four limbs are extremely thin. This image was made in a similar style to those on deer stones (Figure 1.4) and metal ornaments, so is dated approximately to the same period. The discolouration of the exposed rock of the ox shows that it was made earlier than the camel to its left, which remains a brilliant, solid white colour, which indicates that it was made more recently, supporting the earlier date for the ox. This is but one example of contrasting petroglyphs within a panel at Tsagaan Salaa/Baga Oigor to identify a date, demonstrating the general process of deduction necessary to produce date ranges for rock-art panels and their figures. A criticism of Jacobson-Tepfer *et al*.'s study on Tsagaan Salaa/Baga Oigor was that the researchers, '[did] not carefully consider technical methods for dating images.'[403] Although researchers unfamiliar with the arduous process of dating rock-art, especially petroglyphs, often espouse the possibility that experiments could be conducted to reconstruct rates of discolouration and patina formation, this oversimplifies the myriad of factors that cause changes to the rock surface. Discussion of these factors can be found in section 2.4, but one would require knowledge of the temperatures and weather a panel has been subjected to, with each panel having a different experience depending on its orientation (an example is shown in Figure 5.6). Consequently, dating rock-art in an area relies slightly on the researcher's familiarity with the material across the region as a whole and their ability to make comparisons, allowing them to identify patterns in

[403] Light 2008, 100.

content. In another publication, Jacobson-Tepfer notes that types of weapons visible in the petroglyphs of Tsagaan Salaa/Baga Oigor change toward the end of the 2nd millennium BCE, with the variety of daggers, knives, clubs, and spears supplanted by weaponry more suited for use on horseback, such as the shorter curved bow and quiver.[404] Another broad pattern in the subject matter is a potential transition during the 2nd millennium BCE from animals that would be hunted to animals that could be herded.[405] Both these patterns highlight some major developments taking place during the 2nd millennium BCE that have been observed in the archaeological record (see 2.2.1).

5.3 Landscape

5.3.1 Macro

Features of the macro-landscape that may have influenced people's decision to create rock-art at Tsagaan Salaa/Baga Oigor most saliently include the two rivers flowing through the complex. Not every river basin in the Mongolian Altai has rock-art and rarely in such a concentration, suggesting that this location was significant. The images are focussed around the confluence of the Tsagaan Salaa with the Baga Oigor and further downstream (Figure 5.3), with the majority on the Baga Oigor's north bank. It has been suggested that khirigsuurs[406] and standing stones from the late 2nd–early 1st millennium BCE were deliberately positioned in relation to rivers.[407] Specifically, the *Archaeology and Landscape in the Altai Mountains of Mongolia* Project of the University of Oregon concluded that these monuments were often built at or overlooking the join of two rivers, stating that confluences 'had a […] compelling

[404] Jacobson-Tepfer 2008, 207.
[405] Waugh 2005.
[406] A central mound enclosed by a round or square fence.
[407] University of Oregon 2009c.

significance for ancient herders in this region.'[408] Whilst the significance of the relationship between river confluences and monument placement could easily be tested through statistical methods, visual observation of the distribution of rock-art in the area demonstrates that it concentrated around a particular confluence, instead of river confluences more generally. Figure 5.3 shows the locations of rock-art panels at Tsagaan Salaa/Baga Oigor mapped by the University of Oregon project. There is a clear distribution of petroglyphs along the lower reaches of the Tsagaan Salaa where it joins with the Baga Oigor (just above Kök Eric in Figure 5.3) to the east, with some rock-art present along other rivers in the area, but not in the same concentration. The fact that rock-art is present near other rivers highlights the importance of water to the positioning of rock-art, as the rock-art is following the rivers. This suggests that it was made whilst people travelled through the valleys, following watercourses.

It seems probable that the primary reason people came to Tsagaan Salaa/Baga Oigor was the water. This is implied by the fact that the lower reaches of the Tsagaan Salaa now form a network of braided rivers and pools. Such environments are optimal for attracting animals and birds that people can hunt. Alternatively, they provide ideal places for large numbers of herd animals to drink and feed. Indeed, the majority of rock-art the University of Oregon project identified as pre-Bronze Age is found around the lower reaches of the Tsagaan Salaa before it flows into the Baga Oigor.[409] Remains of pollen in lake cores from lakes in the region[410] indicate that, from *c.* 1000 BCE, temperatures rose and the quantity of water increased. This means that the wetland environment shrank and, due to increased water flow, the Tsagaan Salaa became more riverine. Between *c.* 3000–1000 BCE, therefore, lower temperatures and lesser

[408] University of Oregon 2009b.
[409] Jacobson-Tepfer and Meacham 2010, 48.
[410] Uvs nuur and Bayan nuur.

precipitation would have facilitated a particularly healthy wetland environment.[411] Support for this comes from observations that even the current wetland environment has shrunk extensively during modern history.[412] In contrast to other types of monuments, rock-art is a pictorial form of expression, thus it could be expected that its subject matter would demonstrate the importance of either the confluence or wetland environment, if these were what the rock-art's creator perceived as the reason or a significant factor for making it. When considered, however, that the majority of petroglyphs made near the confluence, feature oxen, horses, and caprines, it seems that the watercourse was more significant for its utility to watering herd animals. Figure 5.7 shows a panel on the bank of the Baga Oigor near the confluence of a hobbled yak. It is depicted in the style typical of the 2nd millennium BCE and the subject matter emphasises the importance of herd animals to the people who made the rock-art, suggesting that its location results from the resources provided by the wetland for drink and feed.

The mountainous terrain forming the valleys in this region seems, superficially, to have a strong relationship to rock-art, which is pecked or carved into its rocks. Certainly, the forms of the mountains determine the orientation of each panel, a factor that has contributed to the amount of weathering each panel has received, thus influencing the preservation of the archaeological record. The significance of mountains to the people who made the rock-art, however, is less clear. The distribution of rock-art in Figure 5.3 shows that images were not made around a particular mountain or mountains. Instead, they are found on most rock panels on the northern bank of the

[411] Grunert *et al.* 2000, 190.
[412] Jacobson-Tepfer argues that the marsh of the Baga Oigor has shrunk markedly in recent history (Jacobson-Tepfer 2008, 210–211), which may to due to temperature increases (Chapman and Van de Noort 2001, 265–267; Zhou *et al*. 2009).

Baga Oigor. Other rock-art complexes in Bayan-Ulgii aimag have been interpreted as ritual sanctuaries centred around mountains.[413] Upper Tsagaan Gol is one example of this, where the mountain Shiveet Khairkhan splits the valley in two and dominates the skyline (Figure 5.8). Despite its imposing form, rock-art is distributed mainly along the mountain's south and east where the Khar Salaa flows into the Tsagaan Gol, as well as further down the valley to the east, where the Tsagaan Gol is bulked heavily by spring meltwaters (Figure 5.9). This suggests that rock-art here was not created as part of a socio-cultural process that was explicitly focussed on the mountain. Instead, similar to Tsagaan Salaa/Baga Oigor, the images are found along the valley bottom beside a permanent watercourse; features conducive to watering herds of animals. This further suggests that rock-art was created at Tsagaan Salaa/Baga Oigor because the area provided resources for humans and animals. This does not mean that perceptions of the area as sacred, spiritual, or socio-cuturally significant did not form over time, but a salient impetus driving the formation of the rock-art complex seems to have been the resources available in this particular area that were lacking nearby, namely a wetland environment.

There are motifs from multiple time periods at Tsagaan Salaa/Baga Oigor, from before the 2nd millennium BCE to modern times. This shows that various groups have travelled through the valley over an extended period, potentially because the drainage basin of the Baga Oigor was accessible from other valleys that now lie in the Altai Republic (Figure 4.14).[414] Rock-art with similar subject matter and in similar styles to those seen at Tsagaan Salaa/Baga Oigor are found in these neighbouring valleys, with

[413] University of Oregon 2009c. Jacobson-Tepfer also refers to Shiveet Khairkhan as a 'sacred mountain' (Jacobson-Tepfer 2008, 209).
[414] *Ibid*., 211.

examples on the Ukok Plateau,[415] in the Dzhazator Valley (Figure 4.14),[416] and along the Chuya River (Figure 4.13).[417] The accessibility map generated (4.3) also shows that, once a herder has moved into the Baga Oigor drainage, the Tsagaan Salaa is the most amenable place for movement, with several highly-accessible paths in its vicinity on the way to either Ukok or the Dzhazator. Consequently, people moving between these valleys may have used the Tsagaan Salaa as a route. The distribution of high-accessibility pathways shows that the next optimal route for reaching these places from the Mongolian side of the border is further south in Shiveet Khairkhan, another major rock-art site. This indicates that the positions of rock-art sites relate to the movement of people, as these valleys had terrain that was conducive to movement in comparison to the that surrounding it, and they could be used to access neighbouring valleys. The concentrations of rock-art at these two points demonstrate that a large number of people have moved through them throughout time, supporting the idea that they were on major routes within the socio-cultural lifeways of people who were seasonally mobile. Whilst this has been suggested by other researchers,[418] the accessibility map generated in 4.3 provides visual evidence for the possibility. It seems, therefore, that the distribution of rock-art at Tsagaan Salaa/Baga Oigor resulted from the fact that seasonal camps were based there, with pastoralists creating rock images as they moved their herds up and down the valleys.

The relationships between pastoralist lifeways, rock-art, and topographic features identified in this section do not mean that they were the primary impetus driving the creation of rock-art here. For instance, the sheer number of petroglyphs in comparison

[415] Molodin and Cheremissin 1999.
[416] Bourgeois *et al*. 2014b. Alternatively, see the English publication (Bourgeois *et al*. 2014a).
[417] Okladnikova 2011.
[418] Kubarev 2009b, 9.

to surrounding areas indicates that something more than the mere presence of water for herd animals influenced people's decision to make rock-art here. However, this section has highlighted some of the ways that topography can influence the development of socio-cultural practices, like rock-art creation.

5.3.2 Micro

The use of particular rock panels to represent the landscape in miniature is evident at Tsagaan Salaa/Baga Oigor in the incorporation of fissures and cracks into the rock-art composition. The horse and deer(?) in Figure 5.10 date to the 2nd millennium BCE and were pecked as if the seams of white rock were the ground. The two examples of animals using ridges on the rock panel as a representation of the ground in Figure 5.11 are, however, more recent; the boar and caprine in Figure 5.11:2 are still very white, suggesting that they are modern. In general, however, tangible representations of the landscape in rock-art are rare at Tsagaan Salaa/Baga Oigor. Instead, it is more common to find examples of visually-striking fissures that draw the attention of modern researchers. The panel in Figure 5.12 is criss-crossed with fissures that postdate the petroglyphs. Although the larger cracks are more established and, being filled with a grey-white crustose lichen, are very striking, they developed after the ox in the lower right corner was pecked. This does not preclude the fact that these fissures contributed to how people observed it in later periods, but they did not exist when the creators of the imagery selected the panel.

People participating in the rock-art tradition of this complex seem to have preferred smooth rock surfaces to make images. Representation of landscape seems to have been neglected – the form of the petroglyph and its subject matter were more important than showing the space it occupied. This is demonstrated by the huge rock panel covered in petroglyphs in Figure 5.13. The content includes elk, horses, bovines, caprines, canines,

and anthropomorphs (Figure 5.14), with most appearing to be isolated figures. There are some hunting scenes, including one of a horse midway up the panel on the far right of Figure 5.14, which is being attacked by canines. Although the positioning of each figures can represent the relationship between figures, there is no reference to the relationship between figures and the landscape. The relatively even patination on the petroglyphs indicates that most images could have been made within several hundred years of each other at most. Regardless of whether they were made within months or years, it seems that the important factor for the rock-art's creators was the act of contributing to the panel, not situating their figures in realistic space. This demonstrates how past peoples conceptualised rock-art as a practice and what they considered to be represented through their images.

An alternative method of using the rock panel's form is shown in the positioning of images on curved panels. Curvature does not, however, act as a reference for something tangible that can be identified from the surrounding landscape. A scene of two oxen and an anthropomorph is separated from a vertical alignment of caprines and an ox in Figure 5.15, demonstrating that the rock's form was sometimes used to delineate scenes, not represent the landscape. The use of a rock's shape to explicitly separate imagery is more of an exception, however, and the individual petroglyphs of caprines and an ox show that space was not expressed using features in the panel. In some cases, it also seems probable that the use of the rock's shape to separate images was not a deliberate choice made by the rock-art's creator. Indeed, the different orientations of the two sections in Figure 5.15 (the caprines and ox are orientated vertically, whilst the scene is perpendicular to this) suggests that they are separate only in the sense that their creators approached the panel from different angles, therefore space can be considered negotiable within the world that is depicted in rock-art. The implication for panels overall is that the position of images made sense to the creator and those who viewed

the panel, either due to their understanding of aesthetic representation, the fact that panels were agglomerative products of multiple members of a group, or that the position of petroglyphs within the composition was not the key part of creating and viewing rock-art.

5.4 Connections

Several themes in petroglyphic subject matter are found at the majority of sites in the Altai, but the ones that garner most attention are usually anthropomorphs. Researcher interest in humanoid figures stems from the idea that depictions of non-human animals can impart little more than contemporary environmental conditions and/or human subsistence strategies, whereas anthropomorphic representations can be used to interpret value systems,[419] or even reconstruct costumes across different time periods.[420] As non-human animals compose the body of petroglyphic subject matter, however, it seems that the emphasis on anthropomorphic content is disproportionate, which this section attempts to rectify by focussing on non-human animals as indicators of inter-regional connections, firstly through examples of subject matter, then through the construction of motifs.

Caprines (goats, ibex, or argali) are extremely common in petroglyphs and are not particularly useful to identifying either connections or dates, as they are depicted in simple styles and are easily replicable. Caprines are not only extremely common in the Altai, they can also be found in the Tianshan, Central Asia, and generally across the Eurasian Steppe. They are not only common subject matter, but the styles that are used for goats are broadly similar – one method is to represent them in two-dimensional profile, with very thin limbs. This style is extremely easy to reproduce, as demonstrated

[419] Sovetova 2007.
[420] Ladygina 2013.

by figures made recently in Figure 5.16. The undefined contour lines of the images and irregular pecking technique are comparable with 2nd–1st millennium BCE examples, however, the lack of patina indicates they were made in modern times, whilst the shallow pecking also indicates that they also cannot be retouched petroglyphs. The ubiquity of caprines demonstrates that they were the objects of many people's attentions and their creators belonged to a wider socio-cultural sphere, where people both chose to depict lots of caprines and do so in such a style. Style is considered a 'way of doing' that may become repetitive and general, but is also relational.[421] Indeed, in archaeology, style is seen to be enacted by an individual, but with reference to an 'interpreted general way of doing things' meaning the actor makes a choice that continues a particular style.[422] What governs the creator's choice is open to debate, but Timothy Earle argues that a style will be understood by its audience, because, 'the choice between alternative forms is determined by custom.'[423] What is implicit in both archaeological and art historical research is that choice is paramount to determining the finished product, whether this is the choice of what subject to depict, the way it is depicted or the medium used.[424] Consequently, the choice made by people in the Altai and Eurasia to represent goats in profile suggests that they were connected through related stylistic vocabularies.

[421] Ian Hodder makes the argument that style is relational, as he notes that, though Boy George created a style, he would never be referred to as 'stylish'. Thus, it seems that, for Hodder, style is related to modern ideas of what's popular or fashionable (Hodder 1993, 45).
[422] Hodder argues that style is a duality of event and interpretation, i.e. an objective 'way of doing', but also a subjective and historically evaluated referral of an individual event to an interpreted general way of doing (*Ibid.*, 51).
[423] Earle 1993, 73.
[424] In the Euro-American research tradition, style is divided into three types: the visual, which as the traditional focus of art history includes the choice of what images to depict and specific modelling of a figure; the techno-visual, which includes choices in material or technique that directly influence the visual appearance of the finished piece; and purely technical factors, which Chandra L. Reedy and Terry J. Reedy describe as, 'decisions about materials and techniques that have no obvious impact on the visual appearance of the finished product – [f]or paintings, this category might include the choice of material and weave of the canvas.' Despite their emphasis on the finished visual product as the benchmark by which to assess style, they impress upon the reader that all style is the product of the creator's choices regarding their subject matter, mode of depiction and materials selected (Reedy and Reedy 1994, 305–306).

This does not mean, necessarily, that they were aware of how far these connections reached.

Deer are also a common subject depicted in rock-art and they demonstrate cultural affiliations between those living in the Altai to a wider socio-cultural sphere, particularly during the 1st millennium BCE. The diagnostic deer-stone style (1200–500 BCE) is shown in Figure 1.4, whilst Figure 5.17 is on a panel at Tsagaan Salaa. This style of carving is paralleled by petroglyphs at other sites, on deer stones and excavated artefacts from across the Eurasian Steppe, demonstrating the strength of this particular cultural sphere. This treatment of animal subjects is seen on many excavated materials; such as jades from the Central Plains (Figure 5.18). Finding these kinds of deer across such a vast area is not merely the result of mobile subsistence strategies, which is what such a wide spread of similar material culture is often attributed to. Instead, it is the result of external groups being attracted to the imagery and mimicking it, but doing so in a way that appealed to them; Figure 5.18:2 was excavated from the Guo State Cemetery in Henan. As a material, jade was by no means as popular with peoples of the Eurasian Steppe as it was in the Chinese cultural sphere, thus these jades show that people were adapting imagery they liked for local tastes. However, the similarities evident between these jades and depictions of deer found on the Steppe indicate that the makers were familiar with the imagery. Thus, these do not represent a random and isolated infiltration of Steppe culture into the Central Plain, but show that the inhabitants were aware of and familiar with Steppe culture.

Deer's antlers seem to have become a particular focus for stylisation in rock-art, as demonstrated by the example of an elaborate single antler stretched parallel alongside the deer's body (Figure 2.18:1). This is typical of the 1st millennium BCE, however, antlers were also stylised earlier during the 2nd millennium BCE. There are examples of

rock-art at Tsagaan Salaa and in the rest of the Altai, where deer are shown with only one antler. In contrast to Neolithic petroglyphs, where this single antler could merely be the result of deer being depicted in profile, the 2nd millennium BCE single antler is the result of stylisation, as it is shown with tines on both sides of the main beam.[425] Even during the 1st millennium BCE, when antlers are represented in a curved, wave-like pattern, the tines only come from one side, which fits with the antural growth pattern of antlers. Additionally, the single antler with tines on both sides appears alongside deer with two antlers, demonstrating that several styles of representation co-existed at any one time and that it was a conscious choice to depict deer in such a way. The single antler appears at Tsagaan Salaa on 2nd millennium BCE panels (Figure 5.19:1 & 2), as well as through the 1st millennium BCE, as at Karachat in the Altai Republic (Figure 5.19:3). In some cases, this stylisation is so pronounced that the antler appears like a tree. This motif is found throughout Eurasia, in Kazakhstan (Figure 5.20), Xinjiang (Figure 5.21), and Inner Mongolia (Figure 5.22). In these examples, the tines are longer at the base of the antler and become shorter towards the crown. There are, additionally, an exaggerated number of tines, indicating this is an abstract design. D. G. Savinov has shown that 'stylistically definable representations' can transcend archaeologically defined periods,[426] which can result from people in later times taking inspiration from earlier periods. The pervasiveness of this rock-art in the Altai and surrounding areas means that later people would likely have seen earlier depictions of deer with this single antler and replicated it relatively easily, particularly when there was emphasis on antler stylisation more generally, like the late 2nd–1st millennium BCE. The ease with which this style of antler could be reproduced means that examples from the 2nd and 1st

[425] A deer's antler is composed of a main beam, with tines that branch out from this. The smaller tines at the top of the main beam are often referred to as the crown. Tines typically grow on one side of the main beam, though those at the crown can appear to grow on both sides, due to the narrowing main beam.
[426] Savinov 2009, 99.

millennium BCE seem stylistically indistinguishable. However, the lack of a precursor for this antler style from before the 2nd millennium BCE shows that it was a conscious choice to render the antler in a stylised way. In contrast, the popularity of the single antler with tines on only one side demonstrates that the preferable way to depict antlers in the 1st millennium BCE was to represent their natural growth pattern, even if the overall motif was stylised.

