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Deep-Time Images in the Age of Globalization

Rock Art in the 21st Century

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Rock Art in the 21st Century

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Cover illustration: Engraved fish in an elevated coastal part of the Murujuga Cultural Landscape

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About the Editors

Oscar Moro Abadía is a Professor at Memorial University of Newfoundland (Canada). He specializes in the study of Pleistocene images. In 2020, he co-edited, with Professor Manuel R. González Morales, a special issue on Pleistocene and Holocene arts for the *Journal of Archaeological Method and Theory*. In 2021, together with Martin Porr, he co-edited *Ontologies of Rock Art: Images, Relational Approaches and Indigenous Knowledges* for Routledge. His research on Paleolithic art and the history of science has been published in *Cambridge Archaeological Journal*, *Journal of Archaeological Research*, *Journal of Archaeological Method and Theory*, *World Art, History of Human Sciences, History of Science*, *Journal of Anthropological Research*, *Journal of Social Archaeology*, and *Studies in History and Philosophy of Science.*

Margaret W. Conkey is the Class of 1960 Professor Emerita of Anthropology at the University of California, Berkeley. One key focus of her research has been the interpretations of European Paleolithic imagery, and she has carried out the Between the Caves project, a Paleolithic landscape survey in the Ariège region of France. More recently, she has been a co-director of excavations at Peyre Blanque, a Magdalenian open-air site. She has long been involved in the pioneering research on feminist and gender perspectives in archaeology. She has served as president of the Society for American Archaeology as well as for both the archaeology and feminist associations within the American Anthropological Association. Among her many awards, she was the recipient of the prestigious Thomas H. Huxley Memorial Medal of the Royal Anthropological Institute (UK) for her distinguished contributions to Anthropology.

Josephine McDonald is the Director of the Centre for Rock Art Research and Management at The University of Western Australia where she has held the Rio Tinto Chair in Rock Art Studies, funded by their Commonwealth Conservation Agreement for the Dampier Archipelago National Heritage Listed Place (Murujuga). She has researched rock art in Australia's fertile eastern states and its arid zone and the Great Basin, USA. Over the last decade she has collaborated with the Murujuga Aboriginal community and led various teams of multidisciplinary researchers, systematically documenting the rock art, excavating ancient settlements, and experimented with new dating techniques to try and understand the environmental context and age of this inscribed cultural landscape.

Deep-Time Images and the Challenges of Globalization

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Oscar Moro Abadía, Margaret W. Conkey, and Josephine McDonald

Abstract

In this collection of papers on globalization and rock art, we begin to examine how rock art research was historically shaped by a deep Eurocentric bias. We use the concept of deep time, following the recent focus of historians and other disciplines, where an appropriate scale of space and time is being explored to understand the human past (following McGrath and Jebb, Long history, deep time. Deepening histories of place. ANU Press, Canberra. https://doi.org/10.26530/OAPEN_578874, 2015; Griffiths, Deep time dreaming: uncovering ancient Australia. Black Inc., Carlton, 2018). A focus on the "deep time story", as Billy (Griffiths, Deep time dreaming: uncovering ancient Australia. Black Inc., Carlton, p. 5, 2018) asserts, reminds us that history is but one way of thinking about the relationships between past and present. Rock art research has multiple lenses, rather than being a universal science or all-knowing truth. Deeply engrained Eurocentric biases that drove the earliest research efforts into deep time art and its makers, has shifted to a more global perspective on rock art and the people who made it, by those who are involved in its research, and by those for whom it has multiple significances. The proliferation of rock art research in colonized parts of the world, particularly the USA, Australia and Africa, continues to call into question this Eurocentrism. This shift in focus has been fueled, in part, by globalization, which has resulted in many benefits for rock art researchers, including the expansion of inquiry into new territories and the rapid sharing of developments in new methods for surveying, recording and dating rock images. Globalization has also generated new challenges and tensions. There are still many countries and territories that are excluded from these discussions, and Western hegemony and patrimony as promoted by institutions such as UNESCO, often collide with the interests of nationalism and local communities. The chapters in this volume explore these tensions and many suggest strategies to promote more critical attitudes toward globalization.

Keywords

Globalization · Deep-time images · Rock art · Cave art · Absolute dating methods · Eurocentrism

1.1 Introduction

This volume explores many facets of globalization in rock art research. While the origins of 'globalization' can be traced back to the 1940s, this buzzword became popular in the 1990s as "it captured the increasingly interdependent nature of social life on our planet" (Steger 2013: 1). Thirty years later, there are thousands of books and papers on this oft-contested term. That said, most definitions of globalization share multiple elements. 'Globalization' refers to the progressive incorporation of many countries into a world economy defined by the massive flow of goods, services, capital and labor (Stiglitz 2007: 4). It is generally perceived "as primarily an economic phenomenon mediated by cutting-edge information and communication technologies" (Steger 2013: xi). Globalization also refers to "the international flow of ideas and knowledges, the sharing of cultures, global civil society, and the global environment movement" (Stiglitz

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2007: 4). In this idealized view, globalization denotes a connectivity in which "as more people become more connected across greater distances, they create a new world society in which they do more similar things, affect each other's lives more deeply" (Lechner 2009: xiii). Even the champions of globalization seem to agree that "the evidence is overwhelming that it has failed to live up to this potential" (Stiglitz 2007: 5). The past decade has witnessed an increasing discontent with what is generally perceived as "an inevitable techno-economic juggernaut spreading the logic of capitalism and Western values by eradicating local traditions and national cultures" (Steger 2013: 1). It is not surprising that the term 'global' has become a common epithet to describe some of the most pressing crises that the world faces today: global warming (and climate change), global pandemic (the SARs COVID-19 outbreak), and global economic inequality.

Rock art researchers use the terms 'globalization' and 'global' to suggest that we can now recognize the many worldwide facets of rock art (e.g., Lorblanchet and Bahn 2017; David 2017; David and McNiven 2018; Moro Abadía and González Morales 2020). As we argue in Sect. 1.2 of this introduction, this somewhat obvious realization has taken so long partly because the history of rock art research has been marked by colonial views and resultant prejudices. In this context, while various rock art traditions (such as those in America, Australia, and South Africa) developed independently of, and simultaneously with, the tradition in Europe, the latter was considered the most valuable for many years. This was due to the privileged position of Europe in world archaeology. And while the focus continued, there was an efflorescence around the new world of new practices (e.g. Loendorf et al. 2006; Taçon et al. 2022), and, with the turn of the twenty-first century, bringing changes through the impact of globalization in archaeology. As we examine in Sect. 1.3 of this introduction, new techniques for prospecting, recording, and, especially being able to infer the age of rock art images (e.g., using techniques such as accelerator mass spectrometry (AMS) and Uranium Series dating) have largely demonstrated that rock art is a foundational human practice found on almost every continent. These technical developments are synchronic with the global expansion of science and the internationalization of research. This, combined with the impacts of the Internet and social media, has generated an unprecedented flux of information about rock art images. That said, globalization remains a challenge for many engaged in rock art research and management. As we see in Sect. 1.4, tensions between 'the global' and the 'local' arise. The so-called 'globalization' of rock art research remains largely in the English-speaking Global North with huge areas – Central and South America, Africa, Asia – still excluded from the conversation. Moreover, there is a tension between traditional modes of preservation (anchored in the Western ideal that rock art is a 'universal' form of heritage and should be preserved as such), and alternative frameworks of management that are more community-oriented (i.e., grounded in the idea that rock images belong to specific groups of people that should take care of them, preferably by using/engaging with them). Finally, we review in this introduction how the chapters in this book contribute to thinking about rock art globally. These papers foster critical thinking on globalization as well as seek to expand the discussion beyond the normative European focus. Importantly, this corpus calls into question traditional divides to explore the many dimensions of worldwide imageries.

1.2 Eurocentrism: A Long-Standing Bias in Rock Art Research

In 1860 Modesto Cubillas lost his dog while hunting near the cave of Altamira in Northern Spain. The dog "had climbed into a cave and found itself unable to come out. [He] opened up a hole and found a large cavern" (Bednarik 2013: 59). Cubillas mentioned his finding to Marquis Marcelino Sanz de Sautuola, "a local gentleman and [the] landowner, [who] first visited the cave in 1875. Sautuola noticed some black painted signs on the wall but thought little of them" (Bahn and Vertut 1997: 17). Then, in 1878, Sautuola travelled to the World Exposition in Paris where "he was particularly attracted to an exhibit of prehistoric tools and small objects of art that had been found in France" (Curtis 2008: 48). He decided to excavate near Altamira, accompanied by his 9-year old daughter Maria. At some point, "Maria wandered off to play deeper in the cave. Suddenly, from a low side chamber, the marquis heard a cry: "Toros! Toros!" (Bulls! Bulls!). Sautuola hurried over and María pointed to a polychrome (multi-colored) bison, one of numerous animal paintings on the rock […] María (had) made one of the greatest archaeological discoveries of the nineteenth century" (Fagan 2018: 90). Sautuola published a booklet suggesting that the paintings were from prehistoric times (de Sautuola 1880). The scientific establishment rejected Sautuola's discovery until towards the turn of the twentieth century when several caves (La Mouthe, Combarelles, Font-de-Gaume) with convincing contexts of antiquity were discovered in France. This story of debate and disbelief ended in 1902, with the publication of a paper by the well-known prehistorian of the time, Émile Cartailhac, in which he recognized the prehistoric antiquity of Altamira – resulting in possibly the most famous early rock art retraction (Cartailhac 1902).

Almost invariably, rock art and art history books celebrate this story as the first significant episode of the history of rock art research (e.g., Bahn and Vertut 1997; Lewis-Williams 2002; White 2003; Moro Abadía et al. 2013; David 2017): a narrative manifest in the origins of this highly Eurocentric

discipline. In reality, many rock images had already been 'discovered' across the globe long before Altamira (e.g., Phillip 1789). And we should keep in mind that in rock art research and archaeology the concept of 'discovery' is, in itself, highly problematic. In places such as North America, South Africa, and Australia, rock art imagery is not just 'from the past', but forms part of current living and on-going traditions. In this sense, it is false to claim that these images were 'discovered' in the nineteenth century. More accurately, they were just reported by Western people, as part of a worldwide trend of learned societies and museums increasing anthropological understandings of cultural groups across the world and making significant collections of their material culture. Antiquarian interests substantiated the West's quest to understand its own deep antiquity. And the recording of people in 'exotic' places was encouraged by the learned societies of Great Britain and France, described by Thomas (2011:15) as an 'ethnomania' that drove the 'indefatigable' collection of new and interesting facts (Thomas 2011:62), resulting in the eventual emergence of an anthropological knowledge and the arrangement of collections in museums. Hicks (2013) has argued that this was central to the development of anthropology's four-field approach prevalent in North America.

Many rock images across the globe were published before 1902. In North America, scholars such as Cotton Mather and Thomas Jefferson (yes, the third president of the United States) commented on rock images in the eighteenth century. The first synthesis of American rock art was published by Henry Rowe Schoolcraft, a geologist appointed as federal agent to the Chippewa people of the Lake Superior region. Schoolcraft married a woman who was part Ojibwa and he contributed to dismantling the myth of the Moundbuilders (Whitley and Clottes 2005). In his *Historical and statistical information respecting the history, condition and prospects of the Indian tribes of the United States* (first published in 1847, more than 30 years before Sautuola's booklet), he reproduced many rock images and suggested that they were a form of "picture-writing" (Schoolcraft 1851–1857: 333). Garrick Mallery published his first book devoted to North American rock art in 1894. In this book, Mallery developed Schoolcraft's idea and suggested that rock images were "a mode of expressing thoughts or noting facts by marks which at first were confined to the portrayal of natural or artificial objects" (Mallery 1894: 25). It is important to note that Mallery's impressive account had no parallel in Europe at least until 1906, when Cartailhac and Breuil published *La Caverne d'Altamira* (Cartailhac and Breuil 1906).

In Africa, travelers and explorers reported rock images long before the beginnings of the twentieth century. For instance, British geologist Georges William Stow first came to South Africa in 1843. In the 1860s and 1870s, he made copies of rock images in the south-eastern Free State and the Eastern Cape Province of South Africa (Lewis-Williams and Challis 2011: 34). In 1875, Stow "sent many of these copies to Cape Town, where Bleek and Lloyd showed them to /Xam San people, who came from the central parts of the subcontinent" (Lewis-Williams and Challis 2010: 2–3). Lucy Lloyd also received the manuscript of *The Native Races of South Africa* that contained images of many rock paintings from across the country. The manuscript was edited by archivists George McCall Theal and published in 1905 (Stow and Theal 1905). After Stow passed away in 1882, Wilhem Bleek's daughter, Dorothea, kept his collection of rock art copies and published a commented version in 1930 under the title of *Rock-paintings in South Africa* (Stow and Bleek 1930).

People first commented on Australian rock art over 115 years before the 'official' recognition of Altamira in 1902. Governor Arthur Phillip, who set up the penal colony in Sydney Harbour in 1788, was one of the first to comment on the numerous drawings and carvings in the vicinity of the settlement,

> In all these excursions of Governor Phillip, and in the neighborhood of Botany Bay and Port Jackson, the figures of animals, of shields, and weapons, and even of men, have been carved upon the rocks, roughly indeed, but sufficiently well to ascertain very fully what was the object intended. Fish were often represented, and in one place the form of a large lizard was sketched out with tolerable accuracy. On the top of one of the hills, the figure of a man in the attitude usually assumed by them when they begin to dance, was executed in a still superior style. That the arts of imitation and amusement, should thus in any degree precede those of necessity, seems an exception to the rules laid down by theory for the progress of invention, But perhaps it may better be considered as a proof that the climate is never so severe as to make the provision of covering or shelter a matter of absolute necessity (Phillip 1789: 126).

Painter George Angas (1847) documented the production of engraved art around the harbor by known and named individuals, and ethnographers began to document rock art as part of the long-term and widespread evidence for Aboriginal Australia's cultural practices (e.g., Mathews 1893, 1895). Surveyor W.D. Campbell (1899) also published the numerous open engraving sites of the Sydney districts, recorded very accurately from horseback as he surveyed cadastral and other land tenure details. Significantly, also in 1899, Walter Baldwin Spencer and Francis Gillen published *The Native Tribes in Australia*, a book that included a chapter on rock paintings (Spencer and Gillen 1899, 614–618). Spencer and Gillen described several ceremonies among the Arrernte people of Central Australia. They explained that, while every totemic group had its own ceremony (and these ceremonies were all different), "the important point is that one and all have for the sole object the purpose of increasing the number of the animals or plants after which the totem is called" (Spencer and Gillen 1899, 169). This book greatly influenced a number of early twentieth century French rock art

researchers (including Salomon Reinach and Henri Breuil) but it is rarely mentioned as one of the monuments of early rock art research. During the early 1900s rock art documentation continued across the continent with the professionalization of specialist academic fields by people with varying backgrounds: for example, the Frobenius expeditions to the Pilbara and Kimberley regions of Australia (Kuba and Porr 2022) and focused recordings by D.S. Davidson and Fred McCarthy across much of the continent (see McDonald 2022; Taçon et al. 2022).

As these examples illustrate, during early stages of rock art research, European imagery was privileged and the primary audience for its outputs were Western/ European intellectual traditions. Rock art research outside Europe remained largely irrelevant for European audiences during the first half of twentieth century, at which time, the French prehistorian (and priest), the Abbé Henri Breuil, was considered by Oxford and Cambridge to be "the world's leading authority on Paleolithic art" (Bahn 1998: 62). Breuil not only discovered several caves with imagery, but also was recognized as among the first to promote the interpretation of rock images in terms of hunting magic. Breuil's focus on European cave art (until Ucko and Rosenfeld 1967) overshadowed rock art research occurring in places other than Europe. However, the period from 1900 to 1950 was a time of prolific research activity in many parts of the globe. In North America, significant works were published during this period, especially in California and the Great Basin. In 1929, Julian Steward published a major synthesis on the petroglyphs of California and Nevada (Steward 1929). One year later, Anna Gayton examined the connections between rock art and shamanism at the sites of the Yokuts and Western Mono in the California southern Sierra Nevada (Gayton 1930). While these works were certainly not exempt from the prevailing ethnocentrism (Steward, for instance, declared that no knowledge about the meaning of the petroglyphs could be obtained "from Indians living at present", 1929: 224), they merit recognition. Equally, there were significant early works on African rock art. We have already mentioned the publication of Stow's *Rock-paintings in South Africa* in 1930; but at the same time, German anthropologist Frobenius devoted three volumes to African rock art (Frobenius and Obermaier 1925; Frobenius 1931, 1937). Frobenius was among the first to suggest a shamanistic interpretation of rock art in South Africa (Kuba and Porr 2022), despite many suggesting that little could be said of "the motives which prompted the execution of the [South African] paintings or engravings" (Burkitt 1928: 156). Western scholars such as Alex Willcox, were persuaded that "Paleolithic man and his modern representative the Bushman remained, in their capacity for abstract thinking, always young children […] they achieved a degree of adaptation to their environments in which conceptual thinking was not necessary. Civilized man has taken another path" (Willcox 1956: 85). The 1940s also witnessed some important developments in Australian rock art research. For instance, the 1948 American–Australian Scientific Expedition to Arnhem Land set the foundations of later rock art research, while Charles Mountford made significant contributions to the ethnography of Australian rock art (Clarke et al. 2022).

If Breuil eclipsed several non-European scholars during the first half of the twentieth century, Leroi-Gourhan equally overshadowed the work of many researchers in North America, Africa and Australia during the 1960s and 1970s. Leroi-Gourhan is often credited for a structuralist approach in rock art research. In short, he proposed that, far from being randomly distributed, rock art representations composed structured symbolic systems. Additionally, he rejected the use of ethnographic analogies in rock art research. Subsequent authors called into question Leroi-Gourhan's theoretical approach (e.g., Ucko and Rosenfeld 1967), yet his predominance, enhanced by his comprehensive publications, published in many different languages (e.g., 1965), remained unchallenged until the end of the twentieth century despite his own "retreat" from some of his earlier interpretations.

During the 1960s and 1970s, many scholars engaged with Indigenous cosmologies that have set the groundwork for our current approaches. For instance, Peter Ucko played a major role in the development of Australian rock art research. In particular, "he championed Aboriginal peoples' rights to be recognised as the owners and managers of their own heritage, as well as providing the mechanisms to increase the discourse around rock art research and archaeological practice" (McDonald 2022: 58). Moreover, as Director of the Australian Institute of Aboriginal Studies (AIAS), he invited European specialists to visit and funded their conducting research on a variety of Australian sites. Similarly, David Lewis-Williams was pivotal for the development of modern approaches to deep-time images in South Africa (Lewis-Williams 1972; Lewis-Williams and Biesele 1978). He promoted a greater emphasis on San ethnography, developed an approach somewhat influenced by structuralism, and suggested that "the paintings and the myths perform a similar function in depicting and elucidating varied relationships between man and nature […] both the paintings and the myths, then, perform similar functions; they arise from the same needs and drives" (Lewis-Williams 1972: 63; although see Lewis-Williams 2012).

As this brief review illustrates, the development of non-European rock art has been relatively overlooked in the history and development of European rock art research. This is partly because Western archaeology has been shaped by a 'profound Eurocentric bias' that privileges the European record (McBrearty and Brooks 2000: 453), but there are other reasons that explain the perceived 'superiority' of European rock art. It was once argued that the extent and richness of the Franco-Cantabrian cave art made European

Upper-Paleolithic imagery a unique phenomenon in terms of scale and magnitude. While this is true to a certain extent (enhanced, in part, by preservation factors and dedicated research), multiple regions of Australia, North America, and South Africa also host an impressive number of representations and styles with a deep-time record rivaling that of Europe (e.g. David et al. 2017; Finch et al. 2021; Mulvaney et al. 2023; Mulvaney 2015; Veth et al. 2018; Vinnicombe 1976). European cave art is also renowned for its 'realistic' painting style (e.g., the iconic representations of such sites as Altamira and Niaux). This 'naturalism' (i.e., the mode of representation that sought to imitate/copy nature as exactly and accurately as possible) in art history has marked Western perceptions of rock art (Moro Abadía et al. 2013). This 'realism' is not exclusive to the European record, however, nor does it represent "the" pinnacle of artistic abilities and aesthetics – except of course, to a western aesthetic.