Horses were not as common subject matter at Tsagaan Salaa/Baga Oigor as either caprines or bovines prior to the late 2nd millennium BCE. Though they are found on panels earlier in the 2nd millennium BCE, horses are depicted more frequently in the 1st millennium BCE. Horses depicted in a distinctive visual style of the 1st millennium BCE are shown in Figure 5.23; the animals are depicted with very thin legs that are thrown forward, as if the animal braking. The increase in the number of horses depicted in this way coincides with changes in how humans interacted with horses, i.e. the development of horse-riding. When the horse became a means of transport at the end of the 2nd millennium BCE in the eastern Steppe,[427] its role in human societies changed. Whereas previously the horse had been a target for hunting or herding, people attached social significance to the horse as it became a means of transport in herding, military, and social contexts. Though some have attributed the increase in the number of horse petroglyphs to a sudden, widespread adoption of pastoralism throughout the Steppe,[428] mobile herding strategies were already established in and near the Altai by

[427] As well as the increased presence of horse bones amongst the faunal assemblages of Karasuk and Kamenniy, Sophie Legrand notes the presence of three-holed bone cheek pieces at Kamennyj Log and Torgazhak. This suggests that horses were being ridden (Legrand 2006, 857), though Jacobson-Tepfer notes that leather bits may have been used prior to this (Jacobson-Tepfer 2015, 244).

[428] Huang Shiyuan 2014, 18. Changes in economic strategies are interpreted using a step-like interpretive structure in China, not dissimilar to the cultural evolutionary paradigm. This sees developments in society, politics, culture etc., as clearly differentiated steps, which leaves little room for considering the co-existence of a variety of strategies. Additionally, this is likely an extrapolation of archaeological evidence

the 3rd millennium BCE.[429] Consequently, the choice to depict horses in rock-art did not result from a sudden renegotiation of human-animal relations driven by a change in subsistence strategy, but resulted from a marked change in horses' roles in human society. This is demonstrated by the inclusion of horse crania, hooves, and vertebrae in satellite pits surrounding the khirigsuurs of the late 2nd millennium BCE. Examination of the crania found that the horses had been ridden, though contemporary satellite pits also contained cattle and caprine bones, likely consumed as part of the burial rite.[430]

Despite the increasing social importance of horses due to riding, therefore, a strong relationship between riding and human burial practices appears earliest in the 9th century burials at Arzhan 1, Tuva Republic.[431] Nearly 160 horse skeletons were excavated from Arzhan 1, along with bridles[432] – a direct reference to their role in riding. This potentially a desire to take one's riding horses into the afterlife – a funerary practice that seems to have continued to the 3rd century BCE, demonstrated by kurgan burials at Pazyryk, Altai Republic, where the interred were similarly accompanied by multiple horses,[433] though these horses wore elaborate masks and bridles covered with fantastic creatures. M. A. Ochir-Goryaeva suggests this the horse at this point had risen

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from northern central China, where the faunal remains suggest that the emphasis moved from pen-kept animals to herding at the beginning of the 1st millennium BCE (Shelach 2008, 96).

[429] Frachetti 2012, 11.

[430] In most cases, the satellite pits are orientated east, with adult male horses inhumed in particularly significant locations (Taylor *et al*. 2017, 50).

[431] Chugunov 2009, 177; Jacobson-Tepfer 2015, 245.

[432] The horses are Arzhan 1 are smaller in metapodial size than those at Arzhan 2, which may indicate differences in the environments that the two groups of horses grew up in. Larger metapodial indices indicate an arid environment, whilst smaller indices imply the horses grew up in a more humid climate (Zaitseva *et al*. 2007, 646). There could, however, be other factors influencing the sizes of the horses, such as selective breeding practices, to name but one.

[433] Sergei I. Rudenko argues that the horses were not gifts given by the living during burial rituals, citing modern examples of horse use by Eurasian pastoralists. He notes that stallions and mares were rarely ridden, except by the poor, whilst the wealthy rode only geldings. Additionally, a wealthy individual would own several horses at a time, which would be replaced every few years. As the interred horses were all geldings and ranged in age from three years old to 20 years old, Rudenko concluded that they represented horses that had been traded through multiple owners, as well as younger animals being trained. In the examples he cites, a horse is unlikely to be used again once its owner is deceased, thus he concludes the buried animals all belonged to the interred (Rudenko 1970, 39–42 & 117–119).

to a sacred sphere within the Pazyryk culture.[434] This shows that the horse's status was not static during the 1st millennium BCE and the social significance associated with riding occupied various cultural and ritual positions. This increasing ritual importance of horses is not reflected in the rock-art, however, as after the initial increase in the number of horse figures, they do not explicitly increase in number or dominate over other animal subjects during the 1st millennium BCE. Consequently, it seems that rock-art as a material culture operated in a very different sphere from burial rites – it was a process concerned with life, not with death.

A distinctive and recurring form seen in the rock-art at Tsagaan Salaa is the stacking of one animal atop another. The recurring feature is one animal is carved above another. This does not seem to be caused by space on the rock panel being restricted, so seems to be a stylistic choice. The 'stacked' animals can either be the same species (Figure 5.24: 1 & 2) or different. The two animals can be similar sizes (Figure 5.25), or a smaller animal is represented above a larger one (Figure 5.26). In the latter case, the smaller animal appears to be standing on the back of the larger one. Figure 5.26: 4 is particularly distinctive, as it shows three animals standing on each other's backs – unfortunately, the black-and-white line drawing means there is no way to tell in which order they were made. Similar-sized animal pairs often seem to be the same species, whereas the smaller animal is often a different species to the larger animal whose back it sits on. These motifs are seen in rock-art across the Altai, further south in the Dzungar Mountains, and even in eastern Qinghai (Figure 5.27). Though these are predominantly mountainous environments with traditions of pastoralist lifeways, most images of the motif are, unfortunately, in greyscale, thus it is unclear whether this is a deliberately

[434] Ochir-Goryaeva 2014b, 246.

constructed motif, i.e. the two animals were made at the same time, or it represents a practice of augmenting earlier petroglyphs, i.e the animals were made at different times.

The motif of two animals of similar sizes being stacked atop one another is, however, quite prevalent in portable art of the 1st millennium BCE. When commenting in the 1930s on a stacked stag ornament from the Ordos Plateau (Figure 5.28), Alfred Salmony stated that this motif is not found in the Minusinsk Basin or 'amongst the Scythians or Sarmatians.'[435] In modern times, the particular stylisation of the stags' bodies, legs, and antlers are considered diagnostic of Steppe cultures in the 1st millennium BCE. In addition to other pieces of portable art excavated since the 1930s that have demonstrated this, the rock-art at Tsagaan Salaa/Baga Oigor shows that the motif was used in the Steppe during the 2nd millennium BCE, as well as the 1st millennium BCE.

Animals depicted stacked in portable art can also be orientated in alternate directions (Figure 5.29). The petroglyphs in Figure 5.30 are found near Yinchuan 銀川 in the Ordos Plateau and show several horses stacked, similarly, with their heads facing opposite ways. Although the author of these petroglyphs dates them to the 2nd millennium BCE, he does not clarify how this date was established for such indistinctive figures. Consequently, this motif may belong to the late 2nd millennium BCE, which would correlate with the other markedly Steppe-style metal artefacts. In addition, whilst stacked animals are found at various locations in the eastern Steppe, depicting animals in opposing directions when stacked seems more common in the Northern Zone of the PRC, whereas it is less common at Tsagaan Salaa/Baga Oigor or other sites in the Altai. This highlights variation in stylistic tastes

[435] Loehr 1955, 69.

within the wider Steppe cultural sphere, demonstrating that there were divisions between groups and regions. Additionally, the Steppe cannot be approached as a discrete entity with homogenous practices.

In cases where a smaller animal is standing on the back of a larger one, it has been suggested that this is a scene of predation.[436] The smaller animal is supposed to be the predator, whilst the larger animal is its prey. This interpretation seems tenable, particularly for 2nd millennium BCE petroglyphs at Tsagaan Salaa/Baga Oigor (Figure 5.31). Alternatively, there are examples of this motif at rock-art from other sites, as well as on portable art, where the 'predatory' animal is a herbivore or nondescript species. In these cases, it is possible that repeating depictions of one animal may have been a way to communicate 'many of this animal'. Indeed, this is evident in cases where there are three animals stacked, such as at Jiaxihalahai 夾西哈拉海 in the Chinese Altai (Figure 5.26: 4), as well as in metalwork (Figure 5.32). This motif is further seen in artefacts excavated in the Central Plains, but the combination of predator and prey is sometimes inverted. Bronze animal vessels frequently feature smaller animals on the backs of larger ones – generally, wild animals seem to have been preferred for both positions.[437] Additionally, sometimes a herbivore is perched on the back of a predator (Figure 5.33). Whilst it is unlikely that this particular combination of bird atop a tiger reflects either predation or a group of animals, it is not uncommon to observe birds sat on the heads of big cats. As a result, the bronze in Figure 5.33 could reflect a scene that its creator saw. Whilst the 'stacked' animal motif in the Steppe seems to feature animals likely to be seen together in pastoralist settings (i.e. predator—herd animal or two herd animals), this suggests that people in the Central Plain and regions further south were familiar

[436] Jacobson-Tepfer 2015, 381.
[437] Additionally, Bai Ju identifies no preference for any particular type of animal to fill the role of larger or small animal (Bai Ju 2004, 199).

with each other's aesthetic ideologies, but there were distinctions in how each group used them. In the case of the 'stacked' animal motif, it was likely a familiar composition to people living in the eastern Eurasian Steppe and the Central Plains, but the animals an individual from each of these regions would select to form it were very different. It is improbable that the choice to represent the motif in either bronze or rock-art was the primary reason for choosing different types of animal, as petroglyphs of tigers and birds also exist; Steppe groups simply chose not to show them sitting on each other.

5.5 Summary

The rock-art complex at Tsagaan Salaa/Baga Oigor is well-documented, not only in comparison with other sites in Mongolia, but also the Altai Mountains more broadly.

Examination of the macro-landscape highlighted the fact that the positioning of rock-art was unlikely to stem from particular cultural significance attributed to river confluences, but there may have been a cultural emphasis on watercourses more generally. The initial creation of petroglyphs in this place, additionally, probably had a reflexive role in making Tsagaan Salaa/Baga Oigor 'the place with the petroglyphs'. After this, anyone adding to the rock-art corpus would possess an idea that this was *the* place to make petroglyphs, though what people chose to depict would have included subjects of spiritual, social, and personal significance. Examination of the micro-landscape shows that the presence of ridges and shape of the rock were a factor influencing composition layout. However, in most cases, there are no human-made divisions between separate compositions, nor did creators of rock-art seem to make particular use of pre-existing fissures in the rock. This indicates that anyone viewing the petroglyphs likely understood the stylistic, content, and spatial relationships in such a way that the landscape, or simple delineation of scenes, was unnecessary.

The connections demonstrated by the rock-art of Tsagaan Salaa/Baga Oigor primarily demonstrate the integration of this region within a wider stylistic or aesthetic ideology, as many of the more distinctive motifs are paralleled further afield. Although the main research focus has been on animal motifs that can be relatively securely dated to the 1st millennium BCE, these have clear earlier precursors. One of these is the deer depicted with one antler, which is an extremely common motif in the 1st millennium BCE, with parallels on deer stones; however, there are many examples of antler stylisation from the preceding millennium. This earlier style also influenced styles in regions that border the Steppe. The Central Plains adopted the motif of a single antlered deer, demonstrating their familiarity and openness to Steppe styles. This shows how rock-art can illuminate long-distance connections.

6 Case Study – Russia

6.1 Introduction

The Altai Mountains of the Russian Federation are divided between two of Russia's federal subjects – Altai Krai and the Altai Republic (Figure 6.1).[438] Overall, Russia controls the largest portion of the Altai, with traditional transhumance continuing to play a large role in the subsistence strategies of Altaian families.[439] The Katun River valley runs north-south and a large number of rock-art sites are located in its vicinity (Figure 6.2). It is particularly interesting that, despite the large numbers of sites suggesting a significant human presence here, Chapter 4's accessibility analysis determined that the valleys running parallel to the Katun are more amenable to movement (Figures 4.10-12). Indeed, the valley was assigned an extremely low score for movement. This chapter will, therefore, examine possible reasons for why there is a distinctive human signature here, when alternate valleys may have been easier to navigate, exploring the landscape before examining what motifs and contemporary archaeological remains may demonstrate about connections with other regions.

6.2 Background

The Katun River flows from its source north of the Sino-Russian border near Belukha Peak (Figure 6.2). It flows to the west, before heading east through the Uymon Steppe, then flowing north. Overall, the Katun's drainage basin composes approximately ¼ of the Russian-controlled Altai.[440] However, the rock-art sites discussed in this study are mainly found in the middle and lower reaches of the Katun. The upper reaches of the

[438] Respublika Altay ofitsial'nyy internet-portal 2016.
[439] Although agriculture has been encouraged and is now relied upon by many Altaians, it is mainly used by families to supplement their incomes or diets. See Manysheva 2009, 10–11.
[440] There are multiple river systems in the Altai, the main rivers including the Kurchum, Narym, Bukhtarma, Ul'ba, Uba, Ob, Charysh, Biya, Tom, and Yenisei (Sapozhnikov 1901, 91).

river towards the Uymon Steppe and Belukha Peak have markedly fewer sites, though this may be because this region has been less thoroughly surveyed or the findings have not been as widely disseminated.

Russian scholarship maintains continued interest in the customs and pasts of the federation's minority nationalities, in this case the Altaians. The rock-art of this region has, thus, been well-studied, though many of the publications are inaccessible to researchers outside the region. Larger sites have attracted particular attention, with site reports detailing the rock-art. These include *Petroglyphs of Kalbak-Tash (Russian Altai)*[441] and *Kuilyu Cave: A Cult Complex on the Kucherla River (Gorny Altai).*[442] Smaller rock-art sites tend to be incorporated into syntheses or published as short articles. This is the case for those near the Katun, for which rock-art was first published in 1984 as *Petroglyphs of the Katun's Middle Reaches*.[443]

A total of 42 rock-art sites were identified from both published works and internet sites as located near the Katun. The majority of these were published in the 1992 volume *Petroglyphs of the Altai*,[444] which included no GPS coordinates and only a few photographs of sites. Illustrations of petroglyphs were only provided as greyscale drawings. Online resources were, therefore, used to augment knowledge of these sites, particularly to incorporate the landscape context of sites. The tourism industry has developed in the Altai Republic over the past few decades, which has several advantages for desk-based studies, namely that visitors to the region take photographs and make them available online – this was extremely useful for identifying sites. Some negative effects of tourism, alternatively, include the fact that vandalism of rock panels

[441] Kubarev 2011.
[442] Molodin and Efremova 2010.
[443] Okladnikova 1984.
[444] Kubarev and Matochkin 1992.

has been observed. Figure 6.3 shows where someone has carved their name over much older petroglyphs, while the ibex in Figure 6.4 has lost its horns from an attempt to remove the petroglyph with a metal tool. Gertjan Plets *et al*. attribute the majority of conservation problems to increased pressure from tourism,[445] however, a number of recent additions to panels have also been made by local people. An instance of this is the panel along the Che-Chkysh Gorge shown in Figure 6.5, where white pigment has been applied, then overlain by a Soviet military star to celebrate Victory Day. Current inhabitants of the Altai's valleys maintain aspects of traditional Altaian spirituality, including the idea that the landscape has associated spirits (discussed further in 8.4). As a result, certain mountains are seen as sacred.[446] The act of painting or pecking on rock panels in the mountains can, thus, be seen as modern adherence to the belief that topographic features have associated spirits.

6.2.1 Dates

The primary method for dating rock-art around the Katun in the past has been stylistic analogy and typology. This is so established in Russian research that most sites are now dated according to how similar their content is stylistically to other sites. As an example, a panel along the Satakular River was concluded to be 'characteristic for the end of the 2nd to the beginning of the 1st millennium BCE.'[447] This type of abrupt conclusion is common and is typical of the academic writing style. During actual analysis, however,

[445] Plets *et al.* pilot the use of 3D models as a means of recording the present state of rock-art panels in the Altai. This is due to deteriorating preservation resulting from environmental factors and vandalism, amongst other things (Plets *et al*. 2012, 143–144).
[446] Certain mountains are considered *sacred* by local peoples, however, the reason for something being *sacred* or the precise meaning of being *sacred* comes from spiritual ideologies commonly referred to as animistic or shamanic. It is also important to recognise that events of the 20th century have contributed to vast changes in the composition of the Altai's population, the cohesion of its communities, and the way they understand and interact with their landscape. For a more thorough discussion of these issues, see Halemba 2006, 55–56. It is also not just mountains that can be associated with spirits. For example, Tuvans attribute significance to trees growing near springs, particularly ones that grow in irregular ways, which become foci for shamanic rituals (Hoppál 1997, 12–13).
[447] Matochkin 2011a, 110.

researchers explore various aspects of the rock-art to date it, making reference to other sites and examining overlay of images, as well as the accumulation of patina. This is apparent when discussing the sites with them in person; the meticulous process is just not written down.[448]

The majority of sites along the Katun have been assigned to the Neolithic, Bronze Age, and Iron Age periods. In published material, sites are often ascribed to one of the three prehistoric ages, a problem being that the Bronze Age is used by some researchers to include the 3rd millennium BCE,[449] which makes it difficult to calibrate the rock-art with the archaeological material. Consequently, in the event that it is necessary, this chapter makes use of research in all parts of the Altai to surmise a more refined date.

6.3 Landscape

6.3.1 Macro

Water is a prominent feature of the macro-landscape that contributed to past people creating rock-art in the vicinity of the Katun. Whilst it may seem like circular logic to use a river's watershed as an analytical area then examine the significance of water to the placement of rock-art, sites above or outside the valley were also included as being near the Katun. The majority of sites are still found near to watercourses, even with this caveat, indicating that the locations of rock-art are linked to the presence of watercourses.

The Katun's floodplain is extremely broad (Figure 6.6) and receives substantial water flow from its tributaries. Almost all modern settlements in the Altai Republic are

[448] The author experienced this directly when meeting Russian scholars at international conferences, such as Society for East Asian Archaeology 2014 and 2016, as well as the World Archaeology Congress 2016.
[449] Samashev *et al*. 2011, 41.

positioned in river valleys and flooding is a salient concern.[450] Various attempts at flood control have been made, with many dams built in the Altai over the past few decades; the Chemal reservoir can be seen in Figure 6.6. Although flooding may have been exacerbated in recent years by increased degradation of glaciers due to modern climate change, the Katun's floodplain is visibly well-established,[451] thus it is probable that flooding also occurred in prehistory. While lake cores taken in western Mongolia show evidence of lower temperatures and lesser rainfall from *c*. 3000 BCE, environmental data collected from Lake Grushka suggest that temperatures in the Sayan Mountains decreased from *c.* 4000 BCE onwards, but the area experienced increased water flow. This severe cooling caused forests to retreat from lower elevations,[452] a phenomenon also observed along the Katun.[453] This was followed by a prolonged period of higher temperatures and rainfall. The amount of Steppe vegetation increased gradually, but its spread accelerated sometime toward the end of the 2nd millennium BCE,[454] coinciding with a progressively cooler, but still wet environment in the nearby basin of the Chuya River beginning *c*. 1700 BCE. [455] While some researchers identify the 2nd millennium BCE in the Altai as having optimal climatic conditions in contrast to later periods, the spread of Steppe vegetation around the Katun River would have made the area gradually more amenable to the grazing of large numbers of herd animals, with the decrease in temperatures potentially fuelling this. This explanation is attractive, as the

[450] In 2014, heavy rains led to saturated soils of 109-212% average. The high surface run-off contributed to floods that affected 33,300 people – *c.* 15.7% of the Altai Republic's total population (Robertus 2014, 40).
[451] Remains of paleolakes are visible along the Chuya and Katun rivers. Additionally, cataclysmic flooding occurred *c.* 15,800±1,800 BP due to an ice dam near the village of Aktach bursting. The deep valleys of the Chuya and Katun, therefore, were formed long before people made rock-art in the area. Details of the event are published in Reuther *et al*. 2006.
[452] Their conclusions are based on the activities of chironomid fossils at separate strata of two lakes cores (Ilyashuk and Ilyashuk 2007, 722).
[453] Their conclusions are based on analysis of phytoliths excavated from multiple strata at the settlement Tytkesken' 2 (Solomonova *et al.* 2016, 1438–1439).
[454] *Ibid.*, 1439.
[455] Schlütz and Lehmkuhl 2007, 113.

vast majority of petroglyphs dated to the 2nd millennium BCE, and before, focus on animals that can be hunted or herded, fitting with the idea that the creators were expressing something important to them – their subsistence – though the significance of one's subsistence can transcend social and spiritual boundaries.

The environmental conditions described above make it probable that flooding of the Katun happened regularly, meaning that the position of rock-art relative to the landscape changed. Many sites are located on rock panels immediately bordering the valley. Figure 6.7 shows a panoramic shot of the mountains lining the eastern edge of the Katun just south of Kuyus Village. Kuyus Grotto is located on one of the small hills slightly to the right of the metal structures in the foreground. From the view in Figure 6.7, the rocky outcrop on which the rock-art is made, whilst very smooth, does not stand out particularly in either its colour or form when observed from a distance. Instead, it blends into the scenery with the other mountains. The site itself is located at the foot of one of the mountains immediately next to the floodplain and, as can be seen in Figure 6.8, the rock outcrop does not stand out in any way from the surrounding rock in colour. The rock-art was made at different levels, however, which suggests that the site's spatial situation differed over time. The smooth, dark rock in the centre of Figure 6.9 has deer petroglyphs carved onto it, with a likely *terminus ante quem* of the mid-2nd millennium BCE. The grass covers a ridge of rock under the deer hooves, which is where the creator likely crouched to make the images.

Below the grass, on a separate panel accessible at ground-level, there are petroglyphs of caprines and a supposed mythological creature (Figure 6.10). The colour of the rock originally exposed to make the petroglyph is the same as the surrounding rock, suggesting that it has been subjected to severe weathering. Alternatively, when the Katun floods, the waters could easily reach the lower panel; severe flooding in 2014

saw the river rise nearly 9 m.[456] The 2014 floods occurred as the result of heavy rains, but meltwaters from mountain snows can also raise the level of the Katun. This may be the reason why the patina in Figure 6.10 is so dark, thus the lower imagery may be more recent than the deer higher up the, although the patina on them would suggest otherwise. It is possible that the deer were made on the upper panel during a period when water levels made the ground level inaccessible. Another possibility is that the ground was higher in the 2nd millennium BCE, but has been eroded, which can happen during floods or heavy rains.[457] The case of Kuyus Grotto highlights the potential for the landscape to change, not only between the past and present, but also throughout prehistory. As disastrous as floods could be, the possibility that people continued to make rock-art right next to the river indicates that they continued to travel along the valley and around the Altai. In a lecture at the 2016 World Archaeological Congress given by Ekaterina Devlet and Alexander Pakhunov, they noted that petroglyphs along the Amur River in eastern Siberia are routinely submerged each year, though the panels that are submerged vary depending on the quantity of water and what silt is moved by the river. If the images on the lower panel of Kuyus Grotto were made when the Katun was low, their creators may have been aware that the river could cover the petroglyphs and this was the reason they were made there. Such behaviour highlights the changeability of the landscape, as well as people's abilities to deal with changes when they occurred; water sources, hills, and routes of passage were not constant and adaption was necessary.

Although people may have made rock-art close to watercourses that were likely to be inundated, rock-art is also found away from the Katun, in more sheltered places.

[456] Amitel 2014.
[457] Witnesses of the 2014 floods reported roads along the Katun collapsing into the river after floodwaters washed away the earth beneath it (*Ibid.*)

Petroglyphs are found 3.3 km up the Che-Chkysh gorge,[458] which joins with the Katun approximately 35 km north of Kuyus Village. The gorge highlights the potential for the landscape to change depending on the season, as it can either be a lush track with a ready summer water supply, or buried by winter snows. This is shown in Figure 6.11, where grass and water along the gorge is abundant due to spring meltwaters from higher altitudes.[459] This type of environment would offer plentiful resources for herd animals, but would also be attractive to animals that could be hunted. The petroglyphs are located in a corner set into the gorge wall (Figure 6.12), which would have provided shelter from the elements, as the severe gorge walls channel the wind. Whilst the rock-art at Kuyus Grotto was made directly next to a main watercourse in a wide, exposed valley, that at Che-Chkysh indicates the movement of people into ravines that were more sheltered from the elements, as well as other people. Anke Hein noted that, whilst people not accustomed to living in mountain environments might consider the valley bottom to be the optimal route for travel, the mountain-dwelling Yi 彝 people of southern Sichuan have explicitly commented that it is best to travel along the sides of mountains, in order to avoid being seen by others.[460] The concept that valley bottoms are too exposed may be relevant not only from the perspective of remaining vigilant for other herders or possible threats, but it is also applicable to avoiding harsh weather or the results of floods. In the event of strong winds and rain, the gorge in Figure 6.12 offers more shelter to pastoralists and their herds than the wide floodplain of the Katun. In addition, water can accumulate on valley bottoms during harsh weather, which may render it either impassable or difficult to traverse.

[458] Welcome to Altai n.d.
[459] Sukhenko *et al*. 1992, 24.
[460] Hein quoted these opinions as a counter-argument to those of local archaeologists, typically originating from Han Chinese, agricultural backgrounds, who assume *a priori* that non-riverine areas of mountains have no archaeological remains (Hein 2016).

6.3.2 Micro

Representation of the wider landscape in the rock-art of sites near the Katun is visible in some instances. However, panels along the Katun have been exposed both to the weather and modern human traffic, thus the features on a panel that represented the landscape in microcosm are likely to be even less well-preserved than the petroglyphs. However, there are a few cases of potential micro-landscapes being preserved on panels in accessible areas, such as that in Figure 6.13. The panel sits opposite a gulley on the other bank of the Yenisei River and, from the perspective of the person who created the two ibex petroglyphs in the centre, the curves on the panel's right-hand side appear to mimic the meanders of the river flowing down the gulley. Indeed, the two ibex can be considered as walking up the gulley. This is a singular example though, as people making rock-art in the Altai often make no attempt to represent realistic spatial relationships between the subjects of rock-art, instead panels featuring various scenes and images that are not explicitly related are relatively common. In a similar way, therefore, the petroglyphs in Figure 6.12 were probably not created as indicators of a route anchored in physical time and space. Instead, it represented an *event*, though this was not necessarily a singular occurrence, but may have been something observed by the creator of the petroglyphs several times or regularly throughout their life. Thus, the micro-landscape in this case is showing that this is where the ibex go.

In a similar way to rock panels examined at Tsagaan Salaa/Baga Oigor (5.3.2), spatial relationships to landscape are not usually represented into rock-art. However, a panel of petroglyphs at Kalbak Tash on the Chuya River, a tributary of the Katun, exhibits an instance where the rock's shape forms part of the micro-landscape. The creature in Figure 6.14 is depicted as if crawling down the rock panel, towards the anthropomorphic figures below. It's long claws and raised tail give the impression of a predator hunting prey. Figures with crescent-shaped headdresses, as seen in Figure 6.14,

are typically ascribed to around the 2nd millennium BCE,[461] whereas researchers note that the creature is stylistically similar to the art of the Okunevo culture (2.2.2.3).[462] Okunevo-type remains are dated to the end of the 3rd millennium BCE and, to date, this is the only example of a creature pecked onto the same panel as figures with crescent-shaped headdresses.[463] Consequently, it is likely that there were multiple creators of this scene, who were separated from each other, feasibly by decades or centuries. Thus, though some researchers have examined this panel as one entity,[464] it is probable that the creature was made first, then the anthropomorphic figures were made later. It is, however, unclear at what point the deer, caprines, and wolves were made below the anthropomorphs (Figure 6.14), as, if they are contemporary with the creature, then the creature may be hunting them. The interpolation of anthropomorphic figures into this scene of predation, therefore, changes the subject of the panel to be more human-focussed. However, it is uncertain when the row of deer and other animals were made, thus it is unclear whether the subjects of the predator's hunt were originally even the anthropomorphs. As a result, it can only be concluded that the predator was made to seem like it is crawling down the rock panel.

6.4 Connections

Subject matter found at rock-art sites along the Katun River correspond to the themes and subjects found at other sites throughout the Altai, including common petroglyphs of ibex depicted in profile, which appear at the majority of sites (e.g. Figure 6.15). The fact that these petroglyphs are not sufficiently diagnostic as to be of assistance to dating has already been discussed (5.4), but the fact that they are found along the Katun, as well as

[461] Devlet and Jang 2014, 104.
[462] Kubarev 2011, 43.
[463] Devlet and Jang 2014, 107.
[464] *Ibid.*, 105.

in western Mongolia and the northern Jungar Basin, demonstrates their ubiquity throughout this region. This is similar to ambiguous petroglyphs of non-human animals in the middle reaches of the Katun (Figure 6.16). These petroglyphs have been referred to as depicting 'fantastic' creatures,[465] particularly when they cannot be matched with an animal that is known to exist. In Figure 6.16: 1, there are three elongated figures depicted perpendicular to the panel's lower edge, in contrast to the horizontal cervinae(?) and ibex at the top. The lower figure appears to have a total of six limbs, making it a non-recognisable species of animal. It is possible, alternatively, that the extra legs indicate the creature's posterior tail and penis, but this is unclear, as only a greyscale drawing is available. Okladnikova suggests that this animal is either several 'wounded animals or represents the shamanic pantheon.' [466] However, it is important to acknowledge that, not only can petroglyphs be damaged over time and, thus, change in appearance, but they may not represent to the researcher what the rock-art's creator intended to depict. As a result, it cannot be assumed that each petroglyph represents a concrete concept – like shamanic deities – as there is no evidence to suggest that the individual intended their creation to look like this; the form may have been influenced more by the materials available to make it, the difficulty the person had pecking the rock, or even time restrictions on how long they could stay in that place. These are considerations that necessitate caution when concluding that a petroglyph represents something fantastic.

A motif common to rock-art sites along the Katun include anthropomorphic figures depicted with crescent-shaped headdresses. These are seen on anthropomorphic figures

[465] 'Fantastic' is used to denote non-human animal imagery not only that the author cannot identify, as well as that with particularly unrealistic features, in the publication of petroglyphs at Shiveet Khairkhan (Kubarev 2009b, 10).
[466] Okladnikova 1984, 20.

depicted with their torsos *en face* and legs in profile (Figures 6.17 & 6.18). The anthropomorph has bent legs, with one arm flexed to the waist and the other extended. In many cases, the head itself is depicted as a downward facing crescent, whilst in others, the crescent is clearly an addition to the head (Figure 6.18: 1). The bent leg position is also maintained in many instances when the subject holds a stave or bow (Figure 6.18: 1-3). This type of headwear has been referred to as a *mushroom* headdress,[467] however, the word *mushroom* has been used to link the figures to practices of shamanism (see 2.3), thus it has become more literal than a simple descriptor that is part of a stylistic typology. The purported link between mushrooms and shamanism lies in the use of mushrooms as hallucinogens, documented in some modern ethnographies of Siberian groups.[468] From this starting point, Devlet suggests that the figures' flexed knees convey frenzied dancing, then she describes the psychoactive properties of mushrooms consumed by Siberian peoples in ritual contexts and their associated legends.[469] The implication of this is that the motifs' creators were simultaneously anthropomorphising the mushrooms consumed, whilst also expressing the effects of consuming them.

Whilst such a hypothesis works well to integrate regional and supra-regional ethnographic information with archaeological material, the explanation for this motif's form may be slightly simpler. As shown in Figure 6.18: 1, the crescent shape is separate from the anthropomorph's head, suggesting that it is either a head ornament or even hair. Although the anthropomorph's head in Figure 6.18: 3 was definitely only represented as a crescent, it is possible that the crescent shape was understood by people at the time as

[467] Konstantinov 2008.
[468] Not all practising shamans in Siberia utilise mushrooms, or even hallucinogens, to achieve trance status (Siikala 2014, 106).
[469] Devlet and Jang 2014, 107–109.

a headdress or hair, rather than being a literal depiction of the shape of an anthropomorph's head. No headwear from before the 1st millennium BCE has been found in archaeological contexts, however, it is possible that such headdresses were made from felt, leather, or other degradable materials. It is also important to consider that the use of mushrooms as hallucinogens, specifically *amanita muscaria* (fly agaric), was mentioned in early 21st century travel writings as being used primarily among the 'Ostyaks' – an old name for the peoples living in the middle reaches of the Ob River, including the Khanty, Ket, and Selkup.[470] It is, therefore, inaccurate to represent Siberian peoples generally as consumers of mushrooms for psychoactive effect. Such an attitude marginalises the use of rhythmic drumming, sensory deprivation, and other aspects of shamanic rituals used to induce altered states of consciousness.[471] What is of most relevance to this thesis, however, is that figures with crescent-shaped headdresses are found across a wide area, regardless of what they represent. The most well-documented anthropomorphs with crescent-shaped headdresses are found at Kalbak Tash (Figures 6.14), but they are also found at various other sites along the Katun, such as Bol'shoi Yaloman (Figure 6.19), though the lighter patina on these figures suggests that they were made much later than those at Kalbak Tash. They are similarly common in the Mongolian Altai, but are not found in the southern foothills of the Altai, nor in the Jungar Basin. This suggests that the people creating this particular motif frequented the central and southeastern Altai.

Another motif of particular pertinence to understanding connections between rock-art sites along the Katun and regions further afield is a distinctive style of anthropomorph. This is seen in Figure 6.20, where a panel of petroglyphs at Orokhtoy,

[470] Travel writings from 1927 detail the practices of the Selkup and also note that the mushroom was often used as other cultures use alcohol – as a general intoxicant (Stepanova 2015, 209).
[471] Jilek 2005, 11–12.

in the middle reaches of the Katun, features two anthropomorphic figures depicted *en face* with their arms extended. In 1984, Okladnikova postulated that these figures formed part of a battue hunting scene, which is a method of hunting game involving some members of a hunting party scaring the targets towards the rest of the group, who then kill the animals. In this case, the anthropomorphs, emerging from camouflage, are driving the elk[472] and other animals to a catchment area where other hunters wait.[473] Based on her argument, the lines extending from the figures' limbs and heads represent the camouflage worn by people hiding in the foliage to surprise and chase animals. The fact that this panel has been published as a greyscale drawing means that the author can only assume the figures are contemporaneous with other petroglyphs on the panel.

It is worth looking in greater detail at their features, particularly the petroglyph highlighted on the far right of Figure 6.20, which has eyes and a mouth, in addition to lines extending from its head, in a similar way to 'faces' or 'masks' found across the Altai and neighbouring areas from the late 3rd to early 2nd millennium BCE. Okladnikova dates this petroglyph to the Early Bronze Age,[474] which generally corresponds to the late 3rd–early 2nd millennium BCE. A stone stele with a face carved in a similar style is shown in Figure 6.21. It was discovered in a mid-2nd millennium BCE cyst burial, but the excavators and subsequent researchers argue that it had been appropriated by the burial's constructors and was, in fact, created during the Okunevo period (*c*. 2200–1900 BCE).[475] Faces (or masks) in the Okunevo style also include the stele shown in Figure 6.22. Both stele in Figures 6.21 & 6.22 have straight lines projecting from the head, in the manner of either hair or sun rays, marks across

[472] Okladnikova refers to this as a female maral, however, the enlarged snout tip suggests that the large animal is an elk.
[473] Okladnikova 1984, 51.
[474] *Ibid*.
[475] Kovtun 2001, 105.

their faces, which seem to reference facial paint. Similar stylistic expressions can be found at other sites in the Minusinsk Basin, such as White Iyus (Figure 2.12). These features are striking, because they are similar to ones found on pottery excavated from sites near Xi'an, Shaanxi, collectively referred to as the Banpo 半坡 type (*c*. 5048–3340 BCE).[476] The example in Figure 6.23, excavated from the type-site of Banpo, features a face decorated by triangles protruding vertically from the crown of the head and horizontally from sides of the jaw; all these triangles are decorated with protruding lines extending outwards. The face is also divided horizontally into three sections, separating the forehead, eyes, and mouth. The fish seen on either side at the temples are a common motif on Banpo-type ceramics and have been used to argue for a belief in fertility worship,[477] however, in the context of anthropomorphic faces, the fish are also interchangeable with horns (Figures 6.24 & 6.25). Anthropomorphic decoration is not rare among Banpo artefacts, as well as more generally on ceramics from the Ordos region throughout this period,[478] but the faces in Figures 6.23-2.25 are comparatively standardised. The features of the Banpo faces – lines extending from the heads, faces divided into sections, horns at the temples – are also found in the rock-art of Siberia, such as the carving in Figure 6.26 from Shalabolino in the Altai, which relate to the traditions of depicting faces with lines extending from the head in a manner often identified as representing a sun deity.

[476] Banpo is the type-site for the culture, but radiocarbon dates calibrated using tree rings for supposed Banpo-type sites cover the period 5048–3340 BCE. Such a broad period is not particularly useful for identifying temporal changes in motif-usage or human choices, so dates are given for individual sites where possible. For information on the carbon dates for Banpo-type sites, see Zhang Xuelian *et al*. 2013, 97.

[477] The basis for the fertility worship argument is primarily that it is a worldwide phenomenon in early societies (Zhao Guohua 1988, 140).

[478] For examples of human faces in ceramic decorations of the Yangshao period, see Zhang Mingchuan 1979.

Despite the explicit similarities in aesthetic features, the dates for the two groups are very different; Banpo and Okunevo are separated by over 600 years. Although the date ranges used for rock-art often cover a broad period, sometimes a millennium, this is necessitated by the nature of the material, however, sites with radiocarbon dates can be dated at much higher resolutions. Therefore, cultures with radiocarbon dates cannot be linked simply because their sites date approximately to the late 4th–early 3rd millennium BCE. This contrasts with the methodology used for rock-art, where broader date ranges mean that a stylistic connection separated by only 600 years would at least be investigated. This brings to the fore one of the reasons why rock-art is often side-lined by archaeology, wherein dating a site roughly to a 1000-year period is considered problematic. Though sites dated according to typology of burial structures or ceramics will sometimes be ascribed a generic period, for example 'Bronze Age', Russian or Chinese reports typically expand upon this, assessing whether each layer contains material relating to other regional sites, thus creating a more specific, though still relative, dating framework. In short, the methodologies for determining relative chronologies at excavated sites and rock-art panels are similar; what differs is the resolution of that chronology.

6.5 Summary

The rock-art sites discussed in this chapter are concentrated along the Katun River and its immediate tributaries. These sites were selected as a case study, due to the results of GIS analysis in Chapter 4 that suggested the Katun River's valley was not amenable to the movement of people, provided their impetus was to travel between places. This case study has demonstrated, however, that there would have been multiple reasons why people in prehistory would have been present in this valley.

Whilst the environment in the region has changed since the 2nd–1st millennia BCE, the overall forms of the Katun River and its tributaries had been carved out by this point. As a result, people would have been presented with a particularly deep valley formed by glaciers and the collapse of ice dams. This valley, additionally, would have offered a ready water supply; something of importance if people were in this area to hunt animals or find pastures for their herds. It seems probable that rock-art was made along the river to acknowledge the relationship people had with these water sources, as sites are predominantly found alongside rivers. Some sites would have been located immediately next to the watercourse, depending on the time of year and extent of flooding. This demonstrates a particular connection between people, their landscape, and the ways they acknowledged this connection. This was done, however, through the placement of rock-art and less so through the integration of petroglyphs with the natural features of the rock to express the wider landscape. There are few instances of natural fissures or grooves in the rock being used to represent topographic features and, when a predator is depicted as crawling over a rock surface to hunt figures below, it seems likely that the predator was initially created alone, without its prey being made explicit. This, thus, demonstrates the relationship between rock-art in the region of the Katun and the rest of the Altai, where realistic spatial relationships between figures depicted in rock-art are not preserved.