Further rationale for the primacy of Europe in rock art research has been that, until recently, European cave art was thought to be significantly older than any other rock art tradition in the world. This belief was partly a product of the extraordinary concentration of preserved, accessible Upper Paleolithic sites in Europe and well-supported researchers, and partly a result of the limitations of chronometric dating methods available before the 1990s, when the AMS (Accelerator Mass Spectrometry) dating method allowed for smaller sample sizes, enabling better chronological control without extensive damage to rock art motifs. For more than a century, the prestige of European cave art was in part predicated on it being the oldest art by anatomically-modern humans made on Earth. While French scholars continue to develop innovative approaches to Upper Paleolithic rock art (Fritz et al. 2017), including pigment paint recipes (Walter and Cardinali 2013); technical and technological studies (Fritz 2014); intensive dating programmes (Quiles et al. 2016); c*haîne opératoire* and implications of this for gender studies (e.g., Fritz et al. 2016); other understandings of deep time art production (e.g. Fritz and Tosello 2015); as well as the spectacular atlas for Chauvet (Delannoy and Geneste 2020); and the replicative productions of the imagery from Chauvet, Cosquer and Lascaux; the fact remains that a more global focus of our knowledge base has emerged during the past 20 years.

1.3 Globalization and Rock Art Research

At the end of the twentieth century, a number of parallel processes converged to challenge the dominance of European cave art. A globalized world emerged after the fall of the Berlin Wall (in 1989) and the dissolution of the Soviet Union (in 1991) as founded on a multiculturalist paradigm that accommodates the ethnically-and culturally-diverse societies produced by the global movement of people, capital and goods. Critical views of Eurocentrism flourished in this multicultural framework. In the 1990s, academia witnessed the rise of postcolonial studies. This field examined "the various institutions of European colonialism, the discursive operation of empire, the subtleties of subject construction in colonial discourse and the resistance of those subjects, and, most importantly perhaps, the differing responses to such incursions and their contemporary colonial legacies in both pre- and post- independence nations and communities" (Ashcroff et al. 1998: 187). Under the influence of Edward Said (1978) and other literary critics, postcolonial authors claimed that the political independence of most colonies had not translated into freedom from colonialist values that persisted "along with political, economic and cultural models… after independence" (Ashcroff et al. 1998: 64). Over the past 20 years, the postcolonial project has evolved into new forms of critique. While postcolonial studies attacked the effects of Western imperialism upon non-Western countries, the target shifted towards the colonial structures of settler countries. In the United States of America, Canada, Australia and South Africa, there has been an increasing demand for the deconstruction of Western ideologies – offering "a different perspective to human and civil rights-based approaches to justice, an unsettling one, rather than a complementary one" (Tuck and Wayne Yang 2012: 36). Postcolonialism and decolonization have had an impact in many of the social sciences. In archaeology, calls for decolonization "have become frequent, loud, and global" (Lippert et al. 2020: 7). Archaeologists are now urged to challenge the asymmetries of power that dominate the production of archaeological narratives. They have been asked to contest the link between Eurocentrism and "the structures of Western colonialism, which erase contemporary Native presence, introduce irreconcilable ruptures between present and past, and are essential to a framework of archaeological objectivity in empirical observation" (Schneider and Hayes 2020: 133).

It is thus not unexpected that the privileged position of European cave art has been increasingly called into question. In fact, it is not exaggeration to state that, effectively since Leroi-Gourhan's works in the 1970s and 1980s, the center of rock art research has somewhat shifted from Europe to other regions, such as Australia, North America, and South Africa. This process is as much (if not more) influenced by recent technological developments in scientific methods in the field as with the proliferation and acceptance of non-Eurocentric attitudes or post-colonial/ decolonizing frameworks (but see, e.g., Brady and Kearney 2016). While these new methods are not without problems (see Sauvet's chapter in this volume) the increased accuracy and range of new chronometric-dating techniques has been fundamental in dismantling the pervasive belief in the European origins of all rock art, as well as the notion that Paleolithic art was (almost) exclusive to Northern Spain and Southern France (see Ruiz-Redondo's

chapter in this volume). This process began in the 1990s when Accelerator Mass Spectrometer (AMS) radiocarbon dating was first applied in the European caves of Altamira, El Castillo, Niaux, and Gargas (Valladas et al. 1991; Clottes et al. 1992; Moure Romanillo et al. 1996). At this time the technique was also applied in southern Africa (Brandt and Carder 1987) and Australia (McDonald et al. 1990). The French results demonstrated that Leroi-Gourhan's stylistic/chronological system was flawed in fundamental ways and, in particular, that rock art had not evolved in a linear fashion from simple to complex throughout the Paleolithic (Clottes et al. 1995). Moreover, radiocarbon dates soon indicated that what we could consider to be human symbolic behavior—previously thought to have emerged in Europe at the beginnings of the Upper Paleolithic—had appeared significantly earlier in Africa. The radiocarbon dating of two pieces of ochre bearing what are taken to be symbolic engravings from Blombos cave to about 75,000 years ago (Henshilwood et al. 2002; Henshilwood et al. 2018) stimulated the search for early traces of what might be considered to be symbolism all across Africa. The 'abstract' imagery in Blombos Cave promoted the idea of an early emergence of 'drawing' in Africa. Subsequent archaeological research has demonstrated that personal ornamentation existed in Africa during the Middle Stone Age with such materials found from sites from the North [such as the Grotte des Pigeons in Morocco (Bouzouggar et al. 2007), and Oued Djebbana in Algeria, (Vanhaeren et al. 2006, and the South (such as at Sibudu and Blombos Cave in South Africa (d'Errico et al. 2008, 2015)]. Similarly, shell beads, as a marker of symbolic practices, have been discovered in many places across the globe, including Skhul in Israel (Vanhaeren et al. 2006), Jerimalai in Timor-Leste (Langley and O'Connor 2016; Langley et al. 2016) and from numerous Australian sites (Balme and Morse 2006; Balme et al. 2018).

And if radiocarbon dating has made it evident that these indicators of symbolism did not originate in Europe, uranium-series dating has demolished the idea that the earliest cave art is exclusive to France and Spain (see Brum, Oktaviana's and Aubert's chapter in this volume). Using this method on coralloid speleothems from cave walls, archaeologists have dated human hand stencils (to ca. 39,900 years ago) and two babirusa ('pig-deer') to ca. 35,400 years ago in Borneo, indicating that 'humans were producing rock art by ~40 kyr ago at opposite ends of the Pleistocene Eurasian world' (Aubert et al. 2014). More recently, this same team of archaeologists have dated the carbonate deposits covering two red stencils and a figurative animal painting in the cave of Lubang Jeriji Saléh (Borneo). The hand stencils have yielded a minimum date of 37,200 years ago, and the figurative painting depicting a purported hunting scene to 40,000 years ago (Aubert et al. 2018a, b) confirm that figurative art was being produced in island southeast Asia at the same time as Chauvet Cave in France (see also Quiles et al. 2016).

These technical developments have challenged and reframed many conceptions of rock art. But a full dismantling of Eurocentrism has also required the socio-political reconfiguration of rock art research. European scholars no longer dominate the discipline with their privileged access to the main European sites and in setting the tone of theoretical debate. Over the past two decades, scientific research has diversified (in France and globally) and the times in which one or two scholars (*'les mandarins'*, in the French parlance) controlled entire areas of inquiry are happily over. Today, many different specialists (from many different backgrounds) study rock art and praxis has greatly benefited from multidisciplinarity as well as cultural diversity amongst its scientists. Moreover, we have witnessed a decentralization of research and the reconceptualization of what is central – and what is more ephemeral – research. Franco-Cantabrian rock art was at the forefront of twentieth century research while non-European traditions were considered peripheral (at least from the viewpoint of European scholars). However, with the rise of national research agendas in a plethora of new rock art regions, the global research milieu has evolved towards multiple centers leading research innovation and methodological predominance. The Australasian case is the most obvious. As we have shown, the genesis of professional Australian rock art research can be traced back to the nineteenth century. However, the development of new dating techniques has garnered international attention, at sites such as Nawarla Gabarnmang (David et al. 2013) and various locales in Sulawesi (Aubert et al. 2014) and Borneo (Aubert et al. 2018a, b). There are now numerous known early art sites which are the fruits of intensive regional rock art projects in Arnhem Land (David et al. 2017) and the Kimberley (e.g., Finch et al. 2020; Finch et al. 2021; Green et al. 2021; Veth et al. 2018) and a national research agenda focusing on first peopling of Sahul through the southern arc of dispersal (e.g., Crabtree et al. 2021). The fact that some of these sites contain the oldest rock art on Earth has enhanced this worldwide recognition.

The rise of multiple unrelated rock art 'centers' has had an interpretive impact. Rock images have been traditionally understood according to models that were very much in the Western intellectual tradition. For instance, cave paintings have been considered in representational terms, i.e., as representations that carry meanings (for one critique of representationalism, see Jones 2021). Similarly, rock images have been often conceptualized with reference to art history dichotomies, such as figurative/abstract, realistic/non-realistic, real/imaginary, etc. Traditional conceptualizations are now being challenged in multiple ways (see, for instance, Jones and Cochrane 2018). Within the Western tradition, philosophers

such as Bruno Latour, Charles Peirce, Gilles Deleuze, Manuel de Landa, and others are inspiring *more than representational* approaches (such as assemblage theory, ontology, post-anthropocentrism, and Peircean semiotics) that are having an impact in rock art research (see, for instance, Wallis 2009, 2013; Jones 2017; Troncoso et al. 2020). Further, in places such as Australia and North America, Indigenous knowledges are generating many new avenues of research for deep-time images. For instance, engagement with Indigenous ontologies is expanding traditional conceptualization of images beyond representationalism (Jones 2017; Tapper et al. 2020). And the same can be said about recent research on Indigenous landscapes and animism (e.g., Creese 2011, 2017; Porr 2018; Zawadzka 2019). While some of these approaches can be traced back to at least the early 2000s (e.g., David 2002), it has been in the last 20 years that they are having a worldwide impact in rock art studies due to the emergence of places such as Australia and United States as new more globally recognized research foci.

The onset of a new global order has coincided temporally with a worldwide reorganization of rock art research, with the Internet playing a principal role. To a certain extent, rock art studies have always had an international dimension. For instance, European scholars like Breuil and Frobenius extensively engaged with African rock art, while French researchers such as Leroi-Gourhan researched sites from Northern Spain. However, this 'beyond-the-borders' dimension was restricted to a small number of privileged individuals and places. During the twentieth century, communication among scholars from different countries was restricted to sporadic conferences (and letters). In this setting, rock art research remained locally – and nationally – oriented. This began to change towards the end of the twentieth century. For instance, in 1995, the French Ministry of Culture launched an international competition to choose the team that would undertake the scientific study of the Chauvet paintings and its pristine cave environment. While the two potential team leaders were French both proposed teams that would include several international specialists (Balter 1996). Clottes, upon having been selected to lead the research, established a formal international scientific advisory committee that met regularly to discuss on-going research as well as the auxiliary projects such as the creation of a replica and the nomination of the site for UNESCO World Heritage status. International recognition became an important factor in scientific research. Additionally, core publications such as Rock Art Research and the International Newsletter On Rock Art (INORA) played an important role in this process. That said, it was the emergence of the internet in the 1990's that strongly modified scientific research. The World Wide Web has fueled the constitution of new international networks, increasing equitable access and circulation of information to unprecedented levels. Some publishing companies with specialized scientific content have made thousands of papers and books available online and are experimenting with more open access. While there is nothing philanthropic about this (for-profit journal publishers are academically restricted to Western countries and financially unsustainable for many universities), and indeed there is still deep inequity in access between the different continents, it is equally true that more and more scholars have access to academic literature (especially with the development of open repositories. A large comprehensive data base of rock art publications was developed (https://musnaz.org/rock_art_studies_db/). The digital revolution has also engendered new formats for deep-time imagery. Since the turn of the new millennium, we have witnessed an 'explosion' of digital rock art research projects, including the virtual replicas that allow 'visits' of renowned caves such as Lascaux. (https://archeologie.culture.fr/lascaux/fr/visiter-grottelascaux/salle-taureaux), Cosquer (http://grottecosquer.fr/visite.html), Font-de-Gaume (http://font-de-gaume.monuments-nationaux.fr/fr/), Chauvet (https://archeologie.culture.gouv.fr/chauvet/en) and Altamira (https://www.culturaydeporte.gob.es/mnaltamira/cueva-altamira/recorrido-virtual.html) all of these being in Europe. The *Musée de la Civilisation*'s virtual exhibition of rock art in Canada (https://imagesdanslapierre.mcq.org/en/) is an outside-of-Europe example, but still in the Global North.

1.4 The Pitfalls of Globalization

Most of the globalization effects discussed so far, broadly speaking, can be characterized as 'positive'. For instance, Eurocentrism has been effectively challenged in multiple ways that have brought other corpuses of rock art into the wider understandings. Moreover, among these 'positive' effects, we should mention the internationalization of research, the incorporation of Indigenous knowledges to our interpretive frameworks along with the increasing co-production of rock art research with Indigenous groups, and the worldwide circulation of information related to rock art sites. That said, globalization is certainly not without pitfalls. While the circulation of information has exponentially increased, access to this information remains inequitably restricted to a privileged number of people and countries. Similarly, the great progress in technological advances in science has accelerated many of the processes involved in rock art research. However, as Isabelle Stengers (2018) has pointed out in relation to science in general, it is far from clear that this acceleration is necessarily producing better science. In addition to these issues (that are common to many sciences), we examine in this section some challenges that are more specific to rock art research. First, globalization is

still developing ways of thinking that are embedded in pre-globalized styles of theorizing and practicing research. Second, globalization has been mainly limited to the Global North and, therefore, huge areas remain excluded from the conversation. Related to this point, it is important to keep in mind that globalization is a Western project that involves a number of homogenizing and universalizing processes that necessarily generate tensions and resistance.

Globalization has fueled criticism on some of the most obvious biases of traditional rock art research. However, the ways in which we think about rock images (especially in places like Europe) are sometimes anchored in theorizing styles that originated in a pre-globalized world and are not *necessarily* adequate for the current context. For instance, much rock art research has been driven by 'origins research', a style of theorizing that assumes that "both our biological beginnings and the inception of cultural complexity were attained during our early prehistory" (Gamble and Gittins 2004: 97). This has resulted in "a search for an unproblematic center- a point of origins which allows unequivocal meaning to be possible" (Gamble and Gittins 2004: 106; see also Conkey with Williams 1991; Wobst and Keene 1983). The pursuit of *the* origins has been particularly pertinent in rock art research. The authentication of rock art initiated a 'gold rush' for scholars seeking the 'beginnings of art' (Bataille 1955) in the caves of France and Spain. This search continued during the twentieth century in Europe given the assumption that rock art had originated during the so-called 'Upper Paleolithic revolution'. The search is now global, as noted above, with the deep time dates from Sulawesi and Lubang Jeriji Saléh. Carbonate crusts overlying pigment motifs in three Spanish caves (La Pasiega, Maltravieso and Ardales) at ca. 65,000 years ago has pushed this chronology still deeper – and brought into play the possibility of Neanderthal authorship (Hoffmann et al. 2018). While these dates have been called into question (Aubert et al. 2018a, b; White et al. 2020), they have reignited the debate as to whether symbolic behavior is a necessary hallmark of modern humans as well as what constitutes "symbolic behavior". The race to locate the 'oldest' art on Earth is fueled by multiple academic and non-academic factors. For example, scholars working with very old art have easier pathways to prestigious journals (such as *Science* and *Nature*), academic funding, as they benefit from 'the reward system in science' (Merton 1957: 642). This is directly related to the popularity of 'origins research' among the public and the mass media (see, for instance, the proliferation of labels such as the 'origins of language', the 'origins of modern humans', the 'origins of society', etc.).

No matter how fascinating the search for the 'origins' is (and while we understand that scholars need recognition and support by funding organizations, public institutions, etc.), this orientation has spurned pernicious effects (see Conkey's chapter in this volume). The focus on the 'origins' of art reflects a prejudice that has oriented rock art studies for centuries, i.e., the idea that the older the rock image, the more important it is. This is obvious, for instance, when one examines academic (and popular) perceptions of Paleolithic and post-Paleolithic images. Paleolithic imagery carries an aura of exclusivity and gets more academic and media attention than any other 'prehistoric' representations (see John Robb's chapter in this volume). As he explains, when you Google 'rock art prehistoric Europe' you get a smaller than representative set of images (mainly Paleolithic cave paintings from Lascaux, Chauvet and Altamira). The privileged position of Paleolithic imagery is rooted in its deep antiquity and its purported connections with the origins of western ancestors. However, the fact remains that the bison on the ceiling of Altamira or the horses at Lascaux *are not more important* than a Mi'kmaw image in eastern Canada or a San painting in Southern Africa. The European preference for Upper Paleolithic art is certainly not the fault of globalization, but this bias becomes increasingly untenable in a globalized context of international rock art research.

There is another problematic outcome of globalization that impacts rock art research. While we have celebrated the inclusion of more countries and territories in the global rock art conversation, this globalization is still embedded in a socio-economic and political reality. The term 'Global North' is used to refer to the nations of the world that are characterized by greater economic and industrial development and includes Europe, North America and Australia. The 'Global South', on the other hand, refers to less industrialized, 'developing countries' in Asia, Africa, Oceania and Latin America. Not surprisingly, the full benefits of globalization of rock art research have largely been restricted to the Global North. While Europe's centrality has been challenged, overall, countries from the Global North continue to reinforce their hegemony in the field. Huge areas of exclusion remain across the Global South. South America is illustrative of this point: Western specialists are largely unaware of rock art from this continent. This results from multiple factors, including the marginal position of South America in the context of world archaeology (relative to North America, despite having some 'older' occupation dates, e.g., Lahaye et al. 2013) along with the assumed 'young' age of its rock art. Yet South America, with a rich and burgeoning intellectual tradition includes an impressive number of rock art places. In Brazil, for instance, regions such as Piauí, Minas Gerais, and Mato Grosso are home of the sites of Serra da Capivara (Pessis and Guidon 2007), Cidade de Pedra (Paillet 2006, Vilhena Vialou 2006), Santa Elina (d'Errico and Vialou 2007), and others. In Argentina, sites such as Cueva de las Manos (Aschero 2018; Aschero and Schneier 2021), Los Toldos (Carden et al. 2018), and Piedra Museo (Carden 2022) has made the Provincia de Santa Cruz one of the richest depositories of rock art in America. In the Colombian

Amazon, archaeologists have documented thousands of rock paintings at Serranía de la Lindosa and propose a chronology starting 12,000 years ago (Morcote-Ríos et al. 2021; Iriarte et al. 2022). This concentration of images, together with the hundreds of pictographs reported at Chiribiquete National Park (Castaño-Uribe and Van der Hammen 2005), make this area amongst the richest rock art regions in the world. A significant number of these sites have been dated to the late Pleistocene/early Holocene transition (Podestá and Strecker 2014). These examples illustrate the pressing need to incorporate South American and continental Africa and Asia into the global conversations about rock art.