Several motifs highlight connections between the Katun River and other areas, both within the Altai and further away. An anthropomorph with a crescent-shaped headdress is found at sites along the Katun, as well as sites throughout the Altai Republic, but it is also found in the southeast foothills of the Altai. This reinforces the idea that mountains were loci of travel and movement, potentially preferred to low-land environments. The faces often interpreted as sun deities found at sites in the Altai may

also indicate links with northern China from a much earlier period. This issue is explored further in Chapter 8.

This chapter has presented a case study of rock-art sites along the Katun River, demonstrating connections between different parts of the Altai. The final case study will examine similar themes in the rock-art of the part of the mountain range under PRC administration. This study will demonstrate, in particular, the differences in methodology and interpretative frameworks between archaeologists of the Chinese and Russian traditions.

7 Case Study – PRC

7.1 Introduction

The section of the Altai Mountains lying within the PRC's borders makes for a particularly interesting case study (Figure 7.1). By contrast with Mongolia and Kazakhstan, which formed a republic and satellite state of the Soviet Union, respectively, during the 20th century, the PRC broke from its close relationship with Russia during the 1950s, allowing its leaders to pursue their own interpretations of Communism.[479] As a result, interpretative frameworks for archaeology developed independently from Soviet influence; a situation that was facilitated by the PRC's enforced international isolation and the language barrier. These factors form the main reason that a study of connections is particularly salient for rock-art and archaeology in the PRC, which have, in the past, been excluded from studies on the Russian-speaking Steppe. There are many apparent similarities between Russia and the PRC – both have been described in the past (and more recently) as empires,[480] their territories in the Altai are populated by peoples classed as ethnic minorities,[481] and both experienced extreme socio-political upheaval in the form of Communist revolutions during the 20th century. However, the differences in their archaeological research traditions are quite marked. Though academia in both countries was heavily influenced by political ideology, there has been a lack of theoretical debate in the PRC regarding archaeology as a

[479] Mandelbaum 1995, 4.

[480] The PRC is, by name, a people's republic, but researchers have noted continuity in features of government from Imperial China to today—specifically the presence of a scholar-official elite (political elitism) and the role of the Communist party as a 'collective emperor' (Pines 2012, 181–182). For perspectives on the continuation of the Russian Empire in modernity, see Annus 2015.

[481] In Russia, republics with large populations of ethnic minorities (or 'nationalities') have their own constitution, though this is subordinate to the constitution of the Russian Federation. In contrast, China is a republic itself, thus its political structure does not allow for multiple constitutions. Minority regions are, instead, granted the status of autonomous region (*zizhi qu* 自治區), which has greater legislative independence than a standard province.

discipline.[482] Instead, archaeology has been viewed as a tool to validate historical sources (2.1.4), not as an independent subject with its own strengths. These factors make the research situation in the PRC particularly interesting by contrast with the case studies presented in Chapters 5 and 6.

7.2 Background

Sites within the PRC are concentrated around the modern city of Altay (Figure 7.2). As Altay is the main urban centre of the northern Jungar and has thus been more thoroughly developed and explored, this likely indicates a survey bias. There are other rock-art sites in the area that are mentioned in the literature or on tourism websites, but they are not indicated on this chapter's map. These include Wulasitegou 烏拉斯特溝, Shechuan 蛇川, Yu'erkenkalasu 玉爾肯喀拉蘇, Que'ergou East 東雀兒溝, Kequtasi 科曲塔斯, Yitasi 依塔斯, Wutubulake 烏吐布拉克, Nainiuchang 奶牛場, Heishantou 黑山頭, Bieliegen 别列根, Luotuofeng 骆驼峰, Quangou 泉溝, Sideke 斯得克, and Lingyuan 陵园.[483] Unfortunately, even general locations could not be established for these sites and, as a result, they were excluded from the map. Major works detailing rock-art in the area include it within wider syntheses of Xinjiang Province, including Su Beihai's 1994 *Rock-Art in Xinjiang*,[484] 2013 *Petroglyphs in Xinjiang*;[485] as well as summaries of rock-art in the entire PRC, like *Rock-Art in China*.[486]

[482] In G. S. Lebedev's history of Russian archaeology, the closing summary alone lists multiple theoretical perspectives that developed during the mid- to late-20th century, such as *strogaya arkheologiya* (strict archaeology). Such relatively lively theoretical debate is lacking in China during the same time, or since (Lebedev 1992, 428–432).
[483] Wang Binghua 2004a, 48.
[484] Su Beihai 1994.
[485] Su Beihai 2013.
[486] Wenwu Chubanshe 1993.

7.2.1 Dates

The existing dating framework for petroglyphs within the PRC was developed in the 1980s by Gai Shanlin, whose primary material was the petroglyphs of Inner Mongolia's Yinshan and Ulanqab grassland.[487] The influence of the time's Marxist social evolution perspective is evident in this dating framework, as the petroglyphs were dated according to content, in a way that coincided with pre-conceived ideas of social development. Thus, the Neolithic to Bronze Age period (*c.* 8000–1000 BCE) is divided into three stages: the first stage includes animals known to be extinct in the area, such as *elapharus davidianus*, *megaloceros*, and ostrich (*c.* 8000–4000 BCE); the second has predominantly wild animals and some images of humans (*c.* 4000–2000 BCE); and the third has mainly domesticated animals, i.e. caprines, cattle, and horses (*c.* 2000–1000 BCE).[488] Gai argues that these animals are domestic, because they are often depicted near to humans.[489] The overreliance on subsistence strategy as evidence of dates demonstrates the influence of early Marxist theory. However, whilst Soviet archaeology in the strictest Marxist terms conceived of the final stage of prehistory as 'proto-peasant,'[490] Chinese archaeological thought acknowledged regional divergence in subsistence strategies during the 1980s,[491] though it has persisted in interpreting archaeology in terms of linear evolutionary models.[492] A result of this is a perception that certain processes are inevitable, meaning that Chinese researchers do not enter into the same level of meticulous explanation for changes in subsistence strategies or social structures as some Western archaeological traditions.[493] Consequently, any content that

[487] Gai Shanlin 1986; Gai Shanlin 1989.
[488] For a succinct outline in English, see Demattè 2004, 8.
[489] Gai Shanlin 1986, 344–345.
[490] Koryakova 2002, 101.
[491] Zhang Aibing 2004, 8.
[492] Flad and Chen 2013, 57.
[493] Nelson 1995, 4.

cannot be classified into one of the periods outlined above is either forced into it or skipped over. This framework neglects issues of overlay, patina accretion, and other methods for dating petroglyphs outlined in 2.4.

7.3 Landscape

7.3.1 Macro

The names given to rock-art sites in the PRC's Altai reflect features of the macro-landscape. The sites in the area around Altay City include Aketasi cave (*Aketasi dongku* 阿克塔斯洞窟), Jiangjunshan 將軍山,[494] Dulategou 杜拉特溝, Balibagai 巴里巴蓋, Khemcek,[495] Cao'erhei 草爾黑, and three sites near Handegate 汗德尕特 village named Moku'ergou 莫庫爾溝, Que'ergou 雀兒溝, and Duo'ategou 多阿特溝 (Figure 7.2). *Gōu* 溝 means 'gulley' or 'ravine' in Mandarin, thus its use refers explicitly to the surrounding topography and relates to the Mongolian word for these features – *gol* – ameaning 'river'. In a similar way, the character *shān* 山, in *Jiāngjūnshān*, means 'mountain'. As discussed in 2.1.4, identifying precise locations of rock-art sites in the PRC is difficult due to restrictions on information; however, naming sites in this tradition limits the area it may be found in to a general topographical feature. As an example, Jiangjunshan denotes an entire mountain located in Altay's east, so it is possible to describe the general surrounding landscape through reference to this, even though the precise location of the site is not clear. The same is true for the sites for which locations could not be determined (7.2), the names of which also include topographical features, such as *gōu* in *Wūlāsītègōu* and *Quángōu*, *chuān* 川 in *Shéchuān* means 'river', and *shāntóu* 山頭 in *Hēishāntóu* refers to the 'mountain top',

[494] Alternatively known as Jiangjun kezi'er shan 將軍克孜爾山 (Wang Binghua 2004a, 48).
[495] Including Yuyitasi, commonly referred to as Ke'ermuqixiang Yuyitasi 克爾木齊鄉玉依塔斯.

demonstrating the significance of the landscape in perceptions of these sites. There is a danger that these names overemphasise the importance of the landscape, but, in many cases, the Mandarin word for the topographical feature in the name is translated or transliterated from the Kazakh or Mongol. An example of this is the site name for *Wulasitegou*, which comes from the Mongolian *uliangar*, meaning 'poplar tree.'[496] This creates a hybrid Mongolian-Mandarin name indicating a 'poplar tree river'.[497] The preservation of these names highlights the importance of natural features in the way modern pastoralists view the world, reinforcing the idea that pastoralists of the past would have been similarly attuned to the features of their environment.

There is a similar pattern among names for rock-art sites further west from Altay City towards Kanas Lake. Three sites, akin to the names of those above, are sinicised versions of either Kazakh or Mongol names – Aqbastaū (*Akebasitao* 阿克巴斯陶) is a common Kazakh place name meaning 'well-spring' and Kanas Lake originates from the Mongolian *khaan us*, which literally means 'the khan's water.'[498] This name, however, was allegedly bestowed by a witty member of the Mongol army during the empire's westward expansion (*c*. 1218–1221 CE),[499] thus it has little reflection on the lifeways of pastoralists during the 2nd–1st millennium BCE. It is less clear where the name of the third site, Kuxugen 庫鬚根, comes from, as *xūgēn* means 'fibrous root' in Mandarin, but the author could not find examples where these characters have been used to sinicise

[496] Xinjiang yinyu 2000.
[497] Although *gōu* is phonetically quite similar to the Mongolian *gol*, it is likely that *gōu* was selected for its closeness in meaning to the Mongolian word, in addition to the way it sounds.
[498] The meaning of the Mongolian name is disputed amongst Chinese netizens, with some claiming that it means 'beautiful, rich, and mysterious' (*meili raofu shenmimoce* 美麗饒富、神秘莫測) (qinpdeshijie 2016); however, this claim is not backed up with any reference to the Mongolian language. The debate is, thus, restricted to the Mandarin language sphere.
[499] Zhang Kailiang describes this legend, but also claims that *kanasi* implies the meaning of a 'sacred lake in the high mountains' (Zhang Kailiang 2014). Despite this, there is no clear link between the Mongolian for any of these words and the Chinese name.

other Kazakh or Mongol place names, so it is possible that Kuxugen is more modern or originates from Mandarin. Overall, the names of the sites on the PRC side of the Altai demonstrate a continuing preoccupation by local people with topographic features in the landscape as a means to simultaneously define spaces and create places, though the case of Kanas Lake also provides a prime example of how one 'site' can encompass several hundred km^2.

As a general pattern, the sites in the Chinese Altai appear to be concentrated in focal areas that are currently receiving much attention due to the expansion of Altay City or marketing for tourism purposes, as in the case of Kanas Lake. It is highly probable that there are more sites located in parts of the Altai that are lacking development, however, recent attempts by local government to promulgate certain areas as scenic spots has made more information available than would otherwise be possible relying solely on published academic works. The least-cost pathways analysis detected several routes amenable to movement, including the areas around Altay City and Kanas Lake (Figure 4.16), which is where many petroglyph sites have been found. It is interesting to note that the analysis also detected a particularly optimal path running parallel to the Sino-Mongol border orientated northwest-southeast. There are six rock-art sites that appear to be located along the border. The one furthest west is at Bogda Peak, so is actually located on the Sino-Russian border. The other five sites are all on the Mongolian side of the Sino-Mongol border. The two in the middle of the high-accessibility route towards Bogda Peak are Aral Tolgoi and Biluut, whilst the three to the southeast are Tsengel II, Khurgan Lake, and Khurgan Lake II (Figure 7.2). The latter three are centred around an area that the GIS analysis identified as a hub of several major routes, as well as some lesser ones, in a similar layout to the sites and pathways around Altay City. However, there are four major pathways in the PRC Altai that are orientated northeast-southwest across the Sino-Mongol border, which demonstrates the

porosity of the mountain passes on the modern border and supports the idea that people could have frequently travelled through the Altai in the past.

In addition to the use of flat rock panels for creating petroglyphs, as seen in the case studies in Chapters 5 and 6, there are cases of rock shelters being used for rock-art. This can be seen 4 km northeast of Handegate Village at the Dunden Bulag Rock Shelters (*Dundebulake yanpeng* 敦德布拉克岩棚), which an international team visited in 2015 and dated the first phase of pigment to *c*. 3300–2050 BCE.[500] Although the English article mentions only one rock shelter, the Chinese literature lists four shelters; numbers one and two are on the eastern bank of the Dunden Bulag River, whilst the third and fourth are distributed slightly further away on the western bank.[501] The presence of these images in caves makes it possible that people sheltered here temporarily to avoid the harsh winds or glaring sun whilst hunting or herding. Alternatively, the people who made these images may have been resident in the area on a more long-term basis. The English publication by Paul Taçon *et al*. notes that one image of a horse was first created from a pink-red pigment that formed the mane and hindquarters, before a purple colouring was used to make the remainder of the horse.[502] This demonstrates planning and forethought in the production of these images, which, in addition to the preparation of ochre pigments, implies that the rock-art was created with a purpose more significant than casual boredom whilst sheltering from a storm. Indeed, a photograph of Shelter 1 today provides clues as to why the images were painted here in the first place. Figure 7.3 shows a metal fence erected in front of the shelter to protect the images from tourists.

[500] The team identified a yellow crust comprising amorphous silica and oxalates beneath the earliest layer of paintings. As amorphous silica forms under wet conditions, the *terminus post quem* for the is the end of last wet period in the region dated to 9985-5250 cal BP (Taçon *et al.* 2016, 26–27).
[501] Wang Bo 2012. It is possible that the different number of shelters given in English and Chinese sources stems from different attitudes towards what constitutes one site. What the English publication refers to as smaller sites near to Dunden Bulag may be what the Chinese researchers consider to be part of one overall site.
[502] Taçon *et al*. 2016, 23.

In addition, local people have placed flags and white scarves on this fence, a practice common amongst adherents of Tibetan Buddhism when honouring spirits,[503] which is the main religion of Mongols. Although the presence of rock-art is likely the reason for local Buddhists believing there are spirits inside, the shelter is very large for something so well-concealed in this landscape. As a result, the creators of the rock-art could have been attracted to the shelter for its distinctiveness, whilst its location next to a river meant it was optimally situated for herd animals to take water.

7.3.2 Micro

The relationship between the images and rock façade at Shelter 1 of the Dunden Bulag Rock Shelters is interesting. Although all animals have been painted facing towards the shelter entrance, they are painted as if in motion, with the large yak on the right-hand side and the horse below it both tilted as if they are leaping over the rounded part of the panel that projects towards the viewer (Figure 7.4). The anthropomorphs drawn in profile at the top of the panel, similarly, seem to follow the curve of the rock. The photograph in Figure 7.5 was taken from an angle that centres the row of anthropomorphs, showing how the façade curves near the entrance, which is not as visible in FIGURE 7.4. Its creator has orientated the anthropomorphic figures to go over the rock curve in the lower right-hand corner of Figure 7.5. This gives the impression that the anthropomorphs are travelling over the mound and if, as suggested on the basis of their bulging backs and flexed knees, this depicts people skiing, then the curved rock forms the surface that they are skiing over. It is also worth noting the curvature of the rock on the left of the same panel in Figure 7.6. The panel towards the back of the cave has further, more faded figures, including that of a reddish bovid (potentially an auroch).

[503] They are also presented to elders when resolving conflicts and used to decorate the portrait of the Dalai Lama (Pirie 2006, 180).

The groove to the right of the bovine cuts across the tip of its horns, implying that it formed (or became deeper/wider) after the figure was painted. In contrast, the groove on the far right of Figure 7.6 running from top to bottom is extremely smooth and was created by water flow; likely the seepage of rain. This suggests that it formed during the wet period identified by Taçon *et al.* that ended before the earliest phase of imagery was made.[504] As can be seen in the lower right-hand corner of Figure 7.6, the creator(s) painted at least one horse across the groove, whereas the other horses above and to the right respect the division created by the groove. If there had been sufficient rainfall, the water pouring down this groove would have looked similar to a river, though the relatively good preservation of the horse at the bottom suggests that water has not regularly flowed over the image since its creation. As a result, it is difficult to say with certainty whether the creator(s) incorporated this feature into the composition, either as a representation of a feature in the landscape, dividing line, or both.

Dulategou near Altay City represents a site more typical of the Altai Mountains. The rock-art is pecked and carved, predominantly on exposed, planar rock faces. Whilst mention was made in 5.2.1 of the effects of weathering on the rock-art of Mongolia, Dulategou is a prime example of how the southern Altai's location by the semi-desert environment of the Jungar Basin has accelerated exfoliation of rock surfaces. The contrast between images made in the 2nd millennium and more recently is quite marked here. The pecked surface of the bovine's body in Figure 7.7 is the same colour as the surrounding rock, indicating that the rock was exposed sufficiently long ago for it to return to its original colour. In contrast, the peck marks on the panel shown in Figure 7.8 are bright white, as the rock crystals have been crushed far more recently, leaving them less time to interact with the air and be weathered. In general, however, the

[504] Taçon *et al.* 2016, 26–27.

surrounding environment seems akin to that of the sites discussed in previous chapters; it is located along a gully that has water flowing through it (Figure 7.9). The photograph was taken in July 2015, which is one of the hottest months for this region, as well as the wettest. As a result, there is plenty of grass and vegetation for herds to feed on along the bottom of the gully, even though the surrounding slopes and hills are formed of sandy soils, with minimal vegetation beside scrub. The photo of the gulley demonstrates the advantage to sitting atop the hillock; it gives optimal views of the surrounding gullies, allowing a herder to keep their eye on wandering livestock. The majority of rock-art is not, however, found on this hillock, but further northeast, within proximity of the lush gullies.

The panel in Figure 7.10 at Dulategou is extremely typical of this region's rock-art. In contrast to the way the creators of the paintings in the Dunden Bulag Rock Shelters seem to have utilised the rock's natural curvature to change the viewer's perspective, the Dulategou panel in Figure 7.10 may have been flat when petroglyphs were first pecked into it; there would likely have been fewer cracks and gaps on its surface. The panel curves slightly away from the viewer on the right-hand side and the panel surface is, additionally, slanted with the lower part coming towards the viewer. There is, however, no identifiable pattern amongst the petroglyphs that suggests the creator attempted to integrate the changing form of the rock panel into the overall composition to represent the landscape. It is possible that some of the cracks on the panel surface existed when the petroglyphs were made. For instance, to the right of the two large ibex in the centre of Figure 7.10 are five quadrupeds that have been pecked one above the other, as if the creator(s) was avoiding the crack. It is possible that the crack existed when the petroglyphs were pecked, but was much smaller and has grown wider over time. In this case, the creators of the petroglyphs used the crack to create a division between figures, though the crack may also have been used as a border whilst

they were creating the work, but had little significance other than being slightly decorative when finished.

The main use of natural features to represent the micro-landscape was to depict the ground. The horse and anthropomorph at the bottom of the panel in Figure 7.7 was only exposed for this photograph by the guide's removal of a layer of sandy soil from the ground immediately in front of the horse; the dark horizontal line beneath the anthropomorph's feet and running across the horse's chest indicates where the soil originally reached. Heavy rains have washed soil and pebbles down from the top of the hillock, covering the petroglyph of the horse, which may have originally been depicted close to the original ground level. Similarly, a thin protrusion on the panel shown in Figure 7.11 has been used to represent the ground the deer is standing on. Although the head of the animal has been quite badly eroded, its hindquarters and legs are still visible. It is not uncommon to find ground depicted (5.3.2), but it is not usual for other forms of terrain to be represented – such as depicting mountains, riversides, or cliffs – instead the terrain is typically nothing more than that shown in Figure 7.11; a patch of ground where the animal stands. This suggests that much of what past creators of rock-art considered important enough to express related to their animals and themselves, rather than the surrounding landscape.

7.4 Connections

The images in the southern Altai are similar to those in other areas of the mountain range that have been presented in Chapters 5 and 6. Ibex and goats are common, as shown in Figure 7.10 from Dulategou, in addition to deer, canines, and anthropomorphs. It has been generally believed that pigment-based rock-art is not typical of northern China, which makes the presence of paintings in the Dunden Bulag Rock Shelters very interesting. What stands out most is the fact that the images made using pigment focus

on similar subjects as depicted in petroglyphs – horse, yak, and anthropomorphs (Figure 7.4). The majority of these figures are also depicted in a similar style; all creatures are shown in profile with their outlines filled in. Due to the perception that petroglyphs often look sloppy, researchers have suggested that they were made whilst pastoralists were watching their animals,[505] though the implication of this is that they were bored and there was little forethought in making the imagery. In contrast, the use of pigment dictates that there had to be a certain amount of planning, as the people making the images had to gather the raw materials (likely haematite), grind them into a powder, add a binding agent, then apply the pigment using either their fingers or a tool that would have been made from organic materials (if used at all). The process that can be constructed from the use of pigment indicates a very different process, and presumably attitude, towards making the rock-art. Whilst petroglyphs required a creator to locate a suitable tool (stone or metal) and location, paintings required their creator to also gather raw materials for pigment and make the pigment. The animals depicted in pigment were, importantly, similar to the ones represented in petroglyphs. This is demonstrated in Figure 7.12, which shows several horse and bovines at Jiaxihalahai near Altay City. This means that the effort and planning evident in the painting of pigment-based imagery can be assumed to have existed for the creation of petroglyphs too, unless explicit evidence indicates otherwise.

The ubiquity of caprines in petroglyphs throughout the Eurasian Steppe has been mentioned multiple times in this thesis (5.4 & 6.4). However, with regard to the point that past peoples were unlikely to have casually depicted content that was unimportant to them, the significance of caprine motifs needs to be explored. Mayimatuobie 瑪依瑪

[505] The same researchers are often, quite confusingly, willing to identify large concentrations of petroglyphs as 'ritual complexes'; something that denotes far more intentional planning to create.

托别 is a site in the low foothills of the southern Altai, which lies along a valley near the modern Sino-Kazakh border in what is now an arid, hilly environment. Of the 46 figures on the panel in Figure 7.13, 38 are caprines, with one confirmed anthropomorph. The sheer number of caprines could be interpreted as the creator(s) desiring many caprines, or expressing that they possessed many caprines. The creator(s) has, however, depicted the caprines in various different styles, which could imply that various different people created the motifs, or that the creator(s) did not perceive caprines as belonging to a single category, instead they were many and varied in the same way as humans. For instance, some caprines are represented in profile, with their horns curled back (Figure 7.13); other caprines have horns that are so large that they attach to the animal's rump; two caprines are represented in profile, but have horns represented *en face*; one caprine immediately next to the anthropomorph has a sharply twisted horn, suggesting that it may actually be an argali sheep – this also applies to two caprines on the upper-right, which both have horns that curl back towards their heads, creating a swirl. This variance in styles implies that, to the people of the 2nd millennium BCE, caprines were not simply a common animal, but an animal that had individual characteristics and physical variations, which were worth expressing in the rock-art representations. This contrasts with modern researchers' attitudes towards caprines. Additionally, this variation shows that there was not one standardised way to depict caprines; even though the style seems similar between all the figures – i.e. caprine represented in profile – all figures are slightly different.

The significance of caprines across multiple periods is attested by the presence of caprine iconography elsewhere in the archaeological record. The ceramic in Figure 7.14 was excavated from Yanbulake 焉布拉克 cemetery near Qumul City (*Hami shi* 哈密市) and dates to the 1st millennium BCE. The caprine is depicted in profile, except for its horns, of which there are two. As a parallel, Figure 7.15 shows a wooden vessel

excavated from the Yanghai cemetery dated to *c.* 500 BCE. This later vessel also depicts its caprines in profile, though the one at the top has two horns and two forelimbs, whereas the lower one is depicted entirely in profile. The timespan between these vessels further reinforces the ubiquity of caprines in aesthetic ideology of peoples of the Eurasian Steppe during the 2nd–1st millennium BCE. This ubiquity indicates the significance of the animal. Whilst pastoralists would have kept some cattle and yak, bones of caprines are found at most archaeological sites during this period in the Steppe. This supports the idea that caprines formed a major part of the economic core and, therefore, were significant to the socio-cultural constructs of these groups, being lauded in iconography of the time. The salience of caprines persisted into the 1st millennium BCE, when highly stylised depictions of deer also became popular. For instance, the elite buried in a kurgan at Pazyryk, Tuva Republic, dated to the 6th–5th centuries BCE contained an ibex horn made of wood and covered with gold foil that was used as a headdress for a horse. This demonstrates that caprines were sufficiently socially significant as to become adornments for horses in the 1st millennium BCE, which were themselves major social actors themselves by that time. All of this points to caprines being key animals in pastoralist society at the time, whether they were goats being herded or ibex and argali being hunted.

A distinctive motif seen more in the southern Altai and other mountainous regions of the northern and western PRC is a yak shown with a long tail that culminates in a rounded ball or large triangle (Figure 7.16). Yak are common subject matter among the rock-art of Qinghai province, where they are most frequently depicted during the earliest phase (*c.* 1000–500 BCE):[506] up to 48.7% of animal figures at Yeniugou 野牛溝

[506] Tang Huisheng and Zhang Wenhua 2001, 167.

are yak;[507] 41.47% at Shebuqigou 舍布（or 卜）齊溝;[508] and 57.14% at Hulimugou 湖李木溝.[509] In contrast, there are 105 figures at the post-2nd century CE site of Huaitoutala 懷頭他拉 and only 16.36% of these are yak.[510] This indicates that yak were significant in the cultures of people living in northern and eastern Qinghai up throughout the 1st millennium BCE. The typical manner of depicting yak at early sites includes representing the tail with a large ball on the end (Figure 7.17).[511] It is not necessarily a ball at the end of the tail, however, but can also be a triangle or, in one case, a wolf's tail (Figure 7.18). This practice of stylising yak tails seems quite similar to that seen at Dunden Bulag Rock Shelters and Duo'ategou, however, the dates estimated for the Qinghai sites are 1000 years later than for those in the southern Altai. However, this *terminus post quem* is based almost entirely on the presence of chariots and maces in the rock-art,[512] i.e. material culture comparisons. In Qinghai, the earliest mace heads are found in Tomb 87 at Dahua Zhongqing 大華中慶 (*c.* 1650–650 BCE),[513] which are shaped liked animal heads.[514] In contrast, the earliest maces in regions nearby, include sites in neighbouring Gansu Province, dating to *c.* 5050 BCE, whilst the majority are found *c.* 3000–500 BCE.[515] Mace heads have also been found in cemeteries of the Qijia 齊家 culture (*c.* 2250–1850 BCE), Gansu.[516] As several cemeteries and settlements in Qinghai are also ascribed to the Qijia culture, it is probable that the people of this time would have been familiar with maces as a weapon,

[507] A total of 239 figures comprised 207 non-human animals, of which 100 were yak (Qiao Hong 乔虹 2013b, 170).
[508] Of 27 figures, 24 are non-human animals, 10 of which are yak (*Ibid.*)
[509] 63 of the 70 total figures are non-human animals; yak make up 36 of these (*Ibid.*)
[510] There are nine yak figures among 55 non-human animals (*Ibid.*, 171).
[511] *Ibid*.
[512] Tang Huisheng and Zhang Wenhua 2001, 167–170.
[513] Tie Yuanshen 2015, 245.
[514] Cui Yonghong 1995, 116; Qiao Hong 2004, 73.
[515] Qiao Hong 2013a, 76.
[516] Ma Minmin *et al*. 2012, 211.

thus the earliest dates for the first phase of rock-art in Qinghai may be earlier, up to 2000 BCE, even if the presence of maces is still used as the indicator. This means that the stylised yak tails may be closer to the dates of the triangle yak tails depicted in the southern Altai. There remains, however, a temporal gap between the two, but the purpose of highlighting this practice at rock-art sites in Qinghai is not to suggest that there is a direct connection between the two regions, but to provide an example where a subject is stylised repetitively in multiple instances. This demonstrates that the creators focussed on a certain part of the animal, though it is unclear whether this may have been intended to draw attention to the feature itself or express something of the animal's perceived qualities.

Cattle species are also depicted at high altitudes in alpine environments, as shown in Figure 7.19 from Shiveet Khairkhan in the Mongolian Altai. The yak's tail is an oval-triangular shape, similar to that in Figure 7.16 at Dunden Bulag, but the horns are represented so that the animal's head appears *en face*, instead of in profile. The fact that stylisation of the yak's tail occurs alongside different styles of horn implies that the shape of the tail is stylisation resulting from creators' attempts to capture a feature of the animal. For instance, Figure 7.20 shows a male yak running, with the tail swishing up in the air. The long tail with thick, woolly hair flicks upwards in this way when the yak runs, contrasting markedly with the tufted tails of cattle. The tail is, therefore, something that sets the yak apart from other *bos* species and can distinguish it in rock-art.

The reason why the yak tail in Qinghai rock-art is short and circular is unclear, though it is interesting to note the similarities between yak tails and human adornment in the rock-art of both Qinghai and the Altai. The anthropomorph with a crescent-shaped headdress seen in the Russian and Mongolian Altai (6.4), often has a stick

attached to its waist with a circle at the distal end (Figure 7.21). As it is attached to an anthropomorph, the stick is typically interpreted as a type of weapon, usually a mace. However, the circle can be replaced with a triangular-oval, similar to the shape of the yak tail (Figure 7.22). In addition, this stick is often placed above the anthropomorph's rump, i.e. in the location where a tail would be. The stick can also be depicted around the groin of the anthropomorph, in which cases it may reference male genitalia, however, there are instances where anthropomorphs have two tails; one at the groin and one at the rump. This is demonstrated in Figure 7.23, where the two anthropomorphs each have two tails. This image simultaneously demonstrates that the rump tail is unrelated to male genitalia and that it is not a mace. If it is a weapon, the creator depicted it as shorter than both penises, implying that penises are more important than weaponry or, more likely, the rump tails are not weapons. One possibility is that the anthropomorphs have been depicted wearing actual tails. This is not implausible, as not only are there many petroglyphs of anthropomorphs which have items of clothing represented, but it is feasible that people wore parts of animals. If they dressed up their horses as deer at Pazyryk and later shamans wear horse fur, deer skulls etc., it is not implausible that past peoples were wearing parts of animals – either leaving the tail on a skin worn for warmth or purposefully referencing the animal in their choice of clothing. Most importantly, this demonstrates a fluidity in the division between humans and non-human animals, as the two worlds were intensively interlinked, for both economic reasons (clothing), as well as the choice to channel the animal's characteristics whilst hunting.

The motif of a deer with a single antler (5.4) is one example of a wide-ranging and distinctive motif also found in the southern Altai. This motif is found on two panels at Yuyitasi 玉依塔斯 near the village of Qiemu'erqieke (Figure 7.24 and 7.25). The two figures are found on separate panels and shown with either one or several goat figures,

showing that the motif was integrated into the overall aesthetic ideology of the creators, as it was combined with other motifs, not used once and never again. The modern environment surrounding Yuyitasi is desert, although extensive hydrological engineering has created lush, oasis-like centres, which include Altay City. Deer, in contrast, are found more commonly in alpine, sub-alpine, and grassland environment. During the 2nd millennium BCE, the Jungar Basin underwent a process of desertification where the biome transitioned from semi-desert to desert; neither type is particularly suitable to supporting populations of deer. Deer are more likely to have been found in the Altai's higher altitudes further north, which indicates that the creators who made these petroglyphs were familiar with deer, as well as the iconographic modes used to represent them. This further supports the findings of the GIS analyses that people traversed different altitudes of the Altai as a matter of course (4.3). However, there are unlikely to have been many deer in the immediate vicinity of Yuyitasi, as the environment was, by the 2nd millennium BCE, already quite dry.

7.5 Summary

The locations of rock-art sites in the southern Altai Mountains demonstrate that, in contrast to the situation of the present day, people moved across and through the Altai regularly. Even today, sites are named and characterised by features of the macro-landscape around them, including gullies, water sources, and mountains. This demonstrates a continuing connection between the people living in the region and the topography. The fact that the majority of names originate from Kazakh or Mongolian words additionally indicates that the practice is inherently related to the lifeways of mobile peoples, rather than sedentary agriculturalists.

A major difference in methodologies used by researchers looking at sites in the other case studies and this one is that Chinese researchers still predominantly publish

greyscale drawings. This makes it extremely difficult to assess the material for a desk-based study, although some researchers are now using computer software to represent different depths of carving and overlay, as in Figure 7.13.

Motifs identified in the corpus of PRC material demonstrate links between the southern Altai and other mountain ranges, not only those running directly east. Tails on cattle are stylistically quite distinct in many cases and are found in the mountainous landscape of northern and eastern Qinghai, highlighting the potential for mountain ranges to act as loci for movement. It is highly likely, in addition, that the Qinghai material is closer in time frame to that in the Altai than currently estimated by scholars. Despite researchers' tendencies to amalgamate rock-art within the PRC into one category, rock-art research in Qinghai seems to be attempting to preserve its independence from other systems of rock-art. As observed in 7.2, rock-art in the Altai is typically studied as part of rock-art in Xinjiang, even though any rock-art in the mountains of the southern Tarim Basin is often further away than rock-art in neighbouring Qinghai. This highlights an issue in utilising administrative districts as analytical areas, as it compels researchers to ignore information immediately adjacent to them, because it is classified within a different area. This is why topographical features were used as the primary delineating factor in determining areas of analysis in this thesis.

Having examined three regions of the Altai in detail, this thesis will now explore information and conclusions that have arisen in each of them with implications for connections and movement through the Altai.

8 Discussion: Connections and Rock-art

Research on 2nd–1st millennium BCE archaeology of the eastern Eurasian Steppe has long suggested that its peoples were connected, both across great distances and within regional interaction spheres (see 2.2). Archaeological evidence of this comes predominantly in the form of portable artefacts, thus the mechanisms of movement and transportation are unclear. In contrast, the rock-art that is discussed in this thesis is found in the location it was first made, thus it shows *where* people travelled. In the preceding three chapters, this thesis has demonstrated the utility of inferring contact and movement from rock-art locations, as well as motifs found in both rock art and portable art. It has also highlighted potential routes of movement to neighbouring locales in the four countries surrounding the Altai Mountains, as well as within the range. First millennium BCE motifs in western Mongolia are found further afield in eastern Kazakhstan, southern Siberia, and the northern PRC (Chapter 5). Such a range demonstrates integration of those who made the petroglyphs with a particular view on how to represent things visually. The varying types of relationships that creators of rock-art had with the landscape is expressed through the locations of sites in the Russian Altai, which vary, despite being found near water sources and accessible paths more generally (Chapter 6). As a practice, the names of sites in the PRC indicate that making rock-art was related to the lifeways of pastoralists, instead of the now dominant agricultural tradition (Chapter 7). In all three cases, links between the Altai and mountains further east and south have been shown, with rock-art motifs implying connections with the Central Plains and the mountain ranges encircling them. In addition, these studies highlight the significance of pastoralism to the practice of creating rock-art in the Altai. This chapter explores the implications of these issues for understanding past peoples, the interactions between them, and the social-cultural background to their decision to make rock-art.

8.1 Imagery at the macro-scale

The rock-art highlighted in this thesis has demonstrated links in aesthetic design between the Altai, Central Asia, and East Asia. This was seen, for example, in the similarity between single-antlered deer motifs at Tamgaly (Kazakhstan), Tsagaan Salaa/Baga Oigor (Mongolian Altai), and Jigonghailesitai 幾公海勒斯太 (PRC) (see 5.4); the faces or masks at White Iyus (Russian Altai) and Banpo (PRC) (see 6.4); and yak petroglyphs at Shiveet Khairkhan (Mongolian Altai), Dunden Bulag (PRC Altai), and the eastern Tibetan-Qinghai Plateau (PRC) (see 7.4). Within the Altai itself, similarities between motifs also demonstrate a general level of connectedness, with stronger links between the western, southern, and eastern mountains. This coincides with the findings of Jacobson-Tepfer and Meacham's large-scale survey of western Mongolian rock-art, from which they concluded that motifs in Bayan-Ulgii are not generally paralleled on the Russian side of the border.[517] Instead, they highlight the function of the Altai's southeastern spur as, 'a funnel chanelling ancient peoples between long valleys on either side.'[518] This description highlights this part of the Altai as a particular locus of interconnectivity in the 2nd and 1st millennia BCE. A potential reason for this is highlighted by the GIS movement model (Chapter 4). In the area immediately surrounding the four countries' borders (Figure 4.16), routes likely to experience higher traffic converge either on the Sino-Russian border or slightly north of it. Otherwise, in addition to the major route running from western Mongolia along the Sino-Mongolian border, the other major route between western Mongolia and the Russian Altai is approximately 100 km directly northeast. This may account for the pattern Jacobson-Tepfer and Meacham observed in the archaeology, particularly of the

[517] Jacobson and Meacham 2010, 134.
[518] *Ibid*.

late 2nd–early 1st millennium BCE, namely that khirigsuurs appear in the northeast and move through western Mongolia into Kosh Agach, whilst deer stones appear to follow the Altai's southeastern spur before appearing in Xinjiang.[519] Their reconstruction of movement based on the archaeological evidence corresponds with the two main paths between western Mongolia and other parts of the Altai identified in the GIS analysis, supporting the idea that these were major transit arteries.

The two major routes running through western Mongolia are not isolated, in fact various paths of both major (minimum 101 lines per cell), medium (67–100 lines per cell), or minor (50–66 lines per cell) categories converge on them. In particular, two nexuses are formed north of Khurgan Lake and the modern settlement of Ulaan Khus.[520] Both foci feature various rock-art sites and archaeological remains, in addition to four rock-art sites located along a low-category route between the two, which indicates transit between these two major places, with the route being used frequently enough that people experienced multiple significant occurrences to stimulate the creation of rock-art. In this case, the archaeology highlights an area of human activity that would not be identified based on the movement model alone. Similarly, the large rock-art complexes identified by Jacobson-Tepfer and Meacham as likely centres of human activity are connected to route nexuses by other major, medium, or minor paths. The GIS model of movement even identifies Tsagaan Salaa/Baga Oigor, which appears less well-connected in comparison to Aral Tolgoi and Shiveet Khairkhan, as visibly linked to the other complexes, the two major path nexuses, as well as sites over the Russo-Monoglian border. Corresponding with what Jacobson-Tepfer and Meacham identified as a likely

[519] *Ibid*.
[520] Known as Biluu prior to 1992 (Jacobson-Tepfer and Meacham 2012, 116).

route into Xinjiang,[521] the path along the Sino-Mongolian border follows the Altai's southeastern spur, leading to several optimal passes near the modern settlements of Altay and Chikhertei. Indication of this movement on the Chinese side is provided by deer stones and khirigsuur-type burials, including Sandaohaizi in the far southeast of the PRC Altai, which attests to the distances traversed, as well as the extent of inter-connectivity within the mountains.