Globalization continues to promote a 'Western' hegemony of rock art research at multiple levels. As many authors point out, English is the language of globalization, and has become the *lingua franca* of science (Tardy 2004; Ferguson et al. 2011; Bennett 2013; Suzina 2020). Examples are innumerable: English is the language of communication among scientists from different countries, English-speaking publishing companies control the academic publication market, the most prestigious journals are in English, academic promotion in non-English speaking countries is mainly based on the number of publications in English-speaking journals, international meetings are held in English, etc. This continues to have several consequences in our field. We are witnessing a linguistic impoverishment of rock art studies. Languages that were important during the twentieth century (German, Spanish and, especially, French) are becoming progressively less relevant in international discussions about deep-time images. In this setting, English functions as "an additional barrier to achieving more equitable participation and a diversity of perspectives" (Suzina 2020: 171). Moreover, since languages are not just systems of symbols, but they express different worldviews, the English hegemony has important epistemological and ontological consequences. Scholars from many different places and origins are forced to translate their views and perspectives into those theorizing styles and Western interpretative frameworks that are dominant in the English-speaking world. And it is important to remember that other-than-English speaking scholars have made significant contributions to rock art research. For instance, the so-called structuralist authors (Leroi-Gourhan, Laming-Emperaire) were relevant to rock art research in the 1960s and they published almost exclusively in French. More recently, the engagement with different Indigenous ontologies has greatly invigorated the theoretical debate (even if English is still the language of the discussion).

The 'colonialism' of rock art research introduces additional frictions. Many of concepts and ideas in the field arise from Enlightenment Western thought. The notion of heritage (*patrimoine*, in French) originated after the French Revolution to designate those monuments, artwork and archaeological sites of an outstanding cultural, artistic and historic value to the French state. During the second half of the nineteenth century, Monuments Acts were passed in virtually every European country, including Britain (1882) and France (1887), and preservation became a burning issue in Italy and Germany (Swenson 2011: 140). The idea of cultural heritage, which initially referred to the historic and cultural patrimony of the different Western nations, expanded after World War II to incorporate several monuments considered of universal importance. In this setting, the creation of UNESCO in 1946 marked the beginnings of a global movement for the preservation of cultural heritage all around the world. The campaign launched by this organization in 1960 to relocate the Temples of Abu Simbel in Egypt (in danger of being swamped by the Nile after the building of the Aswan Dam) was the first in a series of similar initiatives to preserve the 'world's' heritage. And from the 1950s, several voices called for the preservation of natural heritage, i.e., those natural sites and features considered of a universal value from a geological, biological or environmental viewpoint. As a result of these developments, in 1972 UNESCO adopted the *Convention concerning the protection of the World Cultural and Natural Heritage* seeking to guarantee the preservation of monuments, buildings and archaeological sites as well as those natural sites of outstanding universal value. At this time, UNESCO's General Conference in Paris established the World Heritage Committee, whose main function was to elaborate a list of threatened cultural and natural sites to promote corrective action. The first World Heritage Sites were announced in 1978 and, since then, more than eleven hundred sites have been inscribed on the World Heritage List (https://whc.unesco.org/en/list/). Rock art sites have been an important part of the list from the very beginning. Since the inscription of the cave art from the Vézère Valley (France) and the rock paintings from Valcamonica (Italy) in 1979, numerous other rock art sites have been added to the list, including Kakadu National Park in Australia (inscribed in 1981, rock art/cultural values added in 1987), Tassili n'Ajjer in Algeria (in 1982), Altamira in Spain (in 1985), Alta in Norway (in 1985), Serra de Capivara in Brazil (in 1992), Chauvet in France (2014), Chiribiquete National Park in Colombia (added in 2018) as well as many caves across Northern Spain (see Palacio- Pérez's chapter in this volume).

These efforts to preserve rock art around the world are laudable and praiseworthy but they are also problematic. In fact, the idea of World Heritage (as well as UNESCO itself) crystallized in the years immediately after World War II in a context marked by an increasing commitment to peace and international solidarity (Meskell and Brumann 2015: 24). In this setting, UNESCO's initial approach to heritage developed out of the notion of 'outstanding universal value', i.e., the idea that certain cultural (and/or natural) places are so exceptional that they transcend national or cultural boundar-

ies to become part of humanity's heritage (Jokilehto 2008; Labadi 2013). Since the 1970s, however, many commentators have questioned UNESCO's universalism. They have argued that, under a façade of humanitarianism and good intentions, universalism – or as they frame it, 'patrimony' – imposes largely European values that risks diminishing local cultural difference (Eriksen 2001; Meskell and Brumann 2015). The UNESCO response to these critiques has been to shift from "the initial project of constructing cultural unity of a global level [and] been replaced by a celebration of the virtues of cultural diversity" (Stoczkowski 2009: 11). In this context, UNESCO has sought to promote a more inclusive approach as well as stakeholder collaborations with different local communities, and more recently acknowledge the primary rights of Indigenous groups to speak for their heritage (ICOMOS GA2023, Scientific Symposium, held in Sydney). That said, the tensions between the universal and the local are particularly critical in the case of rock art sites – as they are for the nature /culture divide – which many Indigenous groups find a perplexing way to compartmentalize the real world. The idea that rock art sites or broader heritage estates belong to an abstract humanity's universal heritage (which requires them to be placed under the protection of intergovernmental Western organizations) is contradictory with the belief systems (increasingly prevalent in settler countries) that rock art sites belong to the ancestors of different Indigenous communities – and indeed are part of broader cultural (i.e. often natural) landscapes. Additionally, UNESCO's World Heritage is inevitably linked to the Western idea of nation-state. As de Cesari has pointed out, "there is no World Heritage without nation-state sovereignty, and it is nation-states (and experts) that are constituted as the proper actors on the World Heritage stage" (de Cesari 2010: 309). Only state parties (i.e.,countries that have adhered to the World Heritage Convention) can introduce nominations to the World Heritage Committee. This means that while communities and ethnic groups can initiate the nomination process (see Stevens and McDonald's and Palacio-Pérez's chapters in this volume), this is subsumed into a broader and often complex process involving multiple layers of government. The selection process remains in the hands of the States Parties, making them "the key actors, thus leaving all key processes at a country level in the hands of national elites" (Askew 2010: 22). Moreover, once a site has been inscribed in the list, "the World Heritage Committee has both the right and the duty to monitor its state of conservation, relying again on the expert services of ICOMOS, IUCN, ICCROM, and the [World Heritage] Center" (Meskell and Brumann 2015: 26). These interfaces illustrate the tension between the global and the local and remain at the core of current debates about the appropriate management and preservation of rock art sites.

1.5 Organization and Relevance of This Volume

Globalization is a multi-faceted process that has profoundly impacted the ongoing praxis of rock art research. The ways in which rock art scholars organize, undertake, and publish their research has significantly evolved in the past 20 years, changing their role(s) as experts, their relationships with different groups of people, and the ways in which they present their results to the public. If we had to summarize in one word what has happened to rock art research during the past 20 years, it would be intensification. Rock art projects across the globe have multiplied, as have the number of practitioners; international collaborations have expanded; the methods for surveying, locating, examining and quantifying the age of rock art sites have exponentially increased in number and quality; and information about rock art sites can now circulate at unprecedented levels. Overall, this intensification has benefited rock art studies, and these are in many countries considered mainstream archaeological endeavours (Conkey 2005). There are vibrant funding streams in a number of countries, e.g., Australia's ARC funding has provided millions of dollars to major rock art projects funded through a number of universities (McDonald 2022) while ERC funding in Europe has funded major rock art research projects such as the Levantine focused LArcHer project led by Ines Domingo Sanz; and the multidisciplinary ARTSOUNDSCAPES: led by Margarita Díaz Andreu – https://ia.ub.edu/projects-and-contracts).

But it has also fueled new (as well as, old) tensions and problems. This explains the passionate reactions that globalization engenders. For some, globalization has greatly helped the entire world to embrace rock art research. For others, it has merely continued to promote the global spread of Western (and English-speaking) values. Notwithstanding these different reactions, both adversaries and advocates of globalization acknowledge the speed with which changes have occurred. And in this fast-moving world, there is often little time to think critically about these processes (see Conkey's chapter in this volume). The risk of an age in which science continues to improve our ability to know many things about deep-time images encourages "method-idolatry": an overdependence on methods in the absence of critical thought and theorized outcomes. Similarly, the acknowledgement and celebration of Indigenous knowledges can only occur if given appropriate space: in current academia there is a shortage of time to critically examine and meaningfully engage with these knowledges, when 'key performance indicators' and 'research impacts' – the modern drivers of intellectual discourse – engender constant pressure to publish – or perish.

In this setting, our hope is that this volume serves to promote critical reflection on the many impacts of globalization in rock art research. We present these offerings in five sections. Section One – *Recentering rock art* – examines the worldwide reorganization of rock art research and the emergence of new centers beyond Western Europe. Aitor Ruiz-Redondo examines how Paleolithic art research has globally expanded beyond the Franco-Cantabrian region. Adam Brumm, Adhi Agus Oktaviana, and Maxime Aubert focus on the emergence of Indonesia and Australia as one of the centers of rock art research in the twenty-first century. Andrés Troncoso examines South American rock art with reference to Stenger's idea of 'cosmopolitics' (2005). Peter Veth, Sam Harper, and Martin Porr reframe parallels in rock art representation from two distant areas: Europe and Kimberley in Australia.

In this comparative vein, chapters in Section Two –*Comparative views on global art* – examine analogies and differences between disparate geographical areas. Oscar Moro Abadía and Amy Chase call into question the traditional eurocentric divide between European and Indigenous rock art. Danae Fiore, Bryn Tapper, Dagmara Zawadzka, and Agustín Acevedo highlight important analogies between the rock art research of the two distinct poles of the American continent: Southern Argentina and Eastern Canada. Elizabeth Vellicky and her multinational coauthors develop an Ochre Experience Model that is applicable across national boundaries along with several innovative methods. Using a similar transnational perspective, George Sauvet examines some of the pros and cons of the various chronometric dating techniques and challenges the on-going race to discover the oldest art in the world.

In recent years, rock art studies have become transnational (as illustrated by various chapters in this volume) and, equally important, interdisciplinary. Section Three –*Interdisciplinary global rock art* – offers several innovative and inspirational perspectives on rock art written by specialists in other disciplines. The multidisciplinary team of Jean-Jacques Delannoy, Bruno David, and Kim Genuite combines geomorphological and archaeological methods to offer an innovative model for reconstructing rock art landscapes. Whitney Davis, an art historian, ironically reflects on the obsession of archaeologists and art historians to find the earliest dated rock images in the world, providing an important critical approach to some popular ideas in rock art research. Art historian John Onians provides informative and salient neuroscientific observations about rock art research. He seeks to call into question various ideas about rock images that are common to the fields of archaeology, anthropology, and art history. In a different vein, another art historian, Rémi Labrusse, similarly examines the reception of rock art among contemporary artists from a historical viewpoint. His work is important to understand the different ways in which deep-time images have inspired modern imageries.

Section Four –*Rock art management: Tensions of Local versus global* – draws attention to the conflicts inherent in the preservation and management of rock art research in a globalized context. Eduardo Palacio-Pérez examines the process of nomination of several Spanish Cantabrian caves to the UNESCO World Heritage list. He illustrates how, in Europe, the management of rock art is shaped by the tension between a number of apparently antagonistic goals, such as preservation and touristic exploitation. In colonized countries, the tensions are of a different kind. In Australia, local Aboriginal communities, settler national institutions, and international agencies often have different (and sometimes contradictory) views on the management of rock art sites. The chapter by Amy Stevens and Jo McDonald on the nomination of the Murujuga cultural landscape onto the World Heritage List illustrates these frictions. Additionally, prevalent narratives within each of these local, national and transnational groups may be problematic. For instance, as Silvia Tomášková shows in her chapter about South Africa rock art, the widespread insistence on the ancient roots of Indigenous communities in a place may sometimes deprive these peoples of a relevant role in global history. Moreover, globalization has also generated new challenges for the preservation of rock art images. As Paul Taçon's chapter shows, graffiti and vandalism at rock art sites has increased alarmingly during recent years. His reflections are relevant to understanding how we can prevent the ignorant destruction of Global rock art.

The Fifth Section examines *Rock art and the challenges of the Global now*. John Robb analyzes the impact of digitalization in rock art studies. His focus is on how rock representations are subsequently transformed into a myriad of images that circulate in an increasing number of media and formats. The proliferation of digital images has engendered new challenges in our globalized world. For instance, Jamie Hampson and Sam Challis examine how Indigenous rock art motifs from North America, Northern Australia, and Southern Africa are often re-imagined and appropriated for commercial and economic reasons. Taking a different perspective on this, Laura Mayer and Martin Porr reflect on the many processes involved in the creation, management and exploitation of 3D replicas of renowned caves, such as Lascaux and Chauvet. We conclude this section with Meg Conkey's examination of the benefits of 'slow science' for rock art research. In the age of relentless acceleration, Conkey's chapter is the perfect closure for a book that, first and foremost, seeks to provoke reflection about the many dimensions of globalization in rock art research.

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Part I

Recentering Rock Art

‘Out of Franco-Cantabria’: The Globalization of Pleistocene Rock Art

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Abstract

Since the second half of the twentieth century, globalization has transformed archaeology into a ‘geoculture’ (using Wallerstein’s words) defined by the increasing circulation of ideas within a worldwide scientific community. This change has not only affected the ways in which new paradigms and methods are transmitted, but it has also significantly broadened the geographical boundaries of archaeological research. The example of Palaeolithic rock art can be used to illustrate the various dimensions of this transformation. In Europe, Pleistocene cave art was considered a phenomenon with a ‘core’ firmly embedded in the Franco-Cantabrian region and a ‘periphery’ which included some neighbouring areas, such as Southern Spain and Italy. Despite some discoveries in Russia (1957) and Bosnia and Herzegovina (1973), this reductionist view remained unchallenged until the beginning of the twenty-first century. Non-European sites were often disregarded and reduced to the status of ‘outliers’ in relation to the central core area, resulting in the limitation, rather than invigoration, of research in these regions. However, the new millennium has witnessed a significant increase in the number of European countries with well-dated Paleolithic cave art sites, including the United Kingdom and Romania, among others. Nevertheless, the greatest shifts in the field of rock art studies globally have emerged during the last decade with: (1) the discovery of Paleolithic rock art in locations very distant from the traditional European ‘core’ (e.g., Australia and Indonesia), and (2) the development of systematic archaeological rock art surveys in areas outside of the ‘periphery’ (e.g., Southeast Europe). Today, it is evident that Paleolithic rock art is a widespread global phenomenon. Despite this, a vast majority of teams and specialists are still focused on the Franco-Cantabrian region, and they seldomly develop research in ‘new’ territories. Hence, globalization has led to an increasing awareness of the ‘Franco-Cantabrian bias,’ but has archaeological research changed accordingly?

Keywords

Upper Paleolithic · Rock art · Eastern Europe · Southeastern Asia · Australia

2.1 *‘Ex occidente lux’*: Southwestern Europe as the Spiritual Reservoir of Paleolithic Societies

The emergence of Paleolithic art and symbolism is considered a major milestone in human evolution (e.g. Mellars 1989; Zilhão 2007). This is related to the fact that art has been traditionally regarded as one of the first expressions of symbolic and cognitive thought in human history (Mellars 1989; Mithen 1996; d’Errico 2003). The development of Paleolithic cave art and symbolism has often been considered a phenomenon with a ‘core’ firmly settled in the Franco-Cantabrian region and a ‘periphery’ which includes some neighbouring areas, such as central and southern Spain and Italy. A number of scholars from the first half of the twentieth century claimed that Franco-Cantabrian cave art was ‘superior’ to ‘savage arts’ (e.g., Breuil 1906, 135). Among these scholars, Breuil considered Levantine rock art to have stemmed from Paleolithic art (Breuil and Lantier 1951), linking it to an African tradition of – also Pleistocene – rock art (Breuil 1965). This conception changed drastically in the late 1950s and the 1960s. A. Laming-Emperaire, first, and A. Leroi-Gourhan, later, highlighted the European ‘nature’ of Paleolithic art. Leroi-Gourhan, for instance, restricted Paleolithic cave art to France, Spain, and Italy (Laming-Emperaire 1962, 162; Leroi-Gourhan 1965, 204). Despite a

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few discoveries located outside of this area (see Sect. 2.2), this conception of Paleolithic rock art as a geographically-restricted phenomenon was widely accepted until the early twenty-first century (Gamble 1984, 1991; Mithen 1991; Barton et al. 1994; Braudel 1998; Mellars 2006). Two main factors explain this fact. First, until the late twentieth century, research, and especially research in the social sciences, was grounded on Eurocentric biases, and rock art research was not an exception. Second, the focus on Franco-Cantabrian rock art was (and still is) fuelled by the impressive extent and richness of Paleolithic images in this part of the world. Several hypotheses have been proposed to explain this limited geographical distribution. For instance, M. Jochim (1983, 1987) developed an ecological interpretation of Paleolithic art, based on the consideration of southwestern Europe as a *refugium* for human groups from 25,000 BP onwards. This would have drastically increased the population of this area, resulting in an intensified use of rituals. According to this hypothesis, decorated caves would have acted as territorial markers and ritual places. The main problem with Jochim's argument is that he assumed that Europe was the only area that met all the requirements for the appearance of cave art (i.e. dense population, increasing sedentism and territoriality), something that is far from evident. Similarly, Paul Mellars (1985, 2006) linked the origins of cave art to the abundance of resources in Southwest Europe during the Upper Paleolithic (UP hereafter). According to Mellars, this led to human groups to become more socially and culturally complex, facilitating the creation of cave art in the region. Steven Mithen (1991) suggested that cave art would have functioned as a means of information exchange between hunters stalking animals. This cooperation would have been triggered by the overexploitation of game, resulting in the dense population of southwestern Europe during the UP. Once again the emergence of cave art is intimately linked to the particular conditions of the Franco-Cantabrian region. The 'information exchange approach' also stressed that "the appear[ance] of parietal art in the Late Pleistocene Europe resulted from the closing of social networks under conditions of social population density" (Barton et al. 1994, 199). Additionally, it is interesting to note that most of the abovementioned works take for granted that UP rock art was a Western-European phenomenon and they tried to provide an explanation for this *fact*. In this setting, it is legitimate to wonder whether recent claims about Neandertal rock art (that are based on limited archaeological evidence, please see Hoffmann et al. 2018) are not the last attempt to save the privileged position of Europe in rock art research. In any case, evidence for Paleolithic rock art outside of Southwest Europe has existed for over 60 years now and the number of known sites has increased considerably during the last 20 years. Wherever and whenever modern humans first created rock art, it is now clear that rock images are something of a global phenomenon.

2.2 First Discoveries Beyond the 'Cynosure'

More than 50 years after the recognition of Altamira (Cartailhac 1902) and 80 years after its discovery (de Sautuola and Marcelino. 1880), cave art was still considered to be almost exclusive to Spain, France, and a few sites in Italy. However, in 1959, one discovery changed the geography of cave art. Interestingly, the find did not occur in the margins of southwestern Europe (as one would have been expected), but a few thousand kilometres away in the Ural Mountains in Russia. While working at the Pribelsky branch of the State Natural Bashkir Reserve, zoologist A.V. Ryumin found a number of Paleolithic paintings in Kapova cave. More specifically, he reported the discovery of many zoomorphic figures: "Cave bear, wolf, fox, bison, antelope, cave-lion, horses, a mammoth, and [a] sabertoothed tiger" (as cited in Bader 1963, 27). He was convinced of the Paleolithic age of the artwork, and his discovery attracted the attention of several Soviet prehistorians who visited the cave. When examining the artwork, they realized that most were "tricks of nature; the light and shadow of the primordial cave had played upon Ryumin's zoological imagination" (Kunichika 2018, 118). At the same time, they inferred that a few of the images (in particular those from the main panel in the Chamber of Paintings) were likely UP paintings. The government of the Soviet Union sponsored research at the site, and O.N. Bader was designated to direct a number of archaeological campaigns (1960–1978) seeking to document the rock images and examine the cave's archaeological deposits. These led to the discovery of more than fifty paintings in the middle and upper levels of the caves, which were then cleaned of modern graffiti and calcite layers. The excavations revealed additional evidence of human presence in the cave during the UP (Zhitenev 2018). Based on the presence of extinct Pleistocene species among the represented fauna (woolly mammoth and rhinoceros), the close spatial relationship between the archaeological contexts and the paintings, as well as the strength of the formal analogies with Paleolithic cave paintings from Southwest Europe, Bader consistently argued for the Paleolithic age of the artwork (Bader 1963). Thus, the influence of some early works on cave art that had been translated into Russian (including those of Piette, Breuil, and Reinach) and the role of Western archaeologists (Bader presented his first works on the cave at the IV UISPP world conference in Moscow in 1962) played an important role in the authentication of Kapova's art. Although the UP age of the painting was never called into question, the discovery of Kapova had a little impact in the work of Western archaeologists. For instance, in two seminal books on the study of cave art published during the 1960s, Laming-Emperaire (1962) did not mention Kapova, and Leroi-Gourhan (1965) only briefly referred to the site.