Building on the movement model suggested in Chapter 4, the case studies examined features of the landscape that formed significant places, stimulating the creation of rock-art in addition to significant experiences. Motifs in each region not only supported the idea that the Altai was highly interconnected, but also highlighted connections between the Altai and other regions at the macro-scale. At the theoretical level, it was known that connections existed prior to conducting the case studies (Chapters 5–7), as stylistic parallels at other sites and on portable objects are a major component of dating petroglyphs. This means that researchers studying rock-art are already searching for connections. One of the main aims of this thesis was to make these connections the focus and demonstrate their presence. A result has been to highlight tangible routes in and out of the Altai that traverse modern country borders, as well as accessible paths through the mountain range itself (4.2 & 4.3). The presence of rock-art along these routes not only provides evidence for their use in the past, but the petroglyphs also attest to the distances that knowledge and use of certain styles in different periods travelled. Combining the results of GIS analysis of movement with a study of motifs has provided multiple levels of information on the socio-cultural practice of making rock-art and the mechanisms by which it was produced, perceived, and interpreted. One of these mechanisms seems to have been incorporation of the

[521] Jacobson-Tepfer and Meacham 2010, 130.

individual rock-art creator into a wider socio-cultural sphere, where certain styles of visual expression were favoured over others. This is indicated by the wide distributions of visually distinctive motifs highlighted in the case studies. Some motifs are even found in regions neighbouring the Steppe that do not have traditions of making rock-art, such as the motif of the 1st millennium BCE deer with a single antler and tines on both sides. This motif features in the rock-art of eastern Kazakhstan, the Altai, and the western PRC, in addition to being found on portable objects, such as a ceramic vessel in western Mongolia (Figure 8.1) and a jade excavated from the Guo State Cemetery in the central PRC (Figure 5.18). Many other jades were excavated from these tombs that are more typical in style for the region, which is what makes this particular motif stand out. In this case, the motif goes beyond simply emphasising certain aspects of the animal to help the observer identify it. Instead, the features used to construct the representation make it distinctive from other representations of the same animal.[522] Though other parts of the deer may be rendered differently, the antlers show marked consistency across a wide distribution of this motif, to the extent that it conveys the creator's 'relative identity'[523] to a wider cultural entity. As has been noted by others, it is unlikely that the modern researcher will be able to decipher precisely what the creator of the image intended to communicate,[524] but the fact that this semi-formalised mode of representing deer antlers appears across an extensive area demonstrates that the Altai's rock-art creators were part of an ideology expressed aesthetically that understood to represent deer antlers in this way.

[522] This is what Livio Dobrez and Patricia Dobrez label the 'canonical form', though this thesis avoids the evolutionary basis for recognising a subject that they argue contribute to the formation of a canon (Dobrez and Dobrez 2014, 16-18).
[523] Wiessner 1991, 57.
[524] Bradley 1991, 78. This stems, in part, from the fact that the potential meanings contained in style and image are infinite (Hegmon 1992, 520).

In this context, an aesthetic ideology does not refer to the philosophical concept concerning the aestheticisation of political ideologies,[525] but denotes the system of ideas that informs the aesthetics of a particular culture or several. As outlined in 1.2.1, *aesthetics* in this thesis signifies the material principles used to build the image, and differs from 'style' in the way that it refers to the image's formal, visible features – 'style' is thus more general. The material principles can be seen in the yak petroglyphs in Figure 8.2: the one on the left has no horns, a defined hump, four extended legs, and solid body colour; in contrast, the yak on the right of Figure 8.2 has horns, a defined hump, four extended legs, and crossed lines on its body (the feature hanging from its chin is the tail of another yak in front of it). Each petroglyph is recognisable as a yak, but the choices made by the creator(s) in making each image were sufficiently different as to make each one distinctive. As such, the material principles of an image reflect decisions made by a person, and, though these can only be hypothesised and inferred, examining rock-art from this perspective allows us to emphasise the image's place within a network of human relationships and practices, rather than its qualities as 'art.'[526] Doing so characterises rock-art within the broad concept of 'everyday aesthetics' championed by Yuriko Saito, meaning that everything visible has aesthetic qualities with the power to affect the human world-view.[527] Such qualities are coevally tied into the socio-historical context of both the object and the time at which it is interacted with

[525] For more on the topic of aestheticising politics, see Jay 1992, who outlines the preoccupation with a self-referential understanding of beauty that is then applied to the political realm.
[526] Categorising what *art* is and how people identify it has been the subject of much discussion and remains unresolved (De Bolla 2002, 19).
[527] Saito uses environmental aesthetics as an example, noting that the visuals of seemingly mundane objects can affect, 'our ecological awareness, attitude, and ultimately actions, thus literally transforming the world.' Whilst the most well-known examples of aesthetics being used to affect change include the propaganda regimes of Germany and Japan during World War II, Saito prompts us to consider how objects affect the human experience without relying on even a vaguely-defined human actor behind them (Saito 2007., especially p.58).

– whether this interaction be viewing, touching, repairing, or augmenting the petroglyph.[528]

The distribution of the material principles forming the aesthetic ideology demonstrates that they were perceived, interpreted, and reproduced by people across the Eurasian Steppe. Different numbers of images in regions indicates that the extent to which people chose to reproduce the principles varied. A large number of images in rock-art and portable art that demonstrate similar principles suggests that people were integrated with this aesthetic ideology, whereas singular, isolated finds would imply they were not part of the cultural milieu responsible for its production. However, their choice to reproduce the material principles shows that they appreciated the style, either for its association with another culture, or what it represented in their own socio-cultural context, or both. A problem with the concept of aesthetic ideology is that it is relatively superficial – it provides a means of identifying patterns in the archaeological evidence, but cannot elucidate the processes that caused the distribution of a certain style (these are explored in 8.2 & 8.3). It is useful, however, to contextualise the Eurasian Steppe and surrounding area as part of an aesthetic ideology, as this demonstrates the area's interconnectedness, which allows the researcher to see which areas should be included in a study before circumscribing a study region by modern borders.

The arbitrary nature of borders, and studies defined by them, is highlighted by showing this level of connectivity between people across a large distance. Not only do the motifs used in the Altai's rock-art indicate the interconnectivity of the mountain range, but petroglyphs further afield that are now subsumed within wildly different

[528] The difference between repairing an item and augmenting it is that repair is conducted for restoration purposes, regardless of whether this is an erroneous conclusion, whilst augmenting an object involves adding to it to create something new.

historical narratives, like those of the PRC, also testify to this. This thesis identified the northwestern PRC as a particular historical outlier from the traditions of its parent nation, but what is now the country's northern belt has also been cast in the role of barbarian antagonist to the agricultural societies of the Central Plain (see 2.1.4). However, the practice of creating rock-art can be traced through the southern Altai to Yinshan that encircle the Ordos Plateau. The single-antlered deer motif was adopted south of this plateau by the ancient Chinese state of Guo, where it was sufficiently appealing as to be incorporated into local aesthetics (though it only appears in one artefact).[529] All this is in spite of the perceived isolation of ancient Chinese states,[530] a view reinforced by the Sino-centrism of written texts.[531] Although the rise of regional archaeologies has led to interpretative autonomy from the Sino-centric mono-narrative (2.1.4), mapping routes between the Central Plains and regions deep in the steppe ecoregion has been difficult based on portable artefacts. Rock-art, in contrast, is harder to move, so is more suited to use as an indicator of a route between the Altai and Central Plains.

This route is not limited to the north of the modern PRC, but continues south through the mountains of the eastern Tibetan Plateau, as suggested by similarities between the styles of rock-art in Qinghai and the Altai. This not only includes the yak motif (7.5), but also the material principles used to depict the yak, which indicate that its creators were integrated into the Steppe's wider aesthetic ideology. These do not seem to extend further south into Yunnan, which has its own highly distinctive rock-art

[529] Or, at least, the single-antlered deer was appealing to the individual who placed it in tomb M22001, the tomb of Guo Ji 虢季 (Henan sheng wenwu yanjiusuo and Sanmenxia shi wenwu gongzuodui 1992).
[530] Early European scholarship characterised China as isolationist and anti-foreigner, though many imperial policies preventing interaction between Chinese and foreigners were aimed at suppressing piracy or smuggling (Brook 2010, 222-223).
[531] The perceived authority of writing in ancient China has been postulated to stem from its connection with divination and spiritual power. For more detail, see Chang 1988, chapter 5.

tradition based on pigment.[532] This distribution of rock-art related to the aesthetic ideology of the Steppe gives the impression that the images encircle the Central Plains, which lacks rock-art.[533] A similar phenomenon of material culture from the Steppe appearing in the mountains of the northern and western PRC has been observed by other researchers,[534] who have identified the spread of 2nd millennium BCE spearheads and daggers from the steppe to this border zone.[535] Jessica Rawson further notes that these weapons, made from bronze in the Steppe, were reproduced by the 2nd millennium BCE societies of the Central Plains in a material with more cultural significance locally – jade.[536] This is similar to how the motif of a single-antlered deer was adapted into jade at the Guo State Cemetery (5.4), and further testifies to the reach of an aesthetic ideology if it is amenable to being 'translated' into the local cultural context.

Regardless of what the single-antlered deer represented to the rock-art creators in the steppe, they could not dictate it's meaning to those who saw it in the Central Plain.[537] It is possible that, in the same way that trade goods become associated with their place of origin,[538] the deer was identified with the Steppe and its wider aesthetic ideology by those who saw it in the Central Plain. A counter argument to this is the fact that deer were present in the Central Plains and people would have been relatively familiar with them, as suggested by the presence of deer bones at archaeological sites.[539] However, deer are not represented often in jade or other materials, in comparison to, for

[532] Yunnan's predilection for pigment-based rock-art is markedly different from the pecking techniques of regions further north, leading to the casual division of Chinese rock-art into north and south (Zhu Yuan 2013a, 153; Jiang 1991, 5).
[533] The lack of rock-art in the 'fertile', aka agricultural, areas of China has been previously noted. Demattè 2015, 613.
[534] Rawson 2017; Lü and Zha 2014; Tong Enzheng 1986.
[535] Rawson 2017, 380-381.
[536] *Ibid.*, 382; Rawson 2015.
[537] The agency of an image is its *potential* power to affect something, but the outcome may not be what was intended by its creator (Back Danielsson *et al*. 2012, 5).
[538] Yao 2012, 61.
[539] Though the proportion of deer remains in the faunal records of Central Plains sites decreases in the late 2nd millennium BCE, due to over-hunting and environmental cooling (Zhu 2005, 7).

example, birds or cattle – among the prehistoric jades presented in Yang Jianfang's comprehensive *Jade Carving in Chinese Archaeology*, the only examples of deer appear in strata dating to the turn of the 1st millennium BCE at the earliest.[540] Additionally, these early 1st millennium BCE deer jades are represented using the material principles that are, by this time, synonymous with the far more formalised aesthetic ideology that included the deer stones (5.2.1; also Figures 8.3 & 2.30). Whilst still appearing in lower frequencies than other animal representations, the two deer from tomb M1 at Rujiazhuang 茹家莊 near Baoji 寶雞 in Figure 8.4 are shown with their legs thrown forwards (compare the horses in Figure 5.23) and the one in Figure 8.4: 2 has its head contorted, so it is looking backwards, in a way often seen in 1st millennium BCE depictions of animals. This indicates that, although people in the Central Plains were familiar with deer, they did not choose to represent them in material cultural as much as other animals. In addition, when deer do appear, they incorporate material principles that are more common in the steppe. Therefore, even if people did not identify the *animal* exclusively with the steppe, they persistently reproduced principles of a different aesthetic ideology. This simultaneously demonstrates the connection of the Central Plains to this aesthetic ideology, as well as the desire of some people to associate themselves with it.

As has been mentioned, identifying relations between regions in the form of a wider aesthetic ideology does not elucidate *how* people, places, and objects were connected. In short, now that the basis for links between the Altai, southern Siberia, and northern China has been established, it is necessary to build on this by exploring the

[540] *Jade Carving in Chinese Archaeology* was published in 1987, so excludes jade artefacts excavated since then. However, the volume remains one of the largest syntheses of excavated jades to date (Yang Jianfang 1987). However, the 'deer' that Yang identifies as dating earlier to the late 2nd millennium BCE is actually a horse; it has hooves (Yang Jianfang 1987, 304 & plate LI:2).

mechanisms of connections between people. The following sections focus on lifeways of people in prehistory, and how they contributed to the distribution of rock-art we see today, as well as the effect movement has on forming human social relationships.

8.2 Is pastoralism key?

In the Eurasian Steppe, there is an implicit association between the practice of creating rock-art and the subsistence strategy of those who made it. This is demonstrated by the book *Rock-art and Nomadic Culture*, wherein the researchers acknowledge that rock-art was made prior to pastoralism coming into use throughout the Steppe,[541] but they then, a page later, characterise rock-art as 'a human wonder created by nomads.'[542] It is by no means definite that people who practise pastoralist subsistence strategies will create rock-art and, in recent years, several studies have examined Steppe economies to assess whether agriculture may have played a more significant role. Particularly during the 1st millennium BCE, evidence for plant-based foods in the diet becomes common. Human isotope values from the site of Ai Dai (*c.* 740–410 BCE), southern Khakassia, show elevated $\delta^{13}C$ values, which the authors conclude indicates consumption of millet (*Panicum* sp.). They further hypothesise that cereals would have composed 35±10% of the diet, which they argue is a larger amount than expected of a pastoralist population.[543] Isotopic signatures garnered from human remains at Aymyrlyg (*c.* 5th–2nd centuries BCE), Tuva Republic, also support these findings. However, the Aymyrlyg population likely consumed fish, as indicated by heightened $\delta^{13}N$ values.[544] These findings demonstrate the composite nature of economies, though the intention of the researchers in these cases is to demonstrate the salience of plants to subsistence.

[541] Shu and Li 2007, 2.
[542] *Ibid.*, 3.
[543] Ventresca Miller *et al*. 2014, 529.
[544] *Ibid*.

Regardless of the usage of plants in the diet, varying degrees of integrating plants and fish into pastoralist economies has been noted in a variety of contexts though the steppe.[545] Plants should, therefore, not be taken as evidence that a group is less pastoralist than previously assumed,[546] as the prevalent strategies for obtaining food in and around the Altai relied on herding animals or hunting (2.2.2). This is supported by bioarchaeological observations that the amount of calculus on dentition coincides with a predominantly pastoralist subsistence strategy, whilst the prevalence of dental caries coincides with significant consumption of carbohydrates among modern pastoralist groups in northern China.[547] Consequently, cereals were likely to have supplemented the diet, not dominated it.[548] Towards the end of the 1st millennium BCE, barley (*Hordeum vulgare*) and wheat (*Triticum* sp.) do appear in traditionally pastoralist regions, as far east as Ivolga (*c*. 150 BCE), near Lake Baikal (Figure 1.1), though the faunal remains show that caprines, cattle, horses, pigs, and fish formed the main part of the diet.[549] The situation is similar for Egiin Gol (*c*. 90 BCE–60 CE), northern Mongolia, where two wheat grains and one barley grain were excavated. The site's faunal remains included sheep, goat, cattle, horses, and fish.[550] These data demonstrate increasing use of domesticated plants to supplement the diet, but show the predominance of pastoralist strategies in spite of this.

Whether or not pastoralism dominated as a subsistence strategy during the 2nd–1st millennium BCE has implications for how research approaches subject matter in rock-art. A common assumption, for instance, is that people depicted subjects that they

[545] Honeychurch 2014, 286-287.
[546] Questioning the extent to which a group can be considered pastoralist is a common result in studies attempting to deconstruct the dichotomy between nomadic societies and sedentary ones. An example of this is Spengler *et al.* 2012.
[547] Murphy *et al*. 2013, 2554.
[548] *Ibid*.
[549] Wright *et al*. 2009, 374. The full site report can be found in Davydova 1996; Davydova 1995.
[550] Wright *et* al. 2009, 381.

either thought were important or were most familiar with (2.3). This is supported by the prevalence of caprine and cattle remains in archaeological assemblages,[551] which are the animals that also appear frequently in rock-art during this period. In the Altai, petroglyphs of caprines are far more frequent than ones of cattle, however, suggesting either that caprines are underrepresented in the faunal record or that they were more significant to the rock-art tradition. If people chose to depict caprines, was it because they embodied something particular to the pastoralist culture, or for another reason? Whilst the abundance of caprine motifs has been noted in the case studies (5.4 & 7.5), specific types of caprine were not identified, so differences between the representations of wild species and domestic ones were not explored. Many of the caprines in rock-art of the Altai can be identified as ibex due to their large horns (Figure 8.5), in contrast to the smaller horns of other species of *capra* (Figure 8.6). Ibex are a wild species, thus they were the subjects of hunting not herding, if subsistence strategy was the reason they were chosen as subject matter at all. It is possible that when people selected what to depict, the ibex was a default option. A relationship between caprines and rock-art seems plausible, as wild types thrive in rocky environments,[552] in addition to domestic ones. Ibex, and caprines more broadly, may have thus been viewed as an animal with a particular connection to rock, making them an appropriate choice for an individual deciding what should be carved into the rock.

Other animals depicted in the rock-art of the Altai are more typical of a pastoralist subsistence strategy described in modern times. These herds can be hybrid-

[551] Of a total of 64 excavated features belonging to the Okunevo culture, the most common animal was caprine (sheep/goat), which was found in a total of 19 burials, nine ritual pits, and two kurgan mounds. The second most common animal was cattle, with remains in seven graves, four ritual pits, and three kurgan mounds (Gass 2011, 61-72).
[552] Reading *et al*. 2007, 33.

like in nature, comprising cattle, goats, and horses.[553] A mixture of animals can be beneficial to a herd's survival, as horses hoof through snow and ice to reach winter grass, whereas cattle and caprines do not. A herd including a few horses, therefore, was more likely to survive sudden cold weather, when their humans could not reach them in time to provide fodder.[554] Although there are rock panels that show cattle, horses, and caprines together, a lot of panels featuring large groups of animals also have anthropomorphs with bows that appear to be hunting them (Figure 5.14). This demonstrates that wild species of all these animals were likely hunted. This is particularly so for horses during the 2nd millennium BCE, before they became associated with riding, as demonstrated by the addition of a rider to the back of the horse in Figure 2.27. This also highlights the difficulty in determining which animals in the Altai's rock-art were represented as part of pastoralist economies and which were wild species, as there is no evidence to suggest that an animal being wild was signified through the presence of an anthropomorph with a bow nearby – people would have been aware of wild animals in contexts outside of hunting.

This section has demonstrated the complexities in interpreting petroglyph motifs through one main subsistence theory. The subjects depicted in rock-art of the Altai do not unequivocally support the idea that their creators were pastoralists, but this is only if it is assumed that people would represent subjects they saw most frequently or focussed on most. The faunal record, in addition to other archaeological materials, demonstrate that herded animals were the main source of sustenance. As a result, the people creating rock-art can be said to have been predominantly pastoralist, which influenced what they chose to depict, though their choices to represent wild animals shows that their

[553] Finke 2004, 251; Janzen and Bazargur 2003, 51–52; Humphrey 1978, 135.
[554] Horse herds can find their own water and food throughout winter, making them lower maintenance than herds of cattle or caprine (Anthony 2012, 200).

subsistence strategy was not the only factor influencing the subjects chosen. The next section explores how mobile transhumance influenced the culture of making rock-art and the societies behind it, in addition to the distribution visible today.

8.3 Movement & spatial awareness

Movement here denotes the tangible, physical motion of humans and non-human animals between two places. This section examines the significance of place and landscape from the perspective of modes of transit (walking, horse-riding), actors' engagements with intermediary locations along an intended route, as well as the intentions of the individual actor, and impetuses acting on them, that compelled them to move. This differs from *connections*, discussed in 8.1, as considering *movement* brings the focus onto the tangible physicality of travelling between locations, forcing us to consider *how* and why individuals transited between the points marked on maps.

In the Eurasian Steppe, rock-art has been closely associated with movement due to the pastoralist lifeways of the prehistoric peoples presumed to have made it.[555] Another reason for associating rock-art with movement is the fact that it indicates human presence in extreme environments considered inaccessible by modern standards. The presence of painted images at the tops of precipices along the Zuo River (*zuo jiang* 左江) in Guangxi 廣西 Province, therefore, compelled researchers to explore topographic changes in the region to explain this.[556] In a similar way, proponents of the idea that mountains are barriers to movement have been pushed to examine these very environments and include them in archaeological narratives of lower altitudes.[557] The

[555] Kubarev 2009b, 12.
[556] The survey involved low-altitude drones, as the images are inaccessible in modern times, other than by flight or scaffolding (Li Zhe *et al*. 2015).
[557] Although Dong and Liu discuss rock-art sites in the Tianshan, they still refer to the mountains as a northern barrier for the Taklamakan desert, which contradicts the evidence for people moving up into and

results of GIS analysis in 4.2 demonstrated not only that the Altai Mountains were anything other than a barrier to human movement, but also that a person or group had several options when planning the route between two points. Whilst rock-art is often found on highly accessible paths (e.g. Figures 4.14 & 4.16), it is also found in in places not particularly optimal for travel, if one's goal was to move across the mountains. This shows that the impetus for movement was not simply to move, but that people had tasks to complete, which was why they selected certain routes. These tasks could include gathering resources (food, building materials), taking herds to pasture at seasonal camps, relocating part of the community, and various other examples. The tasks could be anything of various social, cultural, political, and spiritual functions that compelled an individual to move to a certain point and, in the interests of this thesis, create rock-art.