Interestingly, the site *is* mentioned by historian Fernand Braudel in *Memory and the Mediterranean* (a posthumous publication): "[Recent discoveries] in a cave at Kapovaya (sic) in the Urals, seem to indicate that they [cave paintings] cover the same territory as the Venuses of the Gravettian era" (Braudel 1998, 31). Nevertheless, he did not question the eminent place of the Franco-Cantabrian province in cave art: "France and Spain are nevertheless (but why?) the unchallenged centres of an art which is thought to date from the Aurignac to the Magdalenian eras" (Braudel 1998, 31).

In 1974, local people from the town of Stolac (Bosnia and Herzegovina) discovered some lithic artefacts in the nearby rock shelter of Badanj. Đ. Basler, an archaeologist at the Zemaljski Museum of Sarajevo, reported this discovery, recognized the potential of the site and began excavations (Basler 1976, 1979). The site is a large, open rock shelter on a slope 30 meters above the base of a steep canyon. The first excavations revealed an extremely rich and complex site, and archaeologists recovered more than 20,000 lithic remains dating from the end of the Pleistocene (Late Epigravettian) during the first campaign. The finds also included hundreds of personal ornaments and dozens of engraved bone fragments, both rare elements in Paleolithic sites of the Balkan Peninsula (see Ruiz-Redondo et al. 2020a). This first campaign also revealed an even more exceptional discovery: a large, engraved boulder. The carvings are located on the upper face, whose surface dimensions are ~4 × 2.7 m, and the maximum height of the boulder is 2.3 m. Hundreds of deeply engraved features were found on the boulder, and since a great part of it was covered by undisturbed UP layers, the Palaeolithic age of the discovery is undisputed (Basler 1976, 1979). Đ. Basler presented his findings at a conference organized by D. de Sonneville-Bordes in Bordeaux (France, May 1977):

> The image seems to be typical of the Paleolithic. Given that this part of the cave was covered with deposits from the end of the Palaeolithic, it is also possible to estimate, in a quite precise way, its chronology. One part of the wall is covered by non-figurative engravings, and, in the other part […] we have found a horse representation and some symbols characteristic of this period (Basler 1979, 346).

Basler was very clear regarding the context of the discovery and the fact that the engravings were covered by UP layers. During our recent work at the site, we have confirmed that the archaeological deposits are undisturbed after the first 3-5 cm below the surface (Ruiz-Redondo et al., forthcoming). Although archaeologists have long assumed the presence of a horse depiction among the engravings, we have found no evidence to support such an interpretation (Ruiz-Redondo et al. 2020a). Nevertheless, Basler concluded his presentation with a significant remark: "It is beyond question that we need to wait for new discoveries from the west coast of the Balkan peninsula" (Basler 1979, 354). Those discoveries did not appear as quickly as Basler would have hoped, and many years passed without any further Paleolithic rock art finds in the area.

In 1978, some members of the speleological club at the University of Bucharest noticed a number of red dots painted on the walls of Cuciulat cave (Romania) while carrying out a first mapping of the cavity. A year later, M. Cârciumaru, from the Romanian Institute of Archaeology, visited the site to evaluate the paintings and attempted to contextualize them. He confirmed the anthropic origin of the paintings, all of them made in red and depicting mostly non-figurative motifs, with the exception of a horse and a possible feline (Cârciumaru and Bitiri 1983; Cârciumaru 1988). Cârciumaru was persuaded of the Paleolithic age of the stylistic because of the resemblance between the horse and other UP paintings. In particular, he compared this figure to the horses in Kapova cave: "The most pertinent stylistic similarities were drawn with the Kapovaia Cave paintings in the Urals and analogies with them, determined by the manner of execution and depiction of animal figures, colour and way of painting" (Cârciumaru and Nițu 2018, 94). J. Kozłowski shared this opinion and even suggested a chronology for Cuciulat's rock art: "The analogy between the Kapovaya horses and the ones from Cuciulat cave allow us to assign a chronology for the latter of circa 15–14 ka BP." (Kozlowski 1992, 89).

Despite these statements, the dating of the paintings remains a complex issue. Since direct dating of the art is not possible, our best chance to determine the age of parietal art is to reconstruct its 'internal archaeological context' ('IAC' – for a definition and compilation of cases see Medina-Alcaide et al. 2018, and references within). When this is not possible, stylistic analogies may also be helpful, but only if there are a number of them available for comparison, and the art style clearly points to the same chronological framework (Fortea et al. 2004). Unfortunately, the site of Cuciulat does not currently meet any of these criteria. The front portion of the cave, which was the most likely area to have been inhabited by prehistoric humans, was destroyed by quarrying activities at the beginning of the twentieth century. According to local people, it consisted of a large chamber at the entrance, seemingly suitable for occupation by UP groups (Cârciumaru 1988; Cârciumaru and Nițu 2018). At the time of the discovery, the site was difficult to access, and the entrance was restricted by a pile of limestone blocks obstructing the gallery. Traversing the limestone pile allowed for access to a fossil gallery, which then led to the area where the paintings are located. No Paleolithic remains were found in the cave. Additionally, stylistic analyses can be applied only to the horse figure, as the supposed feline is poorly defined, and the geometric signs consist mainly of stains and red dots, which were common motifs throughout the Paleolithic. Consequently, the comparison between Cuciulat and Kapova is not without problems. Although the general proportions of

Cuciulat's horse may evoke that of Kapova's horses, the latter consist of perfectly defined outlines (in some cases even highlighted in black colorant) that are only partially filled with pigment (Ruiz-Redondo et al. 2020b). Moreover, a landslide prevented access to the cave, resulting in no new information since the 1980s. Despite these concerns about its chronology, Cuciulat's paintings demonstrate the biases prevalent in cave art research: Instead of being examined in a serious way, these paintings, along with Kapova and Badanj, were typically overlooked by Western specialists.

2.3 Europe Becomes Larger: Systematic Research in Eastern Europe and the British 'Exception'

After their discovery, research continued at the sites of Kapova and Badanj, more extensively in the former and sporadically in the latter (from 1986–87, led by Z. Kujundžić and R. Whallon). At the Russian site of Kapova, after a succession of campaigns led by O.N. Bader (1960–78), V.E. Shchelinsky completed a comprehensive study of the cave (Shchelinsky 1987, 1990a, b, 1993, 1997, 2001; Ščelinskij and Širokov 1999). He found an UP cultural layer in the so-called 'Chamber of Signs', containing a significant number of limestone blocks (including one bearing an image of a mammoth), along with lithics, faunal remains, stains and pieces of ochre, decayed tree remains, a bone tool, a ceramic cup, more than 150 personal ornaments (made from shells, serpentinite, and other materials). It is not surprising, then, that the next Paleolithic cave art discovery outside of southwestern Europe was made in the southern Urals. In 1980, V.T. Petrin, S.E. Chairkin, and V.N. Shirokov discovered red and black paintings in Igniatievkaya cave, relatively close to Kapova (~250 kilometers away). The site was studied from 1980 to 1986 by V.T. Petrin, and in 1995 by V.E. Shchelinsky and V.N. Shirokov (Petrin 1997; Ščelinskij and Širokov 1999). These scholars recorded over fifty motifs that they identified as Paleolithic due to their iconography, style, and resemblance to Kapova paintings. The archaeological excavation undertaken in the main chamber of the cave revealed remains of ancient human occupations. Three charcoal samples from an archaeological layer yielded late Pleistocene dates of ~18–11 ka cal BP (Ščelinskij and Širokov 1999), which may potentially overlap at ~16 ka cal BP when calibrated (Bronk Ramsey 2017; Reimer et al. 2020). Three direct radiocarbon analyses were later performed on two charcoal lines and a black mammoth depiction (Steelman et al. 2002). The results obtained were incongruous and the ages returned were all post-Pleistocene (the oldest ~8.3–8 ka cal BP). The authors of the study rejected the possibility of modern carbon contamination. However, a number of species among the fauna represented in the cave art were extinct in the area well before the end of the Pleistocene; I have recently verified the paintings *in situ* and there are clear depictions of mammoths, woolly rhinoceros, and even a Bactrian camel. Furthermore, the graphic conventions of the figurative paintings show many analogies with those found at Kapova, and the direct dates obtained from Igniatievskaya cave paintings do not fit within the chronological frame of human occupations identified in the same site. The authors propose several possibilities to explain these discrepancies (Steelman et al. 2002, 348): (1) the image does not depict a 'mammoth'; (2) the species existed in the area for over 4000 years longer than previously expected; (3) the depiction was not that of a living mammoth; or (4) the charcoal was from a younger (more recent) overpainting of an older image. Concerning the first option, a positive identification of the species can be ascertained from the clarity and detail of the image. The second and third hypotheses cannot explain the discrepancy in radiocarbon ages between the artwork and the prehistoric occupation of the site; they also do not account for stylistic similarities with UP cave art from other sites. As such, the fourth hypothesis seems to be the most reasonable, although I would not exclude the possibility of carbon contamination, especially considering the amount of modern graffiti that can be found on the walls of the caves. More recently, a new study has analysed the calcite layers overlying and underlying a number of the paintings in the cave (Dublyansky et al. 2021). The ^{230}Th dates obtained on the flowstone that formed above and below the red and black paintings in Ignatievskaya cave situate the chronology of the artistic activity between ca. 78 ka and ca. 10 ka. A number of authors have called into question the reliability of the method in its application to thin calcite layers covering cave paintings (see, for instance, White et al. 2020). That said, the iconography (Pleistocene fauna) and the style of the artwork are compatible with a Pleistocene chronology.

More recently, archaeologists have reported cave art at the site of Serpievskaya 2, located just ~15 km from Igniatievskaya cave (Shirokov and Petrin 2013). In this case, archaeologists have reported a dozen of red paintings and some engravings, most of them non-figurative motifs (with the possible exception of two zoomorphic figures). Although the site has not been studied as extensively as the previous two sites in the Urals, the Palaeolithic antiquity of these artworks seem to be justified *a priori*, based on technical and somewhat iconographic grounds, especially when considering some relevant analogies with Igniatievskaya's paintings. Nevertheless, the evidence is currently too scarce to make a strong case for the Pleistocene age of the paintings, and further research at the site is necessary to establish its chronology.

From 2008 to the present, the research at these three sites has entered into a new phase. Over the past decade, V.S. Zhitenev (Lomonosov Moscow State University) has

led the 'Southern Urals archaeological expedition' which undertakes the archaeological investigations of decorated caves. Due to its archaeological relevance, efforts have mainly been concentrated in Kapova. As a result, knowledge surrounding this site has increased notably in the last decade. Several works have been published, including new data regarding the archaeological context of the UP human occupations inside the cave (Zhitenev 2016, 2018), a number of radiocarbon and U-series dates (Zhitenev et al. 2015; Dublyansky et al. 2016, 2018), new pigment composition analyses (Pakhunov and Zhitenev 2015), and a comprehensive study of the rock art (Ruiz-Redondo et al. 2020b). It is expected that similar research at Igniatievskaya and Serpievskaya 2 will be undertaken in the coming years.

In September 2009, a team of speleologists announced the discovery of a number of possible Palaeolithic drawings at the cave of Coliboaia (Romania). The speleologists and the local authorities contacted Jean Clottes for an international expert assessment. Together with other French collaborators, Clottes visited the cave in May 2010, confirming the UP age of the motifs based on stylistic and iconographic criteria (e.g., some drawings clearly represent Pleistocene fauna). Several animal figures were reported, including horses, bison, rhinoceros, and the possible head of a bear (Clottes et al. 2012), all of them drawn in charcoal. Four samples were taken for radiocarbon dating, three from the IAC of the art, and one taken directly from a horse figure. Based on the result of radiocarbon dating, archaeologists suggested a very early chronology that could correspond to (A) two periods of decoration separated by 4000 years (~37–35 and ~ 33–30 ka cal BP), or (B) a single period of decoration from 35–33 ka cal BP. The second scenario would imply that three of the samples underestimated the age of the drawings due to modern carbon contamination (Gély et al. 2018). Whatever the case, the members of the team that studied Coliboaia were confident that the drawings are Aurignacian in origin. However, the lack of typical Aurignacian archaeological material from within the cave has led some scholars to question the proposed chronology (Cârciumaru et al. 2019). Instead, Cârciumaru and his collaborators have suggested a Gravettian chronology for the drawings. New research and, eventually, independent evaluations could help to resolve the dating issue in the future. Regardless of the precise chronology, it seems clear that Coliboaia's art is from the UP and, therefore, this place is important to understand the dissemination of Paleolithic parietal art across Europe.

Coliboaia is not far from the Balkan Peninsula, an extensive area that probably played an important role in the arrival of Anatomically Modern Humans (hereafter AMH) into Europe but that has been rarely examined in terms of Paleolithic art. Being aware of this situation and the archaeological potential of the area, I decided to assemble a team to survey potential rock art sites in Southeast Europe. Our work began in Serbia in 2012. During that first stage of the project, we surveyed twenty-nine cave sites. In Selačka 3, we found two red fingerprints which, based on stylistic criteria, may be Paleolithic in nature (Ruiz-Redondo 2014; Ruiz-Redondo et al. 2018); this argument is strengthened by the presence of Early Upper Paleolithic industry at the site (Kuhn et al. 2014). Although we looked for further evidence that could help to establish a more precise chronology for the red paintings, our efforts were unsuccessful (Ruiz-Redondo et al. 2020a). Despite the limited impact of the discovery, this find reinforced our conviction that the Balkan Peninsula had great potential for establishing the scope and geographic dissemination of UP art. For this reason, a few years later, we enlarged the team and expanded the territory to be surveyed, which then included Croatia (33 sites), Bosnia and Herzegovina (5 sites), Montenegro (5 sites), Bulgaria (1 site), and a number of additional sites in Serbia (18 sites). These sites constituted the core of two consecutive research projects: BALKARTS (funded by the Programme IdEx University of Bordeaux) and PALAEOARTEAST (funded by the British Academy). In this context, we studied the paintings of Romualdova pećina (Istria, Croatia) in 2017. D. Komšo discovered the site during a visit in 2010. While he was the first to suggest a possible Palaeolithic chronology for the paintings, he was unable to elaborate on its initial assessment. For this reason, we decided to include the site in our project. As a result, we were able to document a minimum of 44 graphic units (that include at least four figurative depictions) that, based on a number of iconographic and stylistic criteria as well as the examination of the IAC, are from the UP (Ruiz-Redondo et al. 2019). This is the first site containing UP figurative art discovered in Southeast Europe and, therefore, this research marked a milestone in the study of European cave art, filling a regional gap in the knowledge and contributing to a better understanding of the connection between UP Eastern and Western European symbolic traditions. The discovery of Romualdova pećina also demonstrated the potential of this area for Paleolithic art studies. As such, our current research continues to focus on this territory, and our future plans include intensifying research at a number of key sites (e.g., Badanj, Romualdova), as well as expanding the survey to nearby countries such as Greece and Bulgaria.

On the other side of Europe, three scholars (P. Bahn, P. Pettitt, and S. Ripoll) undertook a number of surveys in the United Kingdom in 2003, aiming to discover Paleolithic cave art. Fortunately, they started their search at Creswell Crags, where they discovered a series of engravings in the cave of Church Hole (Bahn et al. 2003). The discovery of the engravings of Church Hole represented the first convincing evidence for the existence of UP rock art in the British Isles. Among the engravings, archaeologists documented several figurative motifs, particularly animal figures. The Paleolithic

antiquity of the art was initially based on stylistic grounds (Bahn et al. 2003), and was later supported by radiometric dating (Pike et al. 2005). Both methods situated the engravings at the end of the Pleistocene, associated to the regional Late Upper Paleolithic (~15–13 ka cal BP). The discovery of Church Hole's cave art significantly expanded the known territory of cave art in Europe, opening the door to further explorations. Unfortunately, no other convincing evidence from the UK has been reported so far.

2.4 Beyond Europe

The geography of Paleolithic rock art research has expanded beyond Europe in recent decades (Fig. 2.1). Due to its proximity to the European 'cynosure,' it is worthwhile to first mention the discovery of the Qurta engravings in Egypt. The motifs, distributed among three sites, display a wide variety of animal figures,

> In total there are at least about 160 individual images. The rock art of Qurta consists mainly of naturalistically drawn animal figures. Bovids are largely predominant (at least 111 examples), followed by birds (at least 7 examples), hippopotami (at least 3 examples), gazelle (at least 3 examples), fish (2 examples) and ass (1 example). In addition, there are also (at least) 7 highly stylised representations of human figures (shown with pronounced buttocks, but no other bodily features) (Huyge et al. 2007, 1).

Although archaeologists have not established a precise chronology for this rock art, depictions show a number of similarities with the Magdalenian art from Western Europe. Building on this stylistic foundation, the scientific team linked Qurta's engravings to the Ballanan-Silsilian culture, a Late Paleolithic culture dated to about 15,000 years. While this possibility cannot be ruled out, stronger evidence must be provided to support a Late Pleistocene chronology of these engravings.

On the other side of the world, a number of archaeologists suggested a very old chronology for some Australian picto-

Fig. 2.1 Paleolithic rock art sites reliably dated out of southwestern Europe (Portugal, Spain, France and Italy). 1) Church hole, 2) Romualdova Pećina, 3) Badanj, 4) Coliboaia, 5) Kapova, 6) Igniatievskaya, 7) Serpievskaya 2, 8) Qurta, 9) East Kalimantan caves (>4 sites), 10) Leang Timpuseng & Leang Bulu' Sipong 4, 11) Kimberley rock-shelters (>4 sites), and 12) Nawarla Gabarnmang

grams (Chaloupka 1993). For instance, Chippindale and Taçon (1998) developed a number of ingenious indirect dating methods (based on style, superimposition, the introduction/extinction dates of some taxa depicted, and the IAC) to estimate the chronological sequence of Arnhem Land rock art. They set their 'Old Period' at ~50–30 ka cal BP, coinciding with the first human occupation of the region. The first direct radiocarbon dates of Australian rock art were published in the 1990s. Two samples taken from a painted motif in the Sydney region yielded two results: ~34 ka cal BP and ~ 7 ka cal BP (McDonald et al. 1990). Considering the significant discrepancy of these results and the fact that the samples seem to belong to a single 'drawing event' (McDonald 2000), it is impossible to determine which of the results, if either, are accurate. Indirect dating has been extensively tested in Australian rock art (for a compilation see David et al. 2013a). This has especially focused on the use of both optically stimulated luminescence (OSL) and radiocarbon dating to determine the ages of mud-dauber wasp nests overlying or underlying parietal motifs. In Kimberley (northern Australia), some of these nests overlying an anthropomorphic figure and a hand stencil yielded OSL dates of 16,400 ± 1800 and 17,500 ± 1800 years, which should be considered minimum dates for the paintings (Roberts et al. 1997). A recent investigation surrounding the 'Irregular Infill Animal Period' from Kimberley offered an extensive series of radiocarbon dates on wasp nests related to the rock art (Finch et al. 2021). Based on these results, Finch and his collaborators estimated a timespan for this phase beginning around 17.2 ka cal BP (at minimum) and lasting until at least 15.1 ka cal BP (or possibly as late as 13.1 ka cal BP). In Arnhem Land, a slab with a charcoal painting was found in a stratified context at Nawarla Gabarnmang. The fragment came from the collapse of the ceiling, which still contains other paintings, and archaeologists have established that the slab was decorated prior to its fall. The rock slab was found lying between two sediment layers dating to ~13 ka and ~ 45 ka cal BP. Moreover, using the radiocarbon method, archaeologists have been able to date the ash that had adhered to the painted stone's posterior to about 28,000 cal BP (David et al. 2013b). Given that the ash remains must have adhered to the slab after its fall, this latter date should be taken as a *terminus ante quem* for the art. The chronological evidence from these sites seems to indicate that Paleolithic art had developed in Australia at least 28,000 years ago, but the origin of image-making is most likely older, especially since this art is connected to the recently discovered Pleistocene cave art on the neighbouring islands of Sulawesi and Borneo.

In 2014, Maxime Aubert and others published a set of U-series dating results of calcium carbonate deposits directly associated with rock art motifs on Sulawesi (Indonesia). A number of them, coming from different archaeological sites in the Maros-Pangkep karsts, are from the late Pleistocene (Aubert et al. 2014). For instance, at Leang Timpuseng, a figurative depiction of a suid was dated to at least 35.4 ka cal BP; 2). Similarly, at Leang Barugayya 2, a painting of an unidentified suid-like animal has a minimum age of 35.7 ka cal BP. Finally, twelve hand stencils from various sites also yielded minimum ages of between 39.9 and 17.4 ka cal BP. In 2018, a team led by Aubert published several U-series dating results associated with a number of paintings from different cave sites on Borneo (Aubert et al. 2018b). The paintings are from the Pleistocene, including a hand stencil dating back at least 40,000 years. A year later, the team published the 'Earliest hunting scene in prehistoric art' (Aubert et al. 2019), also from a cave site in Sulawesi. This assessment is questionable on several grounds. First, it is purely speculative that the depictions in the purported scene are engaging in any sort of hunting activity. Second, it is far from clear whether the so-called 'therianthropes' are 'anthropomorphic', or even if they are part-human, part-animal representations. Furthermore, even accepting the authors' interpretation regarding these images, the contemporaneity between the 'hunted animal' and the 'hunters' is not conclusive, and only the former has been indirectly dated by U-series. Regardless of whether or not this depiction represents a hunting scene, the dating results for the panel demonstrate beyond doubt the existence of Pleistocene art in Indonesia. Finally, recent indirect dates (U-series on calcium carbonate deposits) were provided for additional cave paintings in Sulawesi, dating some of its art back to possibly ~44 ka cal BP (Brumm et al. 2021).

Despite the many problems and challenges of using U-series analysis for dating rock art (see Plagnes et al. 2003; Aubert et al. 2018a; Pearce and Bonneau 2018; Slimak et al. 2018; White et al. 2020), the results seem reliable considering: (1) The increasing number of coherent UP dates in the area; (2) that several of these results show a coherent stratigraphy within the calcite deposits; and (3) the fact that at least two of the rock art sites have revealed *in situ* archaeological evidence for UP pigment processing (Brumm et al. 2017, 2018) and portable art (Langley et al. 2020). In short, the Indonesian archipelago is now strongly positioned as one of the most relevant emergent areas for Pleistocene rock art research.

2.5 Conclusion: Global Research for a Global Phenomenon?

Globalization is having an impact on our research and knowledge of Paleolithic art. In the past three decades, we have witnessed an expansion of the geographical scope of this phenomenon – an expansion that, as it has happened with the process of globalization that started in the 1950s (Mazlish 2011), has significantly increased during the twenty-first

century. In the case of Pleistocene art, international collaborations and a more efficient dissemination of scientific knowledge has greatly contributed to this shift. This is not something necessarily new. For instance, as we have seen in this paper, the authentication of Kapova's paintings was possible because the work of early French prehistorians was translated into Russian at the time. This allowed Bader to exchange his impressions with other specialists from around the globe at the IV UISPP conference held in Moscow in 1962. Some decades later, the twenty-first century has witnessed a proliferation of Pleistocene rock art discoveries in places other than the Franco-Cantabrian area. For instance, we have now confirmed the existence of UP cave art across Europe from England to the southern Urals. Moreover, Australia and Indonesia have emerged as new centres for research in Pleistocene symbolism. As a result of these developments, the 'oldest' art of humankind can be currently found in several parts of the globe.

The question is whether we can still speak of 'Paleolithic art' as a single unitarian phenomenon. We need to take into consideration a number of issues. To begin, the geographical distance between the discoveries in Asia/Oceania and the traditional European sites is evident. However, the presence of patterns and themes common to both territories (style of zoomorphic figures, hand stencils, pictorial techniques) somewhat link these distant regions. In the current state of the art, our knowledge is still too fragmentary to assess whether Pleistocene art(s) had multiple independent origins or emerged from a common source, either in Western Europe, Southeast Asia, Oceania, or any other area (Levant?). Nevertheless, the fact that we are discussing this issue represents a significant step forward with respect to what happened only ten years ago, when most scholars simply took for granted that rock art had originated in Western Europe.

But are all these new territories ready to reach their full potential for developing rock art research? Australia, due to its long research tradition as well as the numerous resources that this country dedicates to the study of rock art, is certainly ready to face the new challenges of Pleistocene rock art. For instance, research teams from this country are leading different projects in other areas, such as Indonesia. However, in Eastern Europe, the number of sites, projects and specialists is still clearly insufficient, and many rock art researchers working in the area come from other countries and places. In recent years, some of us have tried to establish a solid network of collaboration, but the fact remains that, in Eastern Europe, rock art research is still far (quantitatively speaking) from the investigations into UP art in Western Europe. An example can illustrate this point. While we undertook the BALKARTS project (a single team with nine project members for an archaeological survey in four countries), about 50 projects on UP rock art were undertaken in Western each year. Considering that Franco-Cantabrian art was discovered about 140 years ago and has a wide array of dedicated resources in comparison with other areas, we can only expect that the difference between the amount of information/data originated in Western Europe and other areas will increase in future years. Additionally, while it is true that the global picture has changed, the fact remains that most countries have not yet yielded any evidence concerning UP art and there are very few teams working in these countries. Hence, although the discovery of Pleistocene rock art in several countries represents a step forward for the body of knowledge surrounding this phenomenon, there are still significant differences between countries and regions. In this setting, we can conclude that if Palaeolithic rock art has become a global phenomenon, its investigation is still far from achieving the same reach.

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Some Implications of Pleistocene Figurative Rock Art in Indonesia and Australia

3

Adam Brumm, Adhi Agus Oktaviana, and Maxime Aubert

Abstract

Until recent years, most western scholars had overlooked the existence of rock art in Indonesia or viewed it as being of limited antiquity and of largely regional-interest only. In 2014, however, an Indonesian-Australian team announced the results of a program of Uranium-series (U-series) dating of rock art in Maros-Pangkep, Sulawesi, including a surprisingly early antiquity of at least 39.9 ka for a hand stencil and 35.4 ka for a figurative animal painting. U-series dating more recently has yielded minimum ages for figurative animal painting of 40 ka in Kalimantan and 45.5 ka in Maros-Pangkep, with the latter presently constituting the world's oldest dated example of representational art. Indonesia's previously little-known rock art has been propelled to the global stage. Here, we examine how scholars are grappling with the implications of 'ice age art' in Indonesia and its integration, for the first time, into models of early human artistic culture in other parts of the world. In particular, we discuss the seemingly close stylistic parallels between Late Pleistocene figurative animal art in Indonesia and early representational depictions of animals in the Arnhem Land and Kimberley regions of northern Australia. We consider scenarios that could explain these similarities, including the idea that a single figurative rock art style spread into Australia from Wallacea during the early movements of our species in the region.

Keywords

Sulawesi · Indonesia · Rock art · Late Pleistocene · Figurative art · Animal painting · Wallacea

3.1 Introduction

The presence of rock art in Indonesia was first reported by a western observer in 1678 (Tan 2014), long before the celebrated discovery of the animal images at Altamira in 1878 that would culminate in the scientific recognition of the existence of Palaeolithic rock art (Bahn and Vertut 1997). Despite this long pedigree, until recently relatively little systematic field research had been undertaken by western researchers into the nature and distribution of rock art in Indonesia and wider Southeast Asia, collectively described just a decade ago as 'one of the least understood regions of the world in terms of its rock art heritage' (Taçon and Tan 2012, 207). Most work in Indonesia and other Southeast Asian countries (e.g., Thailand) had been done by local scholars and was published in domestic, non-English language journals that are not easily accessible to western scholars (Tan 2014). It is therefore not surprising that, until recently, most global rock art syntheses published by western scholars have failed to include more than a fleeting reference to the rock art of Indonesia and Southeast Asia.

In 2014, however, a team of Indonesian-Australian scientists reported Late Pleistocene ages for rock art in limestone caves and shelters in the tower karst region of Maros-

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Pangkep, South Sulawesi (Fig. 3.1). Using Uranium-series disequilibrium (U-series) analysis of associated calcite deposits (coralloid speleothems — 'cave popcorn'), Aubert et al. (2014) inferred a minimum age of 39.9 ka for a hand stencil in the limestone cave of Leang Timpuseng. These researchers also showed that a figurative painting of a pig on the same panel was created at least 35.4 ka. This 2014 paper was followed by another U-series rock art dating study focused on the limestone karst area of Sangkulirang-Mangkalihat in East Kalimantan, Borneo (Fig. 3.1). Here, Aubert et al. (2018) obtained a minimum age of 40 ka for a figurative painting of an indeterminate animal. These studies were followed by two U-series rock art dating papers reporting: (1) a large naturalistic painting of a suid at Leang Tedongnge (Maros-Pangkep) with a minimum age of 45.5 ka (Brumm et al. 2021a); and (2) a multifigured hunting scene created at least 43.9 ka at Leang Bulu' Sipong 4 in the same karst area (Aubert et al. 2019).

These U-series dating breakthroughs in Sulawesi and Kalimantan have considerably raised the international profile of rock art in Southeast Asia. Subsequently, the rock art of Indonesia is, for the first time, undergoing a process of academic 'globalization' in the sense that authorities are beginning to consider the role that this formerly poorly understood corpus of parietal imagery may have had in the development of ancient artistic cultures in other parts of the world. For example, some scholars have posited that the Pleistocene rock art of Indonesia is strikingly similar to that of Upper Palaeolithic Europe. According to Derek Hodgson, 'the [figurative animal] depictions of the Sulawasi[sic] artists display a number of similarities with those from Europe [and] the observable differences seem marginal' (Hodgson and Watson 2015, 784). This same neuroscientist and rock art authority has also argued that the Pleistocene animal art of Sulawesi and Europe is markedly similar in that it is characterised

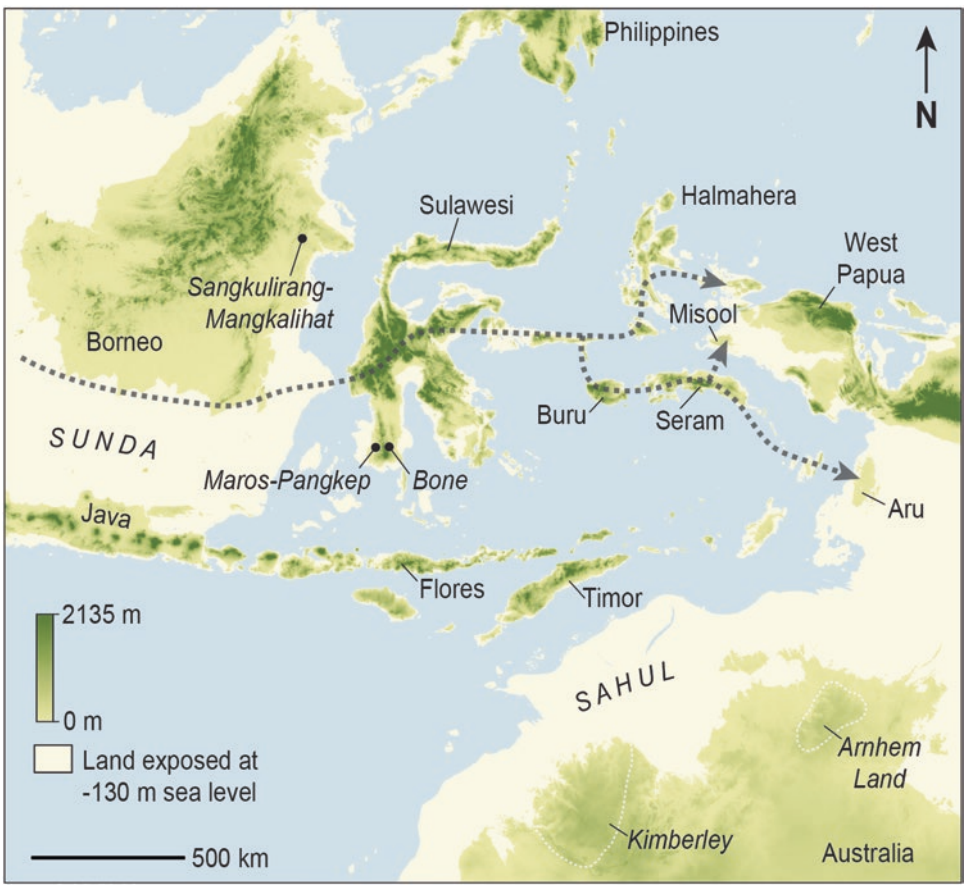

Fig. 3.1 Map of Island Southeast Asia and northern Australia. Dated Late Pleistocene rock art is reported from the limestone karst regions of Sangkulirang-Mangkalihat in northeastern Kalimantan (Indonesian Borneo) — at the very eastern extent of the Sunda landmass — and the Maros-Pangkep district in the south of Sulawesi — the largest island in Wallacea, the biogeographically-distinct zone of oceanic islands situated between Sunda and Sahul. Similar rock art has also been found in the Bone karsts to the east of Maros-Pangkep, as well as in the northern Australian rock art provinces of Arnhem Land and the Kimberley. It has been proposed that modern human seafarers followed the so-called 'northern route' (indicated by grey dotted lines) from Borneo to West Papua during the initial colonisation of Sahul. Base map prepared by M. Kottermair and A. Jalandoni

by animal outline depictions shown in profile (side) view, and that these portrayals of animals also tend to exaggerate body proportions (Hodgson and Watson 2015, 778; see also Hodgson and Pettitt 2018 for broadly similar comments). The Upper Palaeolithic cave art of western Europe has long served as a yardstick of ancient human artistic endeavour (Bahn and Vertut 1997). It is therefore inevitable, perhaps, that some authorities will contemplate how the very old Indonesian rock art 'measures up' to this record. Leaving aside the fact that the vast majority of Upper Palaeolithic rock art in Europe is undated (Clottes 2016), and that about 80% of the known artworks can all be attributed stylistically to the Magdalenian period (von Petzinger and Nowell 2011) — i.e. tens of thousands of years after the dated animal art in Indonesia – there is little to be gained by directly comparing the Pleistocene rock art traditions found in such widely separated parts of the world. Portraying animals as outline depictions shown in side profile is a ubiquitous feature of visual cultures worldwide (Halverson 1992; Taçon et al. 2010). As Meyering et al. (2021, 3) point out, 'this particular profile view "grammar" for depicting animals can be seen as a pan-global phenomenon'. Others have argued that apparent parallels in the early animal art of Late Pleistocene Sulawesi and Europe are best explained by the shared concerns of small-scale societies engaged in a hunting and gathering lifestyle, by commonalities in human-animal relations among foragers, and other convergences (Taçon et al. 2010, 2014).

On the other hand, some scholars have noted what appear (to us) to be much more compelling resemblances between the Pleistocene animal art of Indonesia and certain early northern Australian rock art styles featuring naturalistic depictions in the famously art-rich regions of Arnhem Land and the Kimberley (Aubert et al. 2014; Finch et al. 2021; Taçon et al. 2014; Taçon and Webb 2017). It has long been assumed that 'Art was almost certainly part of the cultural repertoire of the first Australians' (Balme et al. 2009, 64). Cultural convergence may have been a factor here (Taçon et al. 2014), but the notion of direct transmission of an early rock art style via modern human migration from Sulawesi to northern Australia is at least theoretically plausible, given that seafaring hunter-gatherers had to pass through Wallacea, and probably Sulawesi (Kealy et al. 2018), to reach northernmost Sahul by 50 ka (Allen and O'Connell 2020), and possibly up to 65 ka (Clarkson et al. 2017). Here, therefore, we discuss the nature of the apparent similarities between the early animal art styles of southern Sulawesi (presently the oldest known in the region) and those of Arnhem Land and the Kimberley, and consider what they could mean.

3.2 Current Rock Art Dating Evidence from Indonesia

3.2.1 Sulawesi

To our knowledge, the Maros-Pangkep rock art was first described in the published literature by van Heekeren (1952). It has been intensively studied over recent decades, largely by Indonesian university students and cultural heritage professionals (e.g., see Eriawati 2003; Permana 2015a; Saiful and Burhan 2017; but see also Brumm et al. 2021b). At the time of writing, about 600 individual rock art sites are presently documented in the region. In terms of published data, U-series dates are now available on 26 coralloid samples associated with 20 rock art motifs (13 hand stencils, seven figurative motifs) from ten sites (Aubert et al. 2014, 2019; Brumm et al. 2021a). All motifs yielded minimum Late Pleistocene ages. The earliest minimum U-series age obtained (45.5 ka) is for a suid motif at Leang Tedongnge (Brumm et al. 2021a). This dated suid (pig 1) is interpreted as a Sulawesi warty pig (*Sus celebensis*). It is positioned on a panel with at least two other warty pigs that are facing one another (Fig. 3.2). One (pig 3) seems to be leaping, while the other (pig 2) is in a more passive pose. We interpret this artwork as a composed scene portraying an episode of social interaction between a group of warty pigs. Similarly, the dated panel at Leang Bulu' Sipong 4 comprises a multifigured composition that features small therianthropic figures confronting anoas (*Bubalus* sp.) and warty pigs (Aubert et al. 2019) (Fig. 3.3). The small figures display a mix of human and animal characters: one appears to be depicted with a beak, while another has a tail. Several of these enigmatic beings seem to be holding long thin objects which may represent spears or ropes, that connect with the running animals (Aubert et al. 2019). The composition of this dated panel at Leang Bulu' Sipong 4 is suggestive to us of a mythical hunting narrative.