Pastoralism, where at least some of a group is required to travel regularly, could have produced the distribution of 2nd–1st millennium BCE rock-art seen in Chapter 4. The impetus for movement in a pastoralist context is that a herder is tasked with providing sufficient food for one's herd. This simple-sounding task triggers various other issues that require resolution and influence how and where a herder moves: is there sufficient food for the size of one's herd within a small, local area;[558] if not, where is there suitable pasture; how far away is it; depending on the distance and change in climate, what resources will be necessary to ensure that the herder and herd return successfully?[559] Following on from these immediate questions, there will be others

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through the mountains. They do not acknowledge these conflicting principles (Dong Suning and Liu Yiming 1985, 50).

[558] Varieties of seasonal migration patterns existing in Mongolia prior to 1921 are outlined by Fernandez-Gimenez. Although monastery-owned camel herds in Bayankhongor aimag were moved across distances experiencing a change *c*. 500 m in altitude, independent cattle herders sometimes moved no more than 10 km between their winter and spring pastures. For further details, see Fernandez-Gimenez 2006, 31–32. For a brief discussion of seasonal migration patterns among humans, see Frachetti 2008, 114–116.

[559] A basic supply of shelter, clothing, water, and food is necessary, as well as contingencies in the event of an accident.

present in the same landscape who are pursuing the same or a different task, which will influence the choices one makes. Additionally, their presence forces considerations of how to coexist with others with the same aims or different ones: how do herders set a precedent for who occupies what pasture; are these others viewed as competition; and how will the herder interact with people who are present, but not herders? All of these questions demonstrate that the number of factors a person considers when planning to complete a task as theoretically 'simple' as feeding a herd are endless. In addition, this section has not even touched upon factors of community, identity, worldview, political affiliation, kin ties, and other processes that are continuously enacted in human societies and often dictate the choices people make.

The questions listed, however, aim to highlight only some of the factors relevant to understanding the distribution of rock-art seen in 4.2, and doing so shows that many of these considerations could have led to such a pattern. The presence of rock-art along many major routes in the Russian Altai, for instance, suggests that they were used by people who made rock-art, however, the number of rock-art sites along the Katun River demonstrates that neither the people nor their practices were constrained solely by accessibility. Instead, factors pertinent to the considerations listed above, such as finding suitable pasture and negotiating space with other people, likely influenced herders to follow the Katun, which provided a reliable water source, then its tributaries, which made a variety of lush pastures available (6.3). Such considerations encouraged people to move in the first place in search of viable pasture, sometimes long distances, then encouraged them to leave the main route and find places where food would be plentiful for their herd. Supplementing the diet by hunting wild animals, like deer (Figure 5.27), ibex (Figure 6.4), and horse (Figure 7.4), would have further facilitated this, though the hunter's movements would have been dictated by the animal they followed, rather than where the human guided their herd.

The way people moved through the landscape constructed their relationship to it, as well as their understanding of space. At a conference held at the LVR-LandesMuseum, Bonn, in March 2017, Jacobson-Tepfer suggested that the quantity of rock-art being made in the Altai dropped dramatically when horse-riding became common-place, for the simple reason that the creators of rock-art were no longer at ground level.[560] In this scenario, an individual's experience of the landscape changed to the extent that the landscape itself was altered. Not only did horse riding allow larger herds to be managed by the same number of people,[561] but it may also have changed concepts of distance and space, as, what had once been a long walk away, became only a much shorter horse-ride away. The implications of increased mobility for organisation of territory and the social changes resulting from this have been dealt with in detail elsewhere, [562] but changes in perception of distance and space would have had significant consequences for the production of rock-art, if a pedestrian concept of space was crucial to its production. It is unlikely, however, that this would have been because creating rock-art is an incidental practice, i.e. petroglyphs were made because people saw a lot of rocks. Instead, prior to riding, pastoralists travelled on foot and the landscape would have been viewed from the perspective of someone walking: their walking speed and physical traits, such as height and health, dictated the scale of their landscape. Consequently, small rocks on the ground were sufficiently large as to be worthy of adorning with imagery. In contrast, someone who rode a horse had the potential to cover greater distances, as well as short distances more quickly. Their landscape was much larger and small features less prominent. Rock-art, however, continued to be made, even if, as Jacobson-Tepfer notes, it was in lesser quantities than

[560] Jacobson-Tepfer, pers. comm.
[561] Theoretically, a herder on foot can herd 200 sheep, whereas a rider on horseback could herd 500 (Anthony 2007, 222).
[562] See Guo Wu 2012, 419; Anthony 2007, 222-224.

before. The decreasing size of the spatial world is shown in the decrease in rock-art production at Tsagaan Salaa/Baga Oigor, which was not positioned on a major route. This demonstrates that it was an embedded practice, as people continued to make rock-art in similar places, with similar subjects to earlier times – this suggests that the change in spatial understanding did not remove rock-art's cultural role. It is possible, instead, that people during the 1st millennium BCE acknowledged the primacy of earlier images, making offerings of organic materials to them (reasons for this behaviour are explored in 8.4), which would have seen a decline in the number of figures being made, though the cultural significance of rock-art continued. It thus seems probable that rock-art was not just made because pastoralists had nothing else to do whilst watching their animals. There was, instead, another factor in people's worldviews that necessitated its creation, which is explored in the next section.

This section has outlined features of the human world that had tangible implications for the mechanism of movement. Patterns of movement were not only moulded by the tasks that prompted people to move in the first place, but were also shaped by other humans and animals, whose presences necessitated the negotiation of space and relationships. Spatial perception of the landscape also influenced the locations selected to make rock-art, with technological and social changes in the late 2nd millennium BCE, namely horse-riding, potentially renegotiating people's spatial awareness. Topographic features that stood out to someone riding through the Altai were feasibly different from those salient to an individual who was on foot. The mechanism of movement is only one feature contributing to the creation of rock-art. The next section, on this basis, examines the worldview of the people making rock-art that will also have influenced the locations selected to make images.

8.4 The hills are alive

Shamanic ritual has been a popular interpretation for why rock-art was created in a specific place. The history of research on shamanism and associated issues are dealt with in 2.3, whereas this section concerns the utility of the concept for understanding the worldview behind rock-art's creation. Firstly, shamanism is autochthonous to the Altai and southern Siberia, thus using it does not represent the application of an 'envision[ed] alien way of thinking'[563] to local practices. Secondly, it is a system of spirituality completely different from the monotheistic, Abrahamic religions[564] that inform Western academic tradition,[565] which researchers have sought alternatives to.[566] Shamanic cosmology understands the world as constructed of three parts: this world, an upper world, and a lower world.[567] Although each person is connected to these worlds and the spirits that inhabit them, only a prominent social agent – the shaman – has the ability to move between them. In Evenk[568] cosmology, the structure of these worlds is envisioned as a river (our world) flowing from mountains (above which is the upper world). The lower world is located beneath the river's mouth.[569] Alternatively, the worlds are thought to be structured like a tree, where the tree's trunk runs vertically through all three worlds, linking them together.[570] The common worldview, however, is

[563] This criticism of using shamanism to interpret rock-art was raised after shamanism was presented as an alternative to animism, in a region where both systems of belief can be considered alien (Porr and Bell 2012, 173).
[564] Judaism, Christianity, and Islam.
[565] Academia in Europe, and its former colonies, underwent stringent development within Christian socio-cultural contexts. The format of Western academia continues to be the standard to which new universities in non-Western countries are held today – regardless of apparent differences, the basic format of academia is Western.
[566] Martin Porr and Hannah Bell attempt to acknowledge non-Western modes of argument and thought by writing part of their article in academic prose and the other part in 'creative non-fiction' (Porr and Bell 2012, 164).
[567] Eliade 1964, 205.
[568] The Evenk are distributed across most of eastern Siberia, including the regions of Yakutia, Krasnoyarsk, Evenkia, Buryatia, and Inner Mongolia. They have previously been included with other minority groups under the label Tungus.
[569] Vasilevich 1972, 35.
[570] Hultkrantz 1996, 42.

that all people are connected to the other worlds and the spirits that move between them, but shamans are the only human occupants of this world that can move between the worlds. The important aspect for understanding rock-art, as well as what it may have signified to the people whose socio-cultural contexts it featured in, is that our world is occupied by a wide variety of spirits. The agentic behaviours of these spirits (or their potential to act) affect our own behaviour,[571] as people must act in a certain way in certain situations to either incur their favour or avoid offending them. For example, the Evenk spirit of the family is understood to live under that part of the floor which is opposite the door, beyond the hearth, and it should be given gifts.[572] This shows that an everyday *awareness* of these spirits is integral to this worldview, which is highlighted by modern beliefs in Mongolia that children's games played with rocks in the landscape are thought to '[amuse] the spirit masters of land and water'[573] – everything in the natural world has a spirit, or spirits, and they are watching us. Understanding every feature of one's life, including the landscape, as possessing a spirit that needed some form of acknowledgement may explain why people created petroglyphs – they were a method of acknowledging the spirits that dwelt within either the place or the rock itself.

After this point, the utility of shamanism as a concept to understand rock-art becomes questionable, as the long history of its research in Russian and Western academia means that the term is saturated with connotations that mask the salient features of its worldview. An example of such implicit assumptions about shamanism in current academia is the widely-held belief that it involves the use of narcotics.[574] An

[571] Back Danielsson *et al.* define agency as the *potential* for agentic action, rather than evidence of actual action (Back Danielsson *et al.* 2012, 6).
[572] Vasilevich 1972, 32.
[573] Nandinbilig 2016, 211.
[574] The belief that the shaman consumes narcotics to travel outside their body is touted repeatedly in both Russian and Western scholarship (Devlet and Jang 2014, 107-109; Lewis-Williams 2012, 19; although the latter lists various ways of entering an altered state of consciousness, the very first method he states is

additional problem is that shamanism, for a long time, was framed within a Marxist research context that cast the shaman in the role of a fraud who profited from the labour of others, due to false fears that they could manipulate the world around them.[575] The shaman has, thus, been integral to understandings of shamanism;[576] however, the presence of a religious specialist is less important to understanding rock-art than comprehension of the worldview of the peoples making it, in contrast to what rock-art means when examined by Western academic methods. Although proponents of the 'objectivity' offered by Western academic methods have derided attempts to define 'the silent values and beliefs of prehistoric peoples who never recorded (i.e. wrote down) the precise meanings'[577] of their material culture, a current problem is that researchers have been reconstructing past people's ideologies for a long time. As a result, trying to avoid entanglement in interpretations of intangible past attitudes, whilst ideal, is impossible, as it would necessitate leaving interpretations of past ideologies made so far unchallenged. Additionally, it is not a fruitless exercise to examine and postulate what these silent values and beliefs past were, as these contribute majorly to our overall understanding of these people as humans, with whom researchers should empathise as having had their own ideas about the world around them. In the cases of those who created rock-art in the Altai Mountains and Steppe more broadly, their landscape was agentic in their lives, and the rock-art may have been created as part of the process of acknowledging the entities that inhabited it.

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the ingestion of psychotropic substances), despite the evidence to the contrary (Walter and Neumann Fridman 2004, 533-534; Vasilevich 1972, 36).

[575] Willerslev 2007, 136-138.

[576] Caroline Humphrey attempts to circumvent this issue by, 'leaving the category of shaman rather open,' but the shaman figure continues to dominate the discourse (Humphrey 1996, 193).

[577] Kohl later clarifies that he is referring to the models used by archaeologists in this statement; these are what should be constrained by reference to the material remains (Kohl 2008, 499).

A more useful way, therefore, to refer to the relationship between the people of the 2nd–1st millennium BCE and their landscape may be as animist. Animism contradicts the dichotomy between humans and nature that is presumed to exist in academic traditions influenced by Cartesian thought,[578] with people discerning the world as occupied by various 'persons' who may be human, animal, tree, rock, etc.[579] These persons have their own communities that exist regardless of whether a human is paying attention to them, which removes the emphasis on humans as the subject,[580] or humans as the agent, in interactions with the landscape. Additionally, the persons can perceive humans in very different ways from how humans see themselves.[581] The Altai Mountains, therefore, were populated by various non-human persons that humans moving through the mountains would have had to acknowledge[582] – rock-art is potentially evidence of these interactions. For example, the elk petroglyph in Figure 8.7 was made in the 2nd millennium. It is the largest petroglyph on the panel and most visible from a distance (see the inset), whereas the panel's other images are not very discernible from the rock surface more than a few metres away. In an animistic interpretation, the elk was created as part of a process of acknowledgement of the 'person' who is the rock. Creating the elk involved striking the rock repeatedly with an implement made from either stone or metal that would have needed to be replaced or undergo maintenance, as it would have been worn down by the rock panel.[583] In

[578] Other presumed dichotomies include light/dark, nature/culture, etc. (Wallis 2009, 48; Brown and Walker 2008, 297).
[579] Porr and Bell 2012, 161; Wallis 2009, 48.
[580] Researchers often identify a subject that is the primary actor of interactions, which is usually human (Porr and Bell 2012, 186), but doing so restricts all agents involved to predetermined roles.
[581] Amazonian ethnographers note that indigenous people know spirits perceive humans as animals (when prey) and animals perceive humans as spirits or predators or prey. Spirits and animals, however, understand themselves to be human (Viveiros de Castro 1998, 470). In this way, everyone understands themselves as being a person and the human is not the only agent shaping the landscape.
[582] Social relations between non-human persons and human persons are key to survival strategies in animistic societies (Descola 2013, 13).
[583] Zotkina *et al.* 2014.

addition to selecting and maintaining their tool, the creator would have held in mind what they wanted to depict and been aware of where in the rock panel (other than the part they were immediately working on) they would peck the elk's head/tail/legs. The creation of rock-art was, thus, a reflexive process of continuous engagement between the human and the rock person that the elk in Figure 8.7 is evidence of. Throughout the process, the creator was surrounded by weather (sun/rain/wind) that embodied various persons, whilst the feel of their tool and the rock surface connected them directly to the rock person they were engaged in an interaction with. Though it is difficult to describe the precise purpose of dealing with rock persons – to invoke their protection or favour, request permission to stay in that place, or pass through the area – the act itself of creating rock-art was an extremely mindful activity, where the human's attention was focussed on their dealings with the person of the rock. Consequently, the act of making the rock-art would have been equally, if not more important, than the completion (if there was such a concept). This coincides with what other researchers have observed in spiritual practices of groups in Tuva and Mongolia, who consider the importance of a ritual to lie in enacting it, whilst the spirits do not require a person to believe in them to exist.[584]

Panels covered in multiple images were involved in more than one interaction between a human and spirit person of the rock. The elk in Figure 8.7, though broadly contemporary with the other petroglyphs, was made to overlap images that were already present. This is shown by a number of smaller animals that protrude from under the elk's back or muzzle, which the elk overlays. Adding petroglyphs to a panel that already had several was a behaviour that reinforced the wider culture that the creator of rock-art was associated with – it simultaneously allowed them to fulfil their obligation to the

[584] Lindskog 2016, 1-2; Lindquist 2008, 117.

person dwelling in the rock, whilst also connecting with those who made the earlier petroglyphs. Positive connotations associated with accumulation exist in modern Mongolia, whilst dispersal can be viewed as negative.[585]

The positive connotations associated with accumulation are demonstrated in the material case of *ovoo* (Figure 8.8), piles of rock positioned at various topographic locations – mountain slopes, ridges, passes, mineral springs, lakes, odd-shaped trees – that act as modern points for humans to meet with spirits of the land (*gazryn ezen*).[586] Many *ovoo* were destroyed in the religious purges of the 1930s and have been rebuilt in the past few decades, with rituals to invoke the spirits' favours ranging in scale from the national level down to the individual. Although people often seek a Buddhist or shamanic specialist for more important rituals to ensure that the spirit is not offended, acknowledgement of the spirit person by individuals has been observed, where they circle the *ovoo*, then add a rock or other object to it before passing by it.[587] This shows that a monument in the landscape can at once be a focus for large-scale rituals involving specialists, as well as interactions between an individual and the spirits. Whilst an *ovoo* is usually deliberately constructed by humans, rock-art was created on a feature made by the land, thus it may have been viewed as a more direct link to these spirits or persons. Making a petroglyph on a rock panel that already had several images, therefore, was highly respectful to the rock person, as it embodied the positive concept of accumulation.

Additionally, the rocks petroglyphs were made on were dictated by what the spirit persons wanted or where they were thought to gather. This is why many of the smooth,

[585] Lindskog 2016, 3.
[586] *Ibid*., 4. Alternatively called *obo* (Dematté 2004, 14).
[587] Observed by the author during fieldwork in Mongolia in 2014, 2015, and 2017; and explained by Y. Tserendagva and R. Kortum (pers. comm.).

shiny, dark rock panels that rock-art is usually found on in the Altai are completely void of images.[588] A place like Tsagaan Salaa/Baga Oigor, therefore, that has a huge concentration of rock-art in contrast to the areas surrounding it (5.3.1), has these images because the rock persons at this location were particularly important. The rituals acknowledging these persons may have been conducted at the individual level, or the community level; the process may have involved only carving into the rock, or also making offerings of white food (*tsagaan idee*)[589] to please them. In contrast, the relatively few rock-art sites in such a major route as the valley of the Bukhtarma River (Figure 4.9) suggests that the rock persons were acknowledged, but the locale was not considered to be a major meeting point where humans could call upon them.

In sum, the presence of land spirits in people's everyday lives meant that there was a greater overall awareness of them at all times. As a result, people adapted behaviours designed to avoid their wrath or incur their favour. Regarding rock-art, carving images into rock was a way of engaging with rock persons, who did not necessarily dwell in the specific rock being treated. Instead, the accumulation of rock-art in a relatively restricted area, as seen at Tsagaan Salaa/Baga Oigor (5.2), indicates that the area was seen as somewhere particularly suited to calling upon spirits and requesting their favour, similar to the way *ovoo* function in modern society.

Whilst people's relationships with the spirits was what dictated the placement of rock-art, sites with large concentrations would have significantly affected the organisation of the landscape with which people engaged. In constructing the landscape, rock-art would have acted as a spatial reference,[590] influencing how people moved

[588] The phenomenon of some panels with qualities usually favoured by rock-art creators not having any imagery on them has been noted in regions throughout the world (e.g. Collado Giraldo 2016, 1-2).
[589] Soft cheese, dried cheese, fermented mare's milk, and butter (Lindskog 2016, 11).
[590] Jackson and Wright 2014, 124-125.

through it and to where they went. The next section examines the utility of places in the landscape and how rock-art sites compare to other forms of monument.

8.5 Making places

Whilst landscape has been described as an overarching, macro-view concept,[591] *place* is more localised. David Arsenault characterises *place* as a building block of the cultural landscape forged by human experience.[592] In this context, rock-art is evidence for these human experiences and the role it played to construct places in the Altai is discussed in the case studies (5.5 & 7.4.1). However, rock-art was likely created as part of a reflexive process of acknowledgement between humans and non-human persons resident in the landscape (8.5). As spirit persons of the landscape were presumed to exist regardless of whether an individual believed in them,[593] this means that *place* did not depend on human experiences to be created. In ethnographic accounts, modern animist societies consider spirit persons as having their own communities, stories, and interactions with the world (including other spirit persons), regardless of humans.[594] Such an understanding of the world would have meant that, to the first human to make rock-art in a location, the *place* was already in existence – they were simply acknowledging it in a human way.