The youngest minimum age (17.4 ka) inferred for Maros-Pangkep rock art is for a distinctive style of hand stencil art (Aubert et al. 2014). First described by van Heekeren (1952), these comprise 'normal' anatomical hand stencils where the finger shape has been intentionally modified to produce claw-like digits (Oktaviana et al. 2016). This particular style of stencilling art appears to be unique to Sulawesi. At one Maros cave, Gua Jing, Aubert et al. (2014, 225) also obtained minimum and maximum ages for a 'normal' hand stencil created on an actively forming coralloid speleothem, demonstrating that this particular artwork was created at some point between 22.9 and 27.2 ka. Coupled with evidence from Leang Timpuseng and Leang Tedongnge, these bracketing U-series ages suggest that 'normal' hand stencil art was pro-

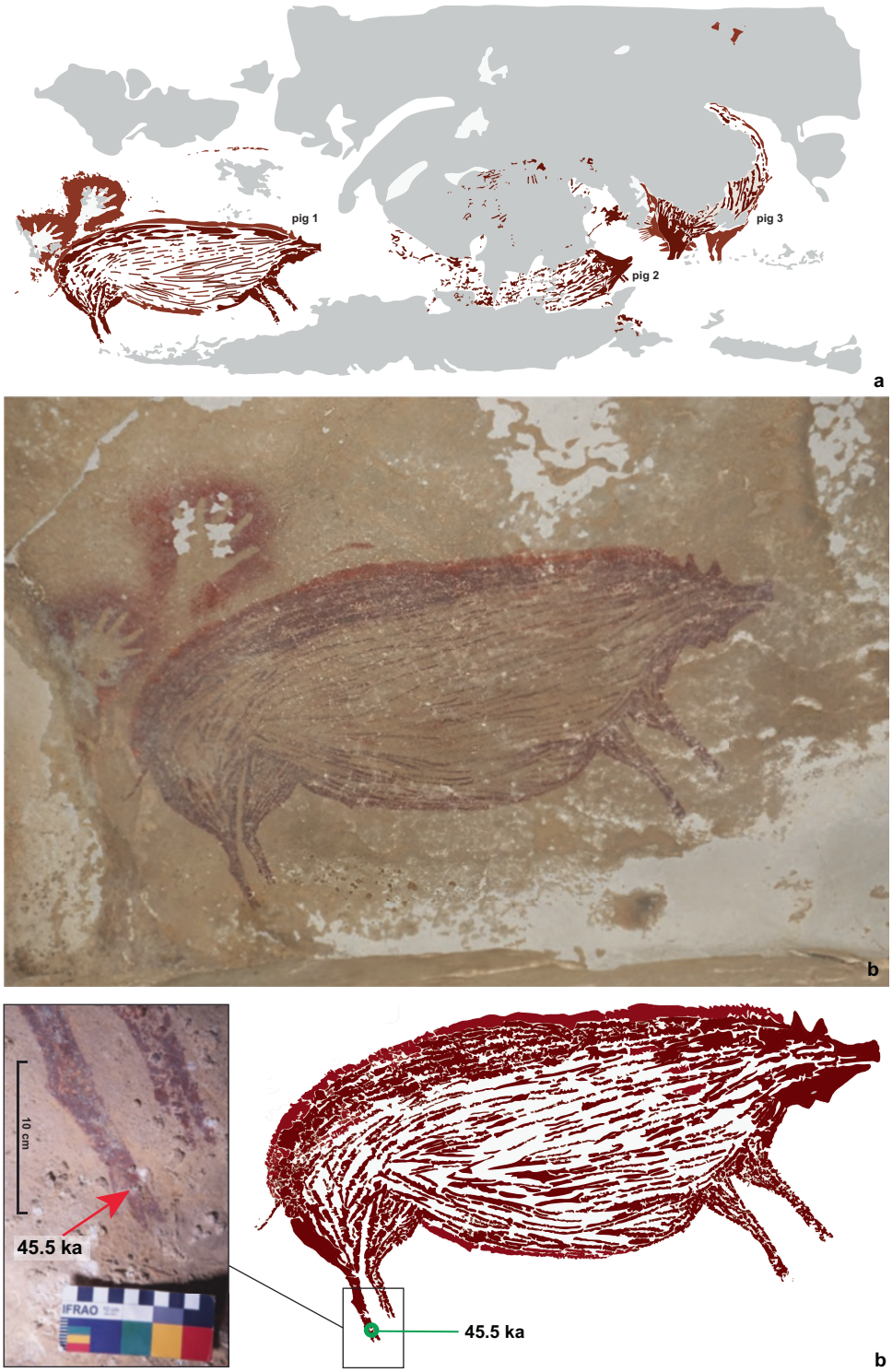

Fig. 3.2 Dated Late Pleistocene suid painting from Leang Tedongnge (Maros-Pangkep). The dated motif (pig 1) is part of a rock panel (**a**) featuring at least two other pigs (denoted pigs 2–3); (**b**), photograph of pig 1. A coralloid speleothem sample collected from pig 1 yielded a minimum Uranium-series age of 45.5 ka, as reported in Brumm et al. (2021a)

duced in the Maros-Pangkep karst area over a period of at least 12,700 years, while parietal art in general was produced over a period of at least 18,300 years.

Of particular note is the early focus in the Sulawesi rock art on composed scenes as we would define them in the context of modern western visual culture; that is, clear figurative depictions of sets of figures in spatial proximity to each other and from which one can infer actions taking place among the figures (Davidson 2021; Davidson and Nowell 2021a, 2021b; see also Azéma and Rivère 2012). As noted,

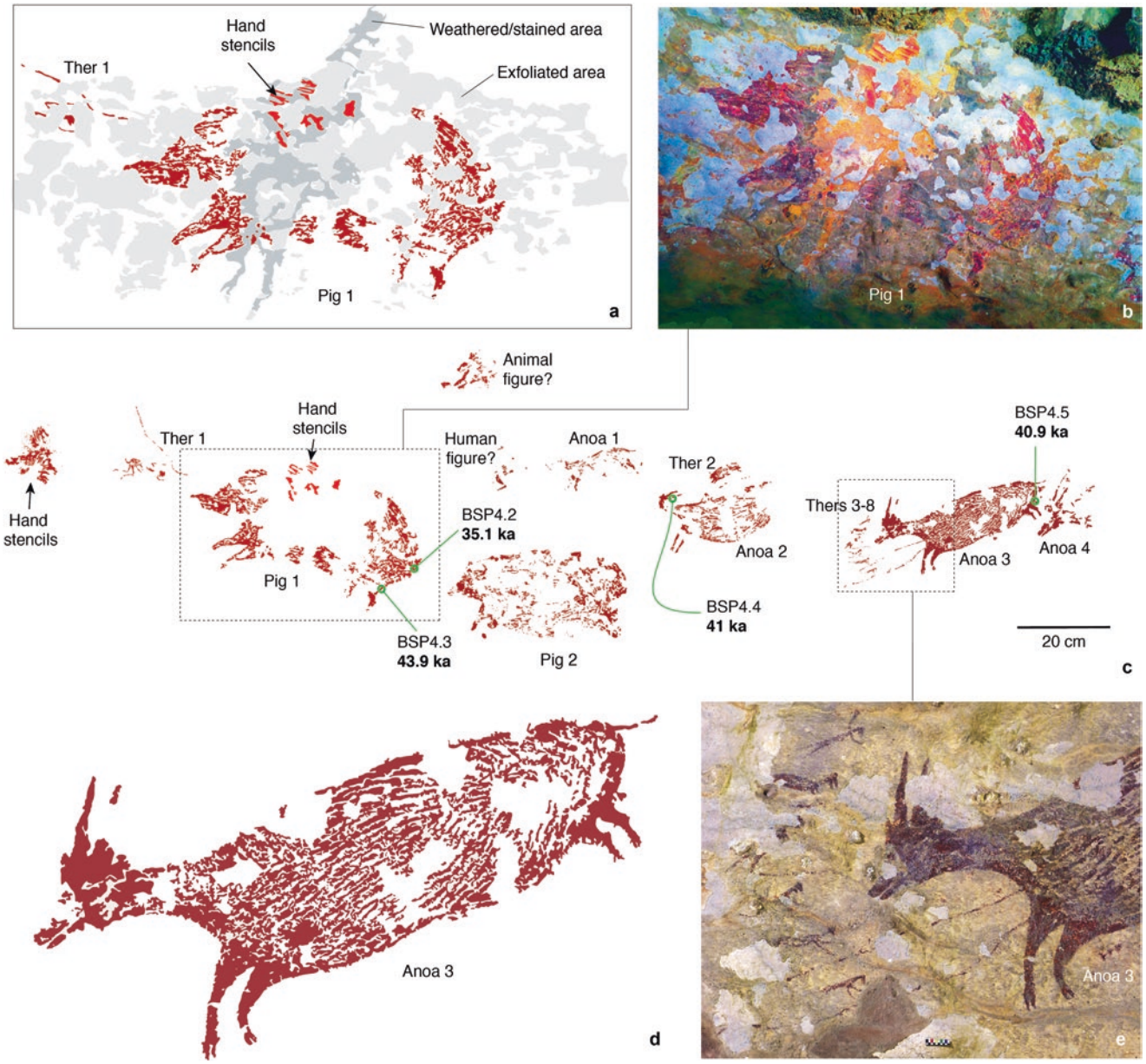

Fig. 3.3 Dated Late Pleistocene animal paintings from Leang Bulu' Sipong 4 (Maros-Pangkep). A total of four minimum Uranium-series ages was obtained for three animal figures (denoted Pig 1 (**a**–**b**, **c**), Anoa 2 (**c**), and Anoa 3 (**c**, **d**–**e**)) on this multifigured rock art panel interpreted as a single narrative composition — a hunting scene (Aubert et al. 2019). The photograph of the animal motif (**a**) has been enhanced using the Decorrelation Stretch (*DStretch*) computer program. The small anthropomorphic 'hunters' (**a**, **c**, **e**) seem to have been intentionally depicted as composite beings with both human and animal characteristics, and hence they are interpreted as therianthropes (denoted Thers 1-8) (Aubert et al. 2019)

in Maros-Pangkep the oldest dated naturalistic animal motifs are in rock art panels at Leang Timpuseng and Leang Bulu' Sipong 4 that we construe to be narrative representations (scenes) (Figs. 3.2 and 3.3). We also draw reference to the ground line painted below the dated suid figure at Leang Timpuseng (Aubert et al. 2014). The latter is a simple horizontal red line atop which the suid seems to be standing; no other aspect of the physical environment of this animal is shown (e.g., grass, trees, hills). For Davidson and Nowell (2021b, 328), the ground line painted below the suid at Leang Timpuseng 'may be the makings of a scene'. Undated animal figures produced in the same style are also portrayed on ground lines at Gua Uhallie, a rock art site in Bone (Permana 2015b).

3.2.2 Kalimantan

Sangkulirang-Mangkalihat is a 4200 km^2 limestone karst area located in a remote part of northeastern Borneo. Rock art was first identified there in 1994 (Fage et al. 2010; Setiawan 2015). Some 52 sites have now been documented. Aubert et al. (2018) dated 15 calcium carbonate samples associated with 13 parietal motifs at six cave sites. The earliest minimum age is from Lubang Jeriji Saléh (previously known as Gua Saleh cave, dated by Plagnes et al. 2003). Here, Aubert et al. (2018) obtained a U-series age of 40 ka for a calcium carbonate deposit overlying a large reddish-orange-coloured painting of a quadruped, interpreted as a still-extant wild Bornean banteng (*Bos javanicus lowi*: Fage et al. 2010). A minimum U-series age of 37.2 ka was also obtained for two hand stencils produced in the same reddish-orange hue (Aubert et al. 2018).

In addition to these dating results, Aubert et al. (2018) provided a chronological age for a distinct rock art style previously inferred on the basis of stylistic analysis and studies of superimpositioning to be younger than the reddish-orange-coloured naturalistic animals and hand stencils (Fage et al. 2010). This style is characterised by dark purple (mulberry) hand stencils, some with elaborate decorative elements in the interior portions of the stencils — including vine-like motifs interconnecting individual hand stencils — as well as small human figures elegantly portrayed in the same mulberry hue. These human figures (termed 'Datu Saman' figures; Aubert et al. 2018) are often depicted with large headdresses; some are represented holding material culture objects, including possible spearthrowers, and in some panels these figures are shown in narrative compositions hunting animals (typically deer). Based on minimum and maximum age estimates, Aubert et al. (2018) infer that the mulberry-hued hand stencils appear in the rock art sequence around 20 ka. A Datu Saman figure yielded a minimum age of 13.6 ka. This U-series dating study provides evidence for a stylistic change in the local Kalimantan rock art sequence during the Terminal Pleistocene.

3.2.3 Figurative Animal Art in Maros-Pangkep

The dated assemblage of Late Pleistocene figurative animal art from Maros-Pangkep now comprises seven individual motifs with U-series ages: (1) a warty pig from Leang Tedongnge, with a minimum age of 45.5 ka; (2) a warty pig (minimum age 43.9 ka) and two anoas (minimum ages of 41 ka and 40.9 ka, respectively) from Leang Bulu' Sipong 4; (3) an indeterminate, suid-like animal from Leang Barugayya 2 (minimum age 35.7 ka) (Aubert et al. 2014); (4) a suid (possibly a female warty pig) from Leang Timpuseng (minimum age 35.4 ka); and (5) a warty pig from Leang Balangajia 1 (minimum age 32 ka) (Brumm et al. 2021a) (Fig. 3.4). Here we discuss only the six identifiable motifs with minimum U-series ages.

The dated figures all consist of monochrome paintings executed using various shades of red to mulberry pigment. In one case, at Leang Tedongnge, two distinct shades of colour were used to produce a single suid motif, likely reflecting a later repainting or retouching episode (Brumm et al. 2021a). So far as we are able to discern, the paint was applied directly to the rock surface using broad, free-flowing brush strokes. The paintings are usually large to life-sized (or bigger), although the anoa motifs at Leang Bulu' Sipong 4 are relatively small (e.g., Anoa 2 measures 74 × 29 cm). In all cases, the animals are represented as pictorial outlines and the figures are portrayed in side (profile) view, making use of 'twisted perspective' (Leroi-Gourhan 1968, 108–9) to depict horns, facial warts, and other paired anatomical features of the animals not visible in strict profile (Meyering et al. 2021).

The exterior outlines of the animal figures are generally depicted in what we regard as an anatomically realistic manner. The suid and anoa motifs typically all exhibit fully formed musculature in the limbs. Overall body proportions are more or less accurately represented, although in the case of the Leang Timpuseng suid the limbs lack clearly defined muscles, being straighter or stick-like (Aubert et al. 2014). There are few stylised elements in the sense of features that do not conform to physiological fidelity. Intuitively, however, the animals' bodies seem to be too rotund and/or elongated in form, and, in the case of Anoa 3 from Leang Bulu' Sipong 4, the legs are shorter than found in nature (Fig. 3.3d). In most cases the artists portrayed the animals' feet (specifically, cloven hooves of suids and anoas) with realistic anatomical detail (e.g., Fig. 3.2b). Certain secondary sexual characteristics, such as head crests, were also represented with sufficient anatomical detail for these motifs to be recognised as depictions of adult male warty pigs (see also Brumm et al. 2021b).

One area in which the outlines fall short of naturalism or anatomical reality is in the omission of certain salient physical features. For instance, genitalia appear not to have been depicted in any of the animal outlines. Moreover, while in three out of six cases the mouths of the animals are portrayed in an open position (as though slightly agape) – the mouth is only clearly defined on three figures – only in one case (the Leang Bulu' Sipong 4 suid) were teeth explicitly depicted. In this particular instance, it seems noteworthy that the prominent upper or lower canines ('tusks') of warty pigs are not evident in the artworks; only the maxillary and mandibular molars and premolars were portrayed, and these seem to take the form of sharp carnivore-like teeth. This unusual anatomical detail, rather than a physiological inaccuracy, was perhaps intended to represent the unworn ridges and cusps of a young suid's cheek teeth — thus potentially functioning as a marker of the individual's relative age.

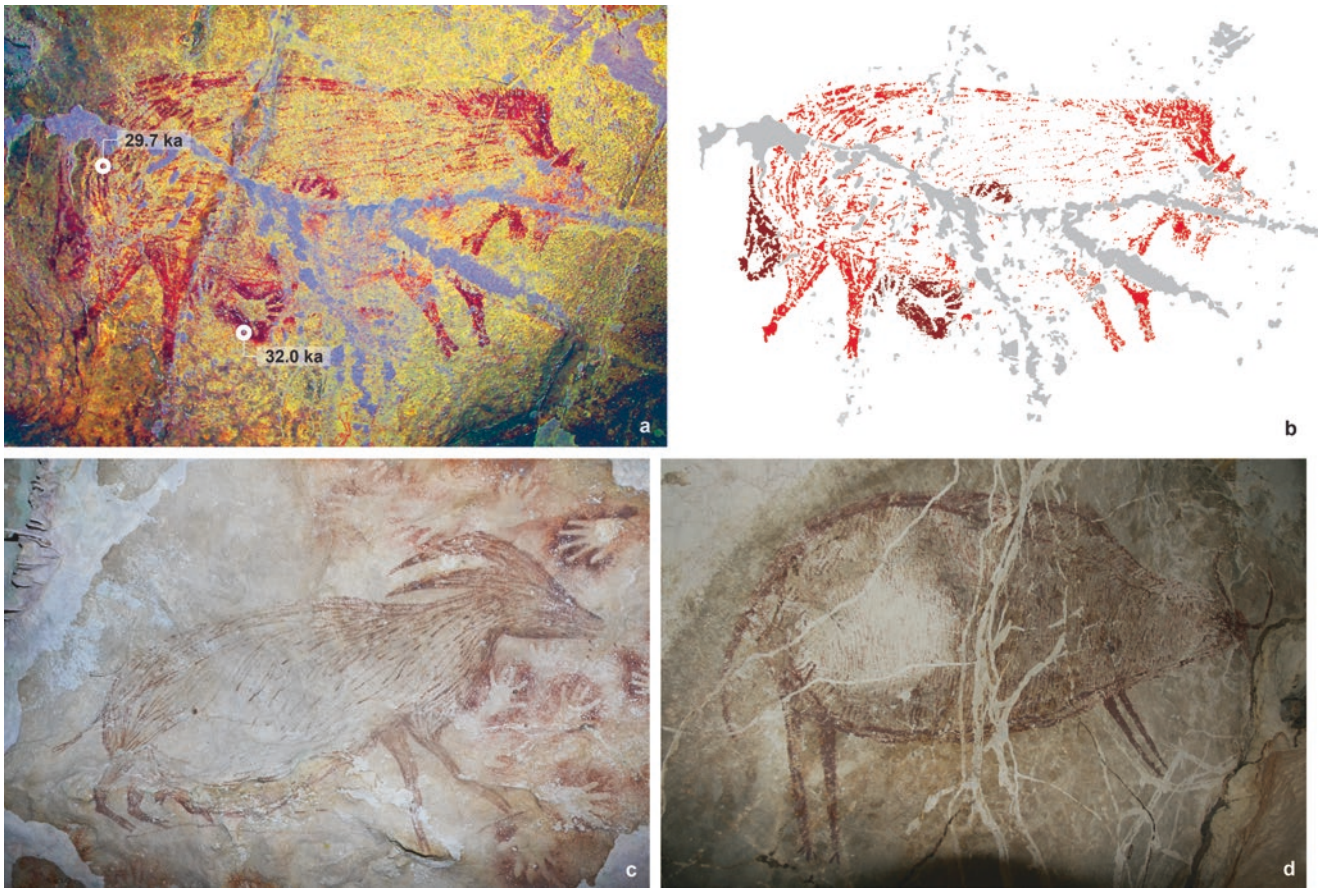

Fig. 3.4 Early rock art depictions of animals from Sulawesi and Kalimantan. **a**–**b**, Pig motif from Leang Balangajia 1, Maros-Pangkep. The photograph (**a**) has been enhanced using the Decorrelation Stretch (*DStretch*) computer program; a digital tracing of the motif is provided in panel **b**. This suid motif has a minimum age of at least 32 ka based on U-series dating of an overlying hand stencil (**a**) (Brumm et al. 2021a); **c**, undated painting of an anoa from a cave site in the Bone karsts, South Sulawesi; **d**, undated painting of a bovid (banteng) from Liang Apil Banteng in the Sangkulirang-Mangkalihat karsts, Kalimantan (credit: Pindi Setiawan)

The most notable departure from naturalism, and one of the key stylistic characteristics of this art, relates to the method used to infill the animal outlines. In all of the cases we have documented thus far the interior of the animal outline lacks discernible anatomical detail such as eyes, coat markings, muscle tone, and so on. Instead, the outline depictions were infilled with what at first appears to be a stochastic pattern of painted strokes or lines. Partial block infill using solid colour was also employed, principally for the extremities (lower limbs and head). This infill pattern does not seem to be a stylistic convention (e.g., a kind of hatching style) for representing coat hair or pelage (see Hodgson and Watson 2015, 778). It also does not seem to be a homogeneous, undifferentiated mass of markings used to fill up the outline in the manner of a decorative pattern 'swatch'. In the case of the Leang Tedongnge warty pig (Fig. 3.2), for example, the orientation of the infill pattern conforms to the outlines of different body parts. The infill strokes on the side and shoulders are oriented in a different direction to those on the 'hams', and the infill pattern on the rear leg on the far side of the suid (the side furthest away from the viewer) is denser than on the opposing rear leg, conveying a sense of depth and volume. Hence, despite the irregular appearance of the strokes and lines comprising the infill pattern, the overall effect gives an impression of the three-dimensional form of the animals. This stylistic characteristic is widely documented in the Maros-Pangkep rock art and may potentially constitute a subtle form of shading.

Here, we propose an umbrella term to describe this distinctive manner of depicting animals in Late Pleistocene Maros-Pangkep: the *Naturalistic animal with stroke-infill* style (hereafter NASI). We should note that very similar animal art is documented at as-yet undated cave sites in the Bone karst region 30 km to the east of Maros-Pangkep (Aubert et al. 2014; Brumm et al. 2021b; Permana 2015b) (Fig. 3.4c). Broadly similar rock paintings of animals are also known from Sangkulirang-Mangkalihat (Aubert et al. 2018; Fage et al. 2010) (Fig. 3.4d). The figurative animal art in Sangkulirang-Mangkalihat is presently less well understood than the figurative animal art in Sulawesi, but based

on our intuitive impression of the Kalimantan paintings we have observed we are inclined to include these artworks within the NASI style *sensu lato*. In the discussion that follows, however, we restrict our comments to the dated distribution of the NASI style located in the Maros-Pangkep and Bone karsts. In these areas of southwestern Sulawesi, NASI animal figures that are dated or attributed based on stylistic grounds to the Pleistocene (N = 85) are dominated by wild suids (89%) and anoas (11%). So far, there are no clear NASI depictions of other endemic mammalian fauna, such as bear cuscuses, civets, macaques, tarsiers, and rodents, or birds and fish. If the surviving motifs we have documented are anything to go by, it seems there was a pronounced focus on just one animal taxon, with nine out of ten identifiable animal images representing suids. We should note that Sulawesi is host to two sympatric suid genera: *Babyrousa* and *Sus* (*S. celebensis*) (Musser 1987). Only the latter is evident among the large corpus of suid paintings in Maros-Pangkep. If the babirusa is represented, the images are all of females (which lack the ornate tusks of males) or immature males.

3.3 Early Figurative Animal Art in Northern Australia

Some of the world's densest concentrations of rock art are found in the Arnhem Land region of the Northern Territory, the 'Top End' of Australia, and in the Kimberley area of Western Australia 700 km to the west (Morwood 2002; Jones et al. 2020; Veth et al. 2018). In both regions style phases focused on large naturalistic animal depictions with NASI-like infill are among the earliest known in the chronological sequence of painted art. In Arnhem Land, Chaloupka (1977, 1993) categorised this style as the *Large naturalistic figures complex*. Taçon et al. (2020, 218) propose that *Large Naturalistic Style* (LNS) is a more fitting descriptive label, while Jones et al. (2020) use the term 'early large naturalistic fauna' (see also Gunn et al. 2018) (Fig. 3.5). In the Kimberley, early large naturalistic fauna depictions are grouped into the *Irregular Infill Animal Phase* (IIAP) style (Walsh 1991, 1994; Welch 1993; Finch et al. 2021).

Large naturalistic paintings of animals (typically macropods) are widely agreed by some specialists to be an early feature of the painted figurative rock art sequences in both Arnhem Land and the Kimberley. Detailed analysis of these animal motifs is challenging, however. This is owing to the advanced state of weathering of the few surviving older motifs (Finch et al. 2021), and dense overpainting obscuring the art (Chaloupka 1993, 94; Walsh 1994, 35). Consequently, there is some debate among Australian rock art authorities about whether these particular styles of figurative animal art have been accurately characterised in the past.

3.3.1 Early NASI-Like Animal Art in Arnhem Land

The LNS is currently the most comprehensively documented of the large naturalistic animal painting styles of northern Australia. Jones et al. (2020) undertook a detailed analysis of 163 early macropod motifs from 88 sites in western Arnhem Land, focusing on stylistic distinctions and design attributes. These authors argue that a distinctly early phase of animal art is characterised by large monochrome red paintings of macropods. Animal figures comprise anatomically realistic out-

Fig. 3.5 Rock paintings of macropods in the Large Naturalistic Style of Jawoyn Country in eastern Arnhem Land. Image credits: Robert 'Ben' Gunn

line depictions in side profile, including stylised but nevertheless relatively accurate renderings of the overall body forms of macropods (well-defined musculature in the legs and forelimbs, and so on). Typical infill patterns lack clear anatomical detail, instead consisting most usually of lined infill, but also partial and block infill (sometimes combined with lined infill in a single figure), and other types. Jones et al.'s (2020) paper does not explicitly characterise what is meant by the lined infill pattern, described by Chaloupka (1993, 94) as 'contour lines', while Chippindale and Taçon (1993, 38) refer to the same pattern observed on LNS figures as 'stroke-infill manner'. However, illustrations of lined infill pattern motifs are markedly similar to the NASI style, consisting of roughly parallel strokes or lines that tend to follow the outline of the body and limbs, and sometimes solid blocks of color infilling the extremities (heads and ears, limbs).

Jones et al.'s (2020) analysis suggests that partial and lined infill methods span multiple styles of figurative rock art from the Pleistocene through to the middle Holocene (including Dynamic and Maliwawa Figures; Taçon et al. 2020), and thus were potentially used to depict fauna and other subject matter for tens of thousands of years (Jones et al. 2020). It is therefore difficult to maintain the view that the particular manner of infill depiction that characterises many large naturalistic animal figures belongs to a single, continuous artistic style or tradition, as prior interpretations of the LNS had assumed (Chaloupka 1977, 1993).

Nevertheless, Jones et al. (2020, 249) propose a style sequence for LNS infill patterns: 'It is likely then that Lined Infill was used as an infill manner alone in earlier macropods (as demonstrated in the superimpositions) and then continued to be used with the introduction of other infill types such as Partial Infill and Early X-ray'. Thus, large NASI-like outline profile depictions of animals with NASI-like lined infill patterns may be the earliest examples of figurative animal art in Arnhem Land. The other infill types were possibly developed in Arnhem Land or were introduced later, rather than all infill types appearing as a single package or repertoire of choices available to early artists for depicting animals.

The age depth of the LNS remains poorly understood. It has long been assumed to be of great antiquity (Chaloupka 1993), and to precede the well-known terminal Pleistocene Dynamic figure style (May et al. 2017). In their new chronology for Arnhem Land rock art, Tacon et al. (2020, 218) consider 'Large Naturalistic Animals (including various extinct animals); hand stencils' to date to 18,000–15,000 BP and to constitute the second phase in the sequence, while the third phase (15,000–13,000) is 'Large Naturalistic Animals (including some extinct animals); hand stencils'. However, as there are no absolute dates available for LNS figures, the antiquity of this particular rock art style is presently unknown.

3.3.2 Early NASI-Like Animal Art in the Kimberley

The IIAP style is less well described in the published literature. It is characterised by large naturalistic depictions of fauna (Walsh 1991, 1994), principally aquatic species (fish and turtles), but including a wide array of animals, especially macropods, but also birds, flying foxes, echidna, possums, and goannas (Finch et al. 2021; Veth et al. 2018). Despite the descriptive name assigned to this art style, a quarter of IIAP images documented by one team portray yams and other plants rather than animals (Veth et al. 2018). Typical IIAP motifs comprise monochrome red outline paintings of animals depicted in side profile (Walsh 1994). The broad, free-flowing brushstrokes (suggestive of fine brushes capable of holding relatively large amounts of pigment) forming the pictorial outlines convey various anatomical details such as overall body form and musculature of limbs in a stylised but generally realistic manner (Walsh 1994, 36). Anatomical detail (e.g., eyes) is usually lacking in the interior sections of the motifs. Instead, outlined animals are infilled with variations of painted lines, dots, or dashes that, while forming an irregular pattern, tend to be oriented in a manner than conforms to the shapes of body outlines and appendages. Walsh (1994, 36) interpreted these infill patterns as a 'paint conservation option' rather than as a purely decorative element.

The IIAP has recently been the focus of a comprehensive rock art dating program based on radiocarbon-dating of micro-charcoal contained within ancient mudwasp nests associated with IIAP motifs (Finch et al. 2021). This research yielded 27 radiocarbon dates on 16 IIAP rock art motifs. Notably, most of the radiocarbon age estimates obtained are *minimum* ages, as the mudwasp nests had mostly formed over the art. The dating team interpret the results to suggest that the IIAP proliferated between 17 and 13 ka (17.2 and 13.1 calibrated thousand years before present) (Finch et al. 2021). The age of one motif (an IIAP style depiction of a kangaroo) was also securely bracketed to between 17.5 and 17.1 ka based on dating mudwasp materials above and below the painting (Finch et al. 2021). The dating team add the cautionary note that much older mudwasp nests associated with IIAP motifs are unlikely to have survived: 'Many more dates from this period are required before the full chronological extent of the paintings still visible today can be determined' (Finch et al. 2021, 317). Veth et al. (2018, 32) propose that the oldest minimum age for animal art in Maros-Pangkep (at that time 35.7 ka; Aubert et al. 2014) can be used as a valid anchor point for dating the first appearance of the IIAP in the Kimberley region, noting that: 'Early exemplars [of the IIAP] may be as old as similar figures from island SE Asia dated to 36 ka BP'.

3.4 Discussion

Archaeologists and rock art scholars have long recognised that the earliest human occupation levels exposed by excavation in Arnhem Land and other parts of northern Australia contain evidence for ochre processing, implying that pigment use was part of the 'cultural baggage' brought to Sahul by the first colonists (Flood 1996, 5; see also Balme et al. 2009). As noted, based on a spate of recent rock art dating breakthroughs it is now evident there is figurative animal art in Wallacea that dates to at least 45.5 ka and is similar in formal style to the earliest surviving figurative animal art in northern Australia. What does this mean? Here, we wish to discuss a few scenarios that could possibly account for the similarities between the NASI art of Pleistocene Sulawesi and the earliest figurative rock art depictions of animals in Arnhem Land and the Kimberley. These are purely theoretical scenarios based on a handful of dates from a vast region; we offer them here as a basis for further thought and debate.

To begin with, it now seems plausible to suggest (see, e.g., Aubert et al. 2014; Taçon et al. 2014) that the apparently large and well-organised groups of people that colonised Sahul (Bird et al. 2019) brought along with them the NASI art style as part of their 'colonising repertoire'. It is possible to imagine a scenario in which the NASI style of figurative animal art depiction originated in Sunda (northeastern Kalimantan) and spread across the Wallace Line with the initial eastward movement of modern human colonists to Sulawesi, from there dispersing with the seagoing colonisers across the so-called 'northern route' to a Sahul previously uninhabited by people, making landfall either in West Papua or the Aru Islands (Kealy et al. 2018; Norman et al. 2017) (Fig. 3.1). The NASI then moved with the exploratory journeys of colonists in a southwesterly direction along the coastal fringes of the now-submerged Sahul shelf, reaching Arnhem Land by at least 65 ka — giving rise to the LNS, which endured until the terminal Pleistocene — and then spreading further west to the Kimberley, where it persisted through the terminal Pleistocene as the IIAP until around 13 ka based on recent dating data (Finch et al. 2021). It should be noted that the earliest excavated archaeological evidence in the Kimberley region is dated at ~50 ka (Veth et al. 2019). Hence, if the NASI reached Arnhem Land and the Kimberley at essentially the same time then presumably there was an earlier phase of human occupation in the Kimberley (going back some 15 millennia) for which there is currently no indication in the stratigraphic record. Alternatively, the NASI reached Arnhem Land earlier than it did the Kimberley.

There is at least one problem we can foresee, however, with the notion that the modern human colonisers of Sahul brought with them the NASI art style as part of the colonising repertoire. In both Arnhem Land and the Kimberley there appear to be indications of various forms of rock art production that pre-date the earliest known figurative animal art, the LNS and the IIAP respectively. In Arnhem Land, this evidence includes early Panaramitee-like rock engravings that seem to have been produced at a period of time prior to the emergence of the LNS (Chaloupka 1993). In more recently formulated schemes, it is contended that the pre-LNS rock art production is characterised by various forms of hand stencils and animal stencils, along with object and hand prints (Taçon et al. 2020, 218). In the Kimberley, rock 'art' characterised by pecked cupules is believed by some to precede the emergence of the earliest figurative art (IIAP animal and plant motifs) (Walsh 1994, 33; Veth et al. 2018). At least in Arnhem Land, the possible existence of what may be older forms of non-figurative image-making is clearly inconsistent with the notion that the NASI rock art style was introduced to Sahul during the initial peopling of the continent from Wallacea.

Therefore, an alternative theoretical scenario is that the NASI tradition originated in Sunda (e.g., Kalimantan) *after* the initial spread of modern humans from Sunda to Sahul at least 65 ka. Thus, the original NASI art style moved across the Wallace Line to Sulawesi as part of a second wave of dispersal by modern humans in the region. From Sulawesi, modern human colonists then took this artistic culture with them to Sahul, most parsimoniously using the northern route through the rest of Wallacea (that is, island-hopping eastward from Sulawesi to the western tip of New Guinea [Bradshaw et al. 2021]). This secondary migration might have taken place by at least 45.5 ka, based on the oldest minimum age for NASI art. However, if we take the oldest known occupation dates from the 'last stop' on the route (Kimberley) as the temporal baseline, then we can push the upper limit back to 50 ka. In any case, the implication here is that the NASI art was originally introduced by a later movement of Wallaceans into a part of Australia that had already been under human habitation for some 15,000 years. Such a scenario would explain the apparent existence of local rock art pre-dating the LNS imagery. Recent genetic evidence can be interpreted to support this scenario; for example, ancient DNA extracted from the skeletal remains (dated to ~7.2 ka) of a middle Holocene 'Toalean' hunter-gatherer from Leang Panninge in easternmost Maros suggests that a secondary wave of Late Pleistocene modern humans of mainland Asian origin entered Wallacea at some stage after the initial settlement of the region by the ancestors of present-day Aboriginal Australian and Melanesian groups (Carlhoff et al. 2021).

Both of these scenarios face some additional problems. First, if we assume that the LNS and the IIAP both derived from the NASI, and that both of these regional variants of the latter persisted in northern Australia until the terminal

Pleistocene period (~13–12 ka), then we must also explain how a particular rock art style could have persisted in Arnhem Land and the Kimberley without apparent change for many tens of thousands of years. Even under a scenario in which a secondary wave of human migration to Sahul introduced the NASI style to Arnhem Land, we are still talking about a period of around 38,000 years without stylistic change. It is an astonishing 53,000 years if we assume that the NASI style arrived 65 ka. Does it strain credulity to suggest that artists depicted animals in essentially the same way over such long periods of time? In Upper Palaeolithic Europe, 'silhouette' art — a particular manner of depicting animals used extensively in (generally pre-Magdalenian) parietal and portable art — is believed to have persisted more or less unchanged for over 20,000 years (Pigeaud 2007). If 20,000 years without stylistic change is intellectually palatable in the context of European cave art can we also digest the concept of a much longer lasting phase of apparent artistic 'statis' among the Late Pleistocene inhabitants of Sahul? If so, the NASI style is starting to look like a single intercontinental rock art tradition that was spread across an area of millions of square kilometres and which endured for a truly vast period of time.

Second, if the NASI art style was brought by modern humans during their movements along the northern route from Sunda to Sahul then the apparent absence of NASI-like rock art in the limestone karst-rich islands between Sulawesi and New Guinea, and in New Guinea itself, is difficult to explain.[1] So far, the only rock art of this style identified in island Southeast Asia is in northeastern Kalimantan and southwestern Sulawesi. The archaeological record of the northern route is poorly known. However, rock art has been identified on some of the northern route islands east of Sulawesi, including Seram and Buru (Arifin and Delanghe 2004). It is also known from the portion of the Sahul landmass where the northern route 'ends' — that is, where seafarers following this route would have made initial landfall in Sahul. This includes Misool, part of the emergent Sahul landmass, where some 50 rock art sites are documented in the extensive karstic landscape (Oktaviana 2015), and coastal and highland areas of western New Guinea (Arifin and Delanghe 2004). Aru, also part of Sahul, is another region with limestone karst where we might reasonably expect to see evidence for the production of figurative animal art related to that of the NASI style. To our knowledge, none of the roughly 213 rock art sites uncovered in these places contain early large naturalistic paintings of animals that are anything like those found in Kalimantan, Sulawesi, Arnhem Land, and the Kimberley.[2] Hand stencil art has been recorded in Buru, Seram, and Misool, and also in mainland West Papua (Arifin 2015; Arifin and Delanghe 2004). Some figurative depictions of fish and other marine fauna are also evident in Misool and elsewhere along the northern route (Oktaviana 2015). These images could also be very old, but the figurative animal art in these places does not offer any compelling similarities to the NASI art style. Perhaps this simply reflects the almost total lack of large non-flying land mammals in the depauperate fauna of these small Wallacean islands. But if so, why was the NASI style of depicting animals not transferred to the fish and other marine creatures commonly portrayed by these artists, or to the terrestrial mammalian fauna such as marsupials and giant rats?

It is evident that the absence of NASI-like art between Sulawesi and Australia presents a conundrum for the idea of a pan-NASI art province associated with the early movements of humans between Kalimantan and the Kimberley. As noted, these areas generally remain under-studied by field archaeologists, so perhaps the NASI rock art is there but simply has not yet been discovered. Or perhaps it has not survived or was not created in the rock art sites uncovered thus far. Another possibility is that during the initial human journeys from Sulawesi to Sahul artists created outline depictions of animals with NASI-like patterns of infill using media (e.g., bark paintings) that have not survived in the record. Alternatively, we could consider the prospect of *direct* long-distance sea-voyaging from Sulawesi to Arnhem Land (or the Kimberley). Or, given that the maximum age of the animal art in northern Australia is as yet unclear we could also surmise, as van Heekeren (1972, 125) surmised, that the dispersal of early rock art between Sahul and Wallacea could have been in the *other* direction; that is, the art originated in Australia and from there spread to Sulawesi.

Given these conceptual dilemmas, another possible scenario is that the NASI rock art style of Late Pleistocene Sunda (Kalimantan) and Wallacea (Sulawesi) is totally unconnected to the LNS of Arnhem Land and the IIAP of the Kimberley, with similar styles of animal depiction simply arising independently at different points in time and space owing to convergence. Is it possible there is a neuroscientific explanation to be found here, with the NASI art style reflecting some universal way of depicting animals? Perhaps this could account for the very widespread focus on depicting animals in outline profile view ('silhouette art'). But in our

[1]The apparent absence of NASI-like art in the Victoria River rock art province between Arnhem Land the Kimberley is more readily explained. It has long been hypothesised that the Pleistocene rock art provinces of these regions were essentially both local variants of a single, spatially continuous art province, with the zone of rock art sites that once connected them located on the now-submerged continental shelf (Lewis 1997).

[2]At this point, we could suggest a later wave of human migration to Sahul followed a variation of the southern route; albeit beginning in Sulawesi, and thereafter involving the movements of people through the Lesser Sunda islands and then direct to northern Australia. There is even less compelling evidence, however, for early NASI-like rock art in Flores, Timor, Alor, and other Wallacean islands in this group — in fact, there is none.

opinion the distinctive patterns of stroke or lined infill evident in the NASI art seem more like the convention of a specific visual culture that was anchored in time and space, rather than some by-product of how the modern mind works (but cf. Hodgson and Watson 2015). Indeed, if the NASI art style simply reflects a commonality in modern human cognitive architecture then why do we not see analogous forms of infill in Upper Palaeolithic Europe?