There were certain topographic features more likely to attract humans to acknowledge the persons dwelling or gathering there. These include springs, odd-shaped trees, and water sources. Among the Nani,[595] a group found along the Amur

[591] Ljunge 2010, 88-89.
[592] Arsenault 2004, 72.
[593] Wallis 2009, 56;
[594] The most well-documented ethnographies of animist societies in modern times are in Australia (see *Ibid.*), though the worldview and perspectives identified are close to those expressed by Siberian groups.
[595] Like the Evenk, Nani were subsumed within the eastern ethnic group known as Tungus. Nani is a self-designation; they are referred to officially as Ulchi, though common previous names include Ol'chi and Manguni (Smolyak 1966, 11).

River, water is one of the main media through which a religious specialist travels to leave the human world and enter the upper world (see 8.4).[596] Water was highlighted in the case studies as significant to the placement of rock-art. Whilst in Tsagaan Salaa/Baga Oigor, the rock-art is concentrated in a relatively localised area where two rivers converge (5.3.1), the case study of the Russian Altai examined smaller concentrations of imagery across a wider distribution along the Katun River (6.3.1). The contrast in distribution and concentration of rock-art in these case studies is purely cosmetic, caused by the foci of the case studies themselves, as there are large rock-art complexes found along rivers in the Russian Altai, like Kalbak Tash. The utility of comparing different types of sites – large and small – was to demonstrate how both relate to watercourses in different ways, and how this reflects beliefs regarding living landscapes where spirit persons of all kinds dwelt. For instance, it was noted that the rock-art in the Mongolian Altai appears to follow watercourses, interpreted as suggesting that those who created it required a relatively reliable supply of water, likely for their herds. However, it is also possible that there was a reflexive association fostered by socio-cultural conditioning of watercourses with places, as the fundamental significance of water to sustaining life was magnified by the presence of non-human persons dwelling in or around it, as well as water's function as a path to the upper world. From this perspective, watercourses were already imbued with qualities of *place*, thus they were more likely to become places where people would create rock-art, i.e. engage with spirit persons. This was also true of other types of monument in the area, including the 2nd millennium BCE burials and standing stones that the Altai Project identified as being connected to the locations of rivers.[597]

[596] The other media are air and earth (Smolyak 1991, 100-102).
[597] University of Oregon 2009b.

The Altai Project focussed on river confluences as having been particularly significant, due to confluences consistently being visible from khirigsuurs and standing stones. However, this is only if the individual looks in a specific direction, and the monuments are located varying distances away from the confluences they allegedly overlook. Additionally, burial mounds, like the one shown in Figure 8.9 at Sagsay Gol, are frequently circular in plan, hence they have no clear orientation. Although an orientation can be suggested after excavation based on the position of the body (if one is present), such knowledge would not have been available to anyone approaching these monuments. As a result, a view of a nearby confluence was not likely significant to the placement of these stone structures, it was more likely that visibility of the stone monument itself from a distance was more of a consideration to those building it.

Rock-art has the opposite effect – instead of being visible from a great distance as an explicitly human-made structure in the landscape, petroglyphs measuring no more than 10 cm might be visible to someone standing several metres away when the stone crystals have been freshly crushed and the image is bright white. In a wide, open landscape like the steppe, however, a pile of stones, like a khirigsuur (Figure 8.9) or *ovoo* (Figure 8.8), can be seen from much greater distances. In contrast, the photographs of rock-art panels shown in the insets of Figures 8.6 and 8.7 demonstrate how older petroglyphs become invisible to anyone standing more than a few metres away. Whilst they would have been more visible in the century of their creation, the fresh white colour would only have extended their visibility for maybe another few metres. This indicates that, even if rock-art and large stone monuments served to reinforce a location's qualities of *place*, they did so in very different ways and as the result of very different constructive processes. An individual would have probably noticed rock-art in an area if they had either known it had been made there, or they were in close proximity

to it – something very feasible, considering that herds comprising any number of caprines would have likely grazed into rocky environments.

The fact that rock-art was not designed to be visible from great distances away, in contrast to other monuments, reinforces the idea that its creators mainly considered how the imagery would appear in relation to the localised area around the panel. This means that the creator of rock-art was aware that the images they made may be seen by other humans, but they assumed that these humans would see the rock-art within the same localised context as them, a context that acknowledged the presence of non-human persons living in the landscape that could be summoned and communed with through processes of engagement (8.4). The creators of the rock-art at Dunden Bulag and Duo'ategou (7.4.1) exhibit this, as both sites are caves. Although the wider landscape in this part of the PRC's Altai is rocky, caves substantial enough to allow human entry are not ubiquitous; this relative rarity may have contributed to a perceived 'specialness' of the caves.[598] The humans who created the petroglyphs also went to the trouble of collecting materials and preparing pigments, demonstrating a higher level of forethought and effort than is explicitly evident in the act of creating petroglyphs, which can be created with stones readily available on the ground if necessary. Although rituals that involved making petroglyphs could have been elaborate (8.4), the significance of the caves at Dunden Bulag and Duo'ategou was evident to their contemporaries in their act of investing resources (materials and time) in painting the images. This also communicated their awareness of the site's significance to the spirit persons that they believed were contactable there. In this sense, the sheer presence of these images was a mode of worship, as well as a demonstration of social respect towards extra-human

[598] Sognnes explores the significance of cave morphology to rock-art in Scandinavia, with different parts of the cave representing different worlds, likely the underworld (Sognnes 2009, 92).

entities. Most importantly, however, these images functioned as devices of communication, but not in the explicit manner of writing understood by literate cultures, as much of the communication was aimed at non-human persons.

In summary, it seems that *place* was constructed in the mountain ranges of Eurasia as the result of multiple converging factors from the social, spiritual, and subsistence-based realms. For instance, the regions south and east of the Altai are arid, with extensive deserts. Therefore, it is not surprising that signs of movement, i.e. rock-art, are concentrated in or near mountain ranges. This is because there are small areas at high altitudes in the southern extension of the Altai that hold water throughout the year for a longer duration than places at low-altitudes.[599] As a result, these areas can sustain greater concentrations of flora and fauna that would be attractive to people travelling through. In addition to becoming significant places for the reason of being able to sustain both humans and their animals, these locations were occupied by or had the potential to serve as gathering points for non-human persons. Increased human presence coupled with the attribution of socio-cultural or spiritual significance to the topographic features of the location made it more likely that human-made remains, like rock-art or burials, would accumulate. The creation of petroglyphs at a point then marked the location as a *place* of significance, encouraging the creation of more rock-art. A *place'*s importance changed with time and the people going to it. However, concentrations of rock-art, like Tsagaan Salaa/Baga Oigor, that have large amounts of rock-art throughout the 2nd–1st millennium BCE demonstrate that certain *places* maintained their significance across time periods. This could be the result of its role as the 'place with

[599] High altitude forest islands survive in the mountain ranges of the Gobi, despite the arid temperatures at lower altitudes. Forests create micro-climates with lower temperatures, meaning that the winter snows melt slowly, thus the moisture is released later in the year when water at lower altitudes has evaporated (Miehe *et al*. 2007, 164). Water, vegetation, and temperatures markedly cooler than those in the open desert would likely have been attractive to people and animals travelling through the Gobi.

the petroglyphs' in people's consciousness, which was facilitated by the complex's location along a prime route through the mountains and the presence of resources (4.3).

This section has demonstrated the multitude of processes that lead to the creation of *place*, emphasising that the importance of a *place* is dependent on various factors that may change, or continue, over time. The next section expands the research focus to incorporate practices and habits surrounding rock-art in the eastern Eurasian Steppe more generally, in order to explore change from the 2nd to the 1st millennium BCE.

8.6 The fourth dimension

The major concern of this thesis has been movement and how it facilitates connections between people. A different type of movement of commensurate importance, however, is progression through time. Key differences between the rock-art of the 2nd and 1st millennium BCE include: stylisation of animal subjects, particularly deer, which are paralleled on stone stele (Figure 8.3); the appearance of horse-riding related equipment, like short bows (see 2.4); and a decrease in the quantity of figures produced (see 8.3). Overall, however, the subjects depicted in rock-art – herd animals, wild animals, and anthropomorphs – remain similar. The temporal distance between two people looking at the same petroglyph influences how they understand what they see and make decisions on how to interact with it. From the perspective that the petroglyph is an agentic being, however, the image is what has moved temporally. This prompts changes in how it manifests materially – the exposed stone crystals may change colour, the edges of the image may be less defined, and elemental damage may augment it with cracks or lichen (Figure 8.10). Any changes in a petroglyph made sometime in the 2nd millennium BCE would have been less marked in the 1st millennium BCE than those seen by modern researchers, so the temporal distance that the image had travelled was not necessarily visible to an observer.

An individual, however, would have understood that certain petroglyphs were made earlier than their own living memory. This is shown by the choices made by some people in the 1st millennium BCE to create new petroglyphs over pre-existing ones. Figure 8.11 shows a stylised deer motif that has been pecked perpendicular to and directly over a petroglyph from earlier in the 2nd millennium BCE. This is one of several cases where this stylised deer overlays earlier petroglyphs,[600] and one of a few where the temporal distance between overlying images is explicit enough that the uppermost stratum can be identified to have been made much later. In the case of Figure 8.11, the *c.* 2nd millennium BCE quadruped had moved temporally to a point where it was observed by someone sometime in the 1st millennium BCE, who then chose to make a new petroglyph over it. Although accumulating petroglyphs on a rock was a positive process (see 8.4), deliberate overlay of earlier petroglyphs in the Altai has been described as uncommon.[601] Deliberately pecking a petroglyph to cover earlier ones thus highlights a change in attitudes towards them.

It has been suggested that pecking the stylised deer over earlier images was an 'aggressive' act.[602] Whereas adding petroglyphs to a panel with pre-existing images was an established practice, superimposition of a formally stylised motif was not, which is potentially why Jacobson-Tepfer identifies it as an expression of power.[603] The aesthetic principles used to make the deer motif are extremely distinctive and are used more frequently for the deer than other animals. In addition, this deer motif is found on stone

[600] Other examples are discussed in Jacobson-Tepfer 2015, 234-237.
[601] Despite deliberate overlay of several images being uncommon, overlay itself is not. However, it is more typical to find later petroglyphs overlapping earlier ones at the edges, i.e. the horns of a caprine may be superimposed on the limbs of a horse (*Ibid.*, 126).
[602] Jacobson-Tepfer refers to the superimposition of stylised deer on earlier petroglyphs as aggressive, though this is rooted in an assumption that the motif became a symbol of power. The power she refers to is intangible, however, as her argument is more concerned with the separation of the deer from nature (*Ibid*., 234-237).
[603] *Ibid*.

stele in western Mongolia, which connects it with a wider aesthetic ideology integrated with monuments of power, in contrast to other motifs that mainly have parallels on portable art. Although it is difficult to state what the nature of this power was, the connection to stone stele places the deer petroglyphs within the same context of monument construction. This contrasts markedly with rock-art practices located in contexts that focussed on interactions with non-human persons (8.4). The people creating these deer over previous images were, instead, located in a context that perceived the creation of petroglyphs as a tool to extend the impact of the stone stele – this may have had a political or social impetus. The creators of these deer, however, were not simply searching for the oldest petroglyphs to make their mark on, as the lower stratum of petroglyphs is typically *c.* 3rd–2nd millennium BCE, and petroglyphs dating to even earlier than this exist, but were not selected for superimposition. This suggests that the temporal distance between those who made each stratum of petroglyphs was not the driving force behind the later individual's choice to overlay a deer on the earlier images, as they did not select the earliest ones. This emphasises the dislocation in rock-art practice between the two temporal points; whereas the imagery of the 2nd millennium BCE was discrete, if often accumulative, the 1st millennium BCE deer motif was purposefully superimposed over earlier images, without apparent consideration for what the images were or when they were created.

Cases of superimposition from the 2nd millennium BCE typically occur between the extremities of petroglyphs (for example Figures 8.5 & 8.10), whereas direct superimposition is comparatively uncommon. As mentioned in 8.4, the elk in Figure 8.7 is superimposed over other petroglyphs, several of which can be seen protruding from its muzzle, back, and belly. Pecking the elk over other images in this case is different from the instances of deer petroglyphs made over earlier ones highlighted above. This results from the fact that the elk is not frequently depicted with highly formal aesthetic

principles superimposed over other petroglyphs. As a result, the elk is located within a context of accumulative spatial relationships with other petroglyphs, suggesting that its superimposition was also part of accumulation, not dominance. The elk can, therefore, still be interpreted within the context of human interaction with spirit persons. The choice to peck it over other petroglyphs was thus the result of the person of the rock requiring it for the human to fulfil their interaction and acknowledge the spirit person adequately.

Making rock-art in the 1st millennium BCE was not, however, a practice that occurred within a context dominated solely by highly stylised deer and stone stele, as making images on stone stele and rock panels is also observed in the late 3rd millennium BCE (see 2.2.2.3). Although the stylised deer seem to be expressions of an ideology relating to forms of monument building that were not rock-art, people still made rock-art during this period, suggesting that, whilst the temporal distance between the two rock-art traditions was long, the distance between their societies and cultures was less so. This is demonstrated by the panel in Figure 8.12, which has 1st millennium BCE petroglyphs that are spatially separated from each other, similar to the majority of panels in the Altai in various periods. Styles of animal seen on portable art are still evident, however, as shown by ox at the top of the panel. The lack of a major change in how petroglyphs are organised spatially between the 2nd and 1st millennium BCE suggests that principles concerning the creation of rock-art, as well as how petroglyphs related to each other within a panel, were relatively similar. Despite the temporal distance, therefore, the people making rock-art were socially and culturally quite close. This does not mean that the people at either temporal point shared the same rituals, beliefs, and practices. Instead, both sets of people were integrated into socio-cultural spheres where rock-art was important. Not only this, but the subjects chosen for depiction, accumulation of petroglyphs on panels, and spatial organisation of

petroglyphs on panels that had many images, were relatively similar. Consequently, the practice of making petroglyphs likely had similar significance to both groups of people – it demonstrated the acknowledgement and respect the individual making the petroglyph had for non-human occupants of the landscape. However, by the 1st millennium BCE, there were other factors, such as stone monument building, that fed back into the practice of rock-art, as demonstrated by the unusual occurrence of the stylised deer being deliberately superimposed over older images. Whilst stone burials were constructed during the 2nd millennium BCE, the lack of imagery means there is no indication that these monuments were related to rock-art as a practice, which contrasts with the link between stone stele of the 1st millennium BCE and some rock panels, as demonstrated by the stylised deer.

The content and practice of rock-art does not seem to have changed markedly between the 2nd and 1st millennium BCE. Although there is a decline in the number of figures being produced, and a new behaviour of superimposing particular images over earlier ones that speaks to the development of supra-regional socio-political transformations, the practice of creating images in significant places to acknowledge non-spirit persons seems to have persisted. The rock-art evidence, therefore, indicates that the animistic ideology of the Altai potentially has a long chronology.

9 Conclusion

This thesis has demonstrated that rock-art, as an archaeological material, is closely integrated with other archaeological remains in the Altai Mountains and their surrounding regions. Significantly, rock-art shows that people in the Altai were integrated with an aesthetic ideology that manifested in various ways across the Eurasian Steppe, indicating that the people of the region were connected, even if only by a worldview not typically understood by sedentary cultures. Though the Steppe was home to a variety of groups with varying socio-political structures and cultural practices, the presence of similar motifs across such a wide area indicates there was a shared understanding of how something should be represented. The presence of such distinctive visual expression on portable art indicates that rock-art occupied a salient role in the socio-cultural practices of the Steppe, as it was common enough that its imagery was replicated on portable objects and some motifs were even adopted by sedentary societies.

The mobile nature of the societies making rock-art, though not the only factor influencing its creation, likely had a significant impact on the processes leading to this. Additionally, the socio-political structures and cultural practices that developed from pastoralist subsistence strategies affected the position of rock-art in relation to topographic features, leading to its concentration along watercourses. This also pushed humans to areas away from more accessible route, in order to find pasture. The mechanism of movement itself was dependent on the negotiation of inter-human relationships, human-animal relationships, as well as the relationships between human persons and non-human persons. These non-human persons resided in the landscape, including in the rocks, land, water, etc. Their presence was part of an animist ontology that continues to inform modern pastoralist worldviews. In the same way that the

Mongolian *ovoo* is built from stone to act as a gathering point with non-human persons, rock-art in the 2nd–1st millennium BCE was an expression of people's respect for the non-human persons in a place. The presence of rock-art thus acted as an indicator to later observers that a place was significant, encouraging the creation of more rock-art, in accordance with positive associations with the concept of accumulation.

Acknowledging non-human persons enabled the creation of *places* within the landscape. These *places* were attributed significance through multiple intersecting processes, such as the attraction of resources to humans and their herds. The wider variety of flora, fauna, and resources in mountain environments meant that there were a greater number of spirit persons present in these locations. The creation of rock-art then had a rolling effect of making the location more significant to later observers, who continued to acknowledge the persons dwelling there; this was behaviour informed by the pre-existence of rock-art in a place. Changes in rock-art practices over the 2nd–1st millennium BCE suggests there was a continued adherence to the belief that spirit persons inhabited the landscape and had to be respected – or could be called upon to grant favours – at significant places. Whether or not a spiritual practitioner, like a shaman, was necessary to negotiating the relationship between humans and spirit persons, the animation of the world was a key aspect of people's worldview in the Altai. When combined with the far-reaching aesthetic ideology that characterised a similar geographic region, it seems that an animistic ontology is most suited to interpreting archaeological remains of this period.

Macro-scale analysis demonstrated that the Altai Mountains are highly accessible (4.3), both internally and externally. This contrasts with the Altai's modern role as a marker of international boundaries. Not only does this counter attitudes that mountains are barriers, but individual rock-art motifs also suggest that mountain ranges are

particular foci of interaction and movement, as similarities in motifs between the Altai and other regions throughout the Steppe show (5.4). In addition, links between motifs in the Altai and mountain ranges to its south and east highlight the high-connectivity that is possible along mountain ranges (7.4).

The locations of rock-art sites provide evidence of the human intentions behind movement, as they are found in places that are not necessarily the most predictable, if their creator's only aim was to move through the Altai (4.3). In contrast, the places where rock-art is found are often in the vicinity of major, accessible routes, but are slightly removed and concentrated in places with resources that would be attractive to hunters, gatherers, and herders alike. Additionally, the positions of some sites indicate a particular relationship with water, not just from the perspective that most routes were identified as being near watercourses, but because some rock-art sites were likely inundated during floods. These were likely frequent occurrences, thus the decision to create rock-art near watercourses with propensities to flooding suggests their creators were aware of this potential (6.3.1). This may have been a key factor in influencing the position of rock-art in some cases.

At the micro-level, the rock panel is not often used to reflect the wider landscape, other than the use of cracks or rock discolouration to depict the ground level. This demonstrates that the spatial relationship between rock-art figures was not a visual reflection of the landscape. Instead, the animistic worldview of rock-art's creators meant that the imagery was considered as integrated with landscape, thus representing it directly in the rock-art was unnecessary.

A major aim of this thesis was to engage with the literature of all four nations that currently divide the Altai Mountains. Whilst the most accessible literature was in either Chinese or Russian, the input of Mongolian archaeologists was invaluable to

understanding modern pastoralists' attitudes to rock-art and mobility. Constraints of time and funding, however, meant that the Kazakh Altai was not examined in commensurate detail to the other three nations. In future, if archaeological reports by Kazakh researchers are not accessible, research on the Altai should incorporate fieldwork in Kazakhstan, so that local scholars can be consulted. This thesis has also brought an academic focus onto a major mountain environment in the Eurasian Steppe. This contributes to recent literature that emphasis mountains as loci of technological transmission and connections, but does this for a specific locale, as opposed to a general mountain range. Rock-art has proven singularly appropriate for this, as well as for serving as a means to examine relationships between human-made artefacts and the landscape. By highlighting the contexts that rock-art was made and observed in, this thesis has demonstrated the key role it played in 2nd–1st millennium BCE lifeways, in addition to the complexity of connections and interaction across the vast region of the Eurasian Steppe.

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