Finally, therefore, we should entertain the notion that the NASI art style arose in Sunda and spread across Wallacea to Sahul following either the 'long' (65 ka) or 'short' (at least 45.5–50 ka) chronology scenarios outlined above, but thereafter underwent a process of stylistic change over time and space as the people who brought it persisted and adapted to their new country in these regions. In northern Australia, styles of animal depiction similar to NASI (LNS and IIAP) were not artistic traditions that persisted essentially unchanged over tens of thousands of years; rather, they changed subtly over time — indicating more realistically that any tradition of depicting animals does not remain static. This is consistent with Jones et al.'s (2020) reappraisal of the LNS, which confirmed that some elements of this artistic convention may be very old and persisted over a long period. Under this scenario, the LNS was not a static art period but was far more stylistically variable than hitherto supposed.

3.5 Conclusion

The discovery of Late Pleistocene rock art in Sulawesi and Kalimantan has elevated the status of the previously little-known rock art of Indonesia in global debates about the origin and spread of the earliest traditions of figurative cave painting. In this process of rock art 'globalization', some scholars have argued that the early Indonesian art is similar in terms of formal style to some early art in northern Australia, implying that there may have been some form of direct historical connection between them. We have argued that there are, indeed, similarities that are worthy of note between the NASI art style and the early large naturalistic animal paintings in the Arnhem Land and Kimberley regions of northern Australia (Aubert et al. 2014; Finch et al. 2021; Taçon et al. 2014). We have considered a number of scenarios that could account for these close similarities in art styles. One possibility that is at least theoretically plausible — based on the available dating evidence — is that the NASI art style was introduced to northern Australia during the initial peopling of Sahul or (more likely) during a later dispersal of Wallaceans to an already-inhabited Australia. Whether the former or the latter would depend largely on the validity of the current view that a distinct stylistic phase characterised by engravings or stencil- and print-focused rock art pre-dates the earliest figurative animal paintings (LNS) in Arnhem Land, which requires further dating work to resolve. We are also still left with the problem of how to account for the apparent absence of NASI art in the regions that are relatively well-explored (although still poorly known compared with the Australian sites) between Sulawesi and Arnhem Land. For example, why is this animal art 'missing' from the northern route islands east of Sulawesi and the Indonesian portion of New Guinea? Why is it not found in still-emergent portions of coastal northern Sahul through which the early colonists likely passed (e.g., Aru)? We clearly need many more rock art dates and a great deal more archaeological research if we are to begin to make sense of the early movements of modern humans and artistic cultures in this region.

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Rock Art, Modes of Existence, and Cosmopolitics: A View from the Southern Andes

4

Andrés Troncoso Meléndez

Abstract

The ontological turn has opened multiples avenues of inquiry in archaeology and rock art research. Goals of this theoretical approach include unfolding and describing other worlds, understanding the differences between modern worldviews and past ontologies, and defining the ontologies materialized in rock images. This paper discusses the relationship(s) between rock art and ontology with reference to the idea of cosmopolitics and the political role of other-than-humans in social life. We suggest that rock art is grounded on historical modes of existence or, in other words, that rock images unfold particular fields of relations, affections, and political agencies through time and space. To illustrate this point, we focus on two Northern Chilean rock art examples: the El Medano hunter-gatherer-fisher rock paintings on the Pacific coast of the Atacama Desert; and carved Incan outcrops of the Atacama Desert. These examples allow us to discuss how rock art images produce historical cosmopolitics that disclose specific relationships between humans, other-than-humans, and politics. A discussion about the relationships between rock art and cosmopolitics is not only relevant to understand past ontologies, but it can also be a useful tool to think about the future, our current relationships with other-than-humans and 'nature,' and the need to create new models of development based on a new way of understanding the relationships between humans, landscape, and other-than-humans.

Keywords

Mode of Existence · Cosmopractices · Cosmopolitics · Atacama Desert · El Médano · Inka Models

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4.1 Introduction

In a recent review, Moro Abadía and González Morales (2020) suggest that ontological approaches play an important contemporary role in rock research. In fact, ontology is generating new questions and lines of work. Ontology forces us to rethink about what we call 'rock art', to evaluate its different forms and affects displayed by this practice over time, and to better understand how this practice is involved with different lifeways (e.g., Jones 2017; Fowles and Alberti 2017; Kearney et al. 2019; Fahlander 2019; Fiore 2020). Moreover, ontological approaches are important to understand how image-making has articulated and produced different worlds over the course of history; ontologized worlds that are experienced and deployed by communities through their dwelling practices (Laguens and Gastaldi 2008; Goldhahn 2019; Robb 2017; Porr 2019).

Approaching and recovering these different worlds has been a foundational aspect of ontology in archaeology (Alberti and Marshall 2009; Alberti et al. 2011). In this field, ontological approaches have mainly focused on describing other worlds and defining what kind of ontology is materialized in the archaeological record (e.g., Bray 2015; Lozada and Tantaleán 2019; Watts 2013). These developments have coincided in time with a re-evaluation of the relationships between persons, bodies, and materials, insisting on the relational and co-constitutive nature of persons, practices, and materials (Ingold 2013; Jones and Cochrane 2018). These new approaches have called into question the modern duality that separates people and things, subjects and objects.

Although these perspectives have generated new avenues of research in rock art, ontological approaches have been useful to re-think the social, political, and historical dynamics of ancient communities. Modernity (Foucault 1998) is grounded on a number of dualities and dichotomies, such as those that place in opposition object to process, nature to culture, and non-humans to humans (Latour 1993; Descola 2014). This political ontology excludes nature and other-

O. Moro Abadía et al. (eds.), *Deep-Time Images in the Age of Globalization*, Interdisciplinary Contributions to Archaeology,
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than-humans from the socio-political field, relegating (even denying) their agency and rendering both as passive and non-participatory observers of human socio-historical processes (Latour 2018). Ontological approaches have systematically called into question the opposition between culture and nature (Descola 2014; Viveiros de Castro 2010; Latour 1993).

In many non-western worlds, the socio-political field is inhabited by non-human beings that unfold their agency and affective capacities in different relational communities (Van Kessel and Cruz 1992; Willerslev 2007; Castro 2016; Bird David 2017; De La Cadena 2015). To approach these worlds, we must understand how other-than-humans take part in different historical processes and relational networks that develop throughout time. This approach seeks to (a) historicize these different worlds and their articulations with past ontologies, and (b) understand the many ways in which other-than-humans engage within historical networks and how their agentive and affective capacities occur (see Pauketat 2013). The term 'cosmopolitics' is a useful conceptual tool to explore this displacement. Following Isabelle Stengers (2005), the word 'cosmos' refers to multiple and divergent worlds constituted throughout history and the term 'politics' highlights how humans and other-than-humans are related within these worlds and how their affective and agentive properties are distributed. In other words, a 'cosmopolitical' approach explores the political dimensions of these worlds, shedding light on their social history from a non-anthropocentric perspective and examining the political actions of other-than-humans from a historical and social perspective.

The rock art of South America offers a privileged space for understanding these cosmopolitics or political ontologies. This region has an ample repertoire of Holocene rock art, characterized by a great variety of techniques and themes related to different socio-political contexts, including hunter-gatherers, farming societies, and modern states (Troncoso et al. 2018). Moreover, a vast body of ethnographic and anthropological literature shows the political role played by other-than-humans in different socio-historical contexts in pre-Hispanic, colonial, and contemporary societies (Martínez 1976; Van Kessel and Cruz 1992; Bray 2015; Castro 2016; Lozada and Tantaleán 2019; De La Cadena 2015). It is not by chance that some of the leading voices of the ontological turn based their proposals on ethnographic studies carried out in South America (Descola 1996; Viveiros de Castro 2010).

This paper discusses the relationship(s) between rock art and ontology, with reference to the notion of cosmopolitics and the political role of other-than-humans in social life. A cosmopolitical approach assumes that rock art is embedded in historical modes of existence, modes in which its materiality reflected and inspired particular forms of relations, affects, and political agency over time. To illustrate this point, we focus on two rock art regions in northern Chile: El Médano rock paintings made by hunter-gatherer-fishers in the coastal zone of the Atacama Desert, and carved outcrops of the Atacama Desert from the Inka period (see Fig. 4.1). These examples allow us to discuss the production of rock art connected different materials, places, practices, and other-than-humans in each case, producing historical cosmopolitics that deployed specific relations between humans, other-than-humans, and politics. Finally, we explore how the relationships between rock art, modes of existence, and cosmopolitics is not only useful for understanding past ontologies, but it is also relevant for thinking about our current relationships with other-than-humans and 'nature' and constituting new modes of existence.

4.2 From Rock Art to Modes of Existence and Cosmopolitics

Throughout history, human beings have inhabited ontologically constituted worlds, comprising particular configurations of social collectives, and differing in their distribution of the properties of beings, materials, and phenomena (Alberti and Marshall 2009; Pauketat 2013; Descola 2014; Watts 2013). These worlds have unfolded particular configurations of political fields in which the nature of power, as well as the agentive and affective capacities of beings, have emerged differentially. Stengers uses the term 'cosmopolitics' to highlight these different engagements among humans and other-than-humans throughout history and to explore these plurality of worlds (Stengers 2005).

The 'modern' world is one of these worlds, characterized by a cosmopolitics in which a particular distribution of beings, collectives, and agencies is based on a fundamental principle: the split between culture and nature (Laguens and Gastaldi 2008; Blaser 2013; Descola 2014; Latour 2018). However, this principle is not common to the multiple and different worlds that human beings have inhabited. These ontologized worlds are intrinsically articulated with historical dynamics and are the product of a complex web of relations between humans, other-than-humans, materials, and places over time (Ingold 2013, 2015). These webs or networks are not a symbolic construction; they are the result of specific sets of relations differentially enacted through practices, movements, places, discourses, visualities, etc. These relations distribute agentive and affective capacities which are not exclusive to humans, but emerge through the interactions between the multiple agents (Ingold 2013; De Landa 2006; Hamilakis 2017).

Although the ontological turn has focused on the differences between our world and 'other' worlds, we must explore the political nature of these alternative worlds from a cosmopolitical perspective. While Foucault (1998) highlighted how power pervades human bodies, we must recognize from an

Fig. 4.1 Map of the study area indicating some archaeological sites. El Médano style: (1) QP-22, (2) El Médano, (3) Izcuña. Inka carved outcrops: (4) Chiu-Chiu; (5) Cupo, (6) Toconce, (7) Bajada El Toro

ontological perspective that power also pervades multiple beings and matters in a historical and cosmopolitical field of relations (see Bennet 2010). In this vein, the political is an emerging property of a field of relations where power, as well as the affective and agentive capacities of beings and matters, exceeds humans. As with ontology, cosmopolitics is not just a symbolic abstract term, it is enacted in practices and experiences. De Munter (2016) uses the term 'cosmopraxis' to show how human practices occur in particular cosmos, implying different kinds of engagements between humans and other-than-humans. From our perspective, each human practice is part of a historical cosmopraxis enacting a particular cosmopolitics through a field of links and power relationships among/and between beings.

The practice of image making and the experiences associated to the materiality of rock art can be examined as a means of creating worlds and unfolding their relational webs and networks (Jones and Cochrane 2018; Goldhahn 2019; Troncoso 2019; Fiore 2020). Like any material element, rock art is the result of a socio-spatial practice; the act of making/experiencing it enacts diverse relations between bodies, persons, materials, beings and places (Armstrong et al. 2018; Troncoso et al. 2020). As Jones and Cochrane (2018) suggest (see also Ingold 2013; Jones 2020; Fiore 2020) the act of making rock art can be understood as an encounter between the agencies of materials, persons and places. It also occurs through visuality and the finished object, which produce an ecology of images, a visual world (Morgan 2018), that articulates a field of relations between materials, visualities, beings, practices, and/or places (Pauketat 2013).

The generative capacities of the practice/experientiality/materiality of rock art can be approached as a 'cosmopraxis'. In short, this means that we can explore how rock images have created worlds thought history and, at the same time, we can evaluate the relationships between these worlds and the properties of the various social collectives (such as states) that have inhabited the planet (Jones 2017). Additionally, this will facilitate an understanding of the different ways in which images, materials, and manufacturing practices unfold their affects in these worlds, with the aim of de-essentializing rock art and approaching its historicity (Jones 2020, Armstrong et al. 2018, Porr 2019; see also Morgan 2018). Image making (as well as image experiencing) occurs within the flow of time and in a particular field of relations; thus, its generative and affective capacities are always historically articulated, enacting different engage-

ments, beings, and meshworks (Ingold 2013, 2015; Pauketat 2013; Armstrong et al. 2018; Fiore 2020; Troncoso et al. 2020).

Latour (2013) defines 'modes of existence' as the particular forms and ways (routes) that these collectives (beings, materials and places) articulate and are performed. This is a multiscale concept that seeks to recognize the different forms, actors, and networks deployed by an institutional, phenomenal, or social environment in its particular movement. For this reason, Latour (2013) recognizes particular modes of existence for techniques, legal knowledge, social collectives, etc. Likewise, Simondon (2008) has recognized that every object has a technical mode of existence (hereafter TME) which exceeds the object and comprises a bundle of material, practical, discursive, spatial, and historical articulations unfolded in its production and use (see also Fiore 1996). For this reason, Simondon (2008, 42) suggests that the making of a technical object is part of its being. In other words, the TME refers not only to the knowledge, acts, and technical steps involved in the making of something, but also to the set of relationships (practical, material, spatial, experiential, corporal) and affects that emerge in the act of making, deploying the ontological and historical nature of the object as a cosmopraxis (see Descola 2014).

The concept of 'mode of existence' has a socio-historical dimension (hereafter SHME) because particular modes of existence are acquired and perpetuated by particular socio-historical networks. The characteristics and properties of the actors, social collectives, and their agentive capacities vary between worlds, along with the principles by which these modes of existence are enacted. Thus, a multiscale and multidimensional relationship is established between TME and SHME: the relations and affects that develop into acts of making produce a field of relations specific to a SHME which, in turn become and promote practices, experiences, and articulations that unfold through dwelling and making.

Rock art, therefore, occurs on multiple scales and involves at least two different modes of existence. First, a particular socio-historical mode of existence (SHME) unfolds a network that connects landscapes, relational communities, socio-political milieu, etc. Second, a technical mode of existence (TME) arises from an act of making and experiencing images, producing a historical network of visualities, places, practices, bodies, materials, and experiences (e.g., Fiore 2020; Gheco 2020).

Understanding these modes of existence implies deciphering their particular forms of unfolding and retraction (Latour 2013). A TME requires a comprehension of the multiple intersection created through the act of making and its operative chains (Troncoso et al. 2020), as well as the articulations and experiences between bodies, materials, and places. A SHME, in contrast, implies understanding how this practice/materiality generates worlds, collectives, and ways of social being. The nature of the social and social collectives is not pre-determined and fixed over time. On the contrary, these phenomena are contingent on their temporal context and result from particular modes of existence; they must not be assumed but, rather, they need to be explained and historicized (Latour 2013; Descola 2014; De Landa 2006; Harris 2014). Thus, we must historicize the technical mode of existence of rock art, understanding the different agentive and affective capacities that it deploys and discussing how it is articulated within a socio-historical mode of existence. This multiscale, multidimensional analytical procedure allows us to approach these other worlds and their modes of existence, and to historicize the practice-materiality of rock art.

However, we must understand that "a cosmos detached from politics is irrelevant" (Yaneva 2015, 5). If each TME deploys a field of particular relations between certain beings, materials, and places through making (cosmopraxis), and each SHME differentiates which beings make up the social collective and how they are distributed within their field of socio-historical relations, we need to keep in mind that a certain political ontology or cosmopolitics emerges through them (Stengers 2005; Blaser 2013; Latour 2018). Cosmopolitics serves to distribute power and the agentive and affective capacities of the different beings and materials; they thus give rise to a political field with its own actors and rules of the game. In contrast to the 'modern' world, multiple modes of existence recognize social collectives and communities formed symmetrically by humans and other-than-humans, multiplying the political actors and obliging us to understand the political ontologies deployed by these SHME (Blaser 2013).

In this context, the practice-materiality of rock art cannot be separated from an historical cosmopraxis and cosmopolitics which allows us to understand how it is inserted in the socio-historical, how it generates a world and unfolds particular agentive and affective capacities. Understanding the SHME and TME of this practice/materiality allows us to understand ancient cosmopolitics and the role of the other-than-human in socio-political life. With these ideas in mind, we explore two case studies of Holocene rock art in northern Chile to try to understand how this practice/materiality is articulated within different cosmopolitics, which in turn refer to differentiated socio-historical formations.

4.2.1 Case 1: El Médano Rock Paintings

El Médano style refers to a set of rock paintings characterized by a maritime imagery including whales, sharks, swordfish, sea-lions, cuttlefish, and turtles, scenes of navigation, hunting of big whales, fishing for large prey, and less frequently, non-figurative motifs like criss-crossed lines which have been interpreted as fishing nets (please see Fig. 4.2)

Fig. 4.2 Marine scenes of El Médano rock painting

Fig. 4.3 QP22: A view of the site and a rock painting with a marine scene (digitally enhanced using D-Stretch)

(e.g., Niemeyer 1977, 2010; Mostny and Niemeyer 1984; Núñez and Contreras 2008; Berenguer 2009; Ballester 2018). This rock art was produced by hunter-gatherer-fisher groups on the coast of the Atacama Desert during the Late Intermediate period (ca. 1000–1400 AD) (Mostny and Niemeyer 1984; Niemeyer 2010; Ballester 2016). The strong maritime orientation of this rock art is consistent with a community wherein much of their lives were spent at sea, navigating and making use of extensive north-south maritime mobility circuits (e.g., Núñez 1984; Castelleti 2017; Gallardo et al. 2017; Ballester and Gallardo 2011). Their residential settlements and funerary sites are located on the continental platform adjacent to the coastline, maintaining a constant visual and experiential relationship with the ocean. Logistic camps associated with excursions to obtain different kinds of raw materials have been found in the hyper-desert space of the pampa inland (e.g., Borie et al. 2018; Castelleti 2007; Gallardo et al. 2012; Gallardo 2018; Pimentel et al. 2017).

Based on their concern with maritime life, hunting scenes, and their location in profusely painted ravines that are difficult to access, El Médano paintings have mainly been interpreted as votive art associated with rites of passage (e.g., Izuña and El Médano site; Mostny and Niemeyer 1984, Niemeyer 2010, Berenguer 2009, Castelleti 2017). However, paintings with a similar style have recently been identified in logistical camps located in the hyper-desert pampa (e.g., QP-22, Monroy et al. 2016) (please see Fig. 4.3).

One striking aspect of the distribution of El Médano style is that, unlike most of the residential and funerary spaces of this culture, the location of these rock paintings is not necessarily associated with the coastline. This implies that practices of rock art-making and observation are mostly framed by experiences and practices associated with the use of inland spaces (ravines or pampa). Both the activity of marking rocks and the art's content are removed from the spaces used for residential purposes and everyday mobility.

The spatial and visual dynamic of El Médano rock art unfolds a particular cosmopolitic. Several authors have shown how the formation of social collectives in mobile hunter-gatherer communities has a multispecies character

(Willerslev 2007; Bird David 2017; Viveiros de Castro 2010; Kearney et al. 2019, 2020). The animals with which humans coexist, and that they frequently hunt, form part of their social group. Their relationship is based on principles of co-habitation, implying practices, experiences, and forms of communication deployed in everyday existence and that structure social life. While the modern (Western) idea of community is based on the principle of belonging (people are part of a community), in many hunter-gatherer groups this idea is based on the notion of a pluripresence of beings (Bird David 2017; see also Willerslev 2007, Viveiros de Castro 2010, Descola 2014). According to Bird David (2017), for instance, pluripresence, or the act of meeting in and co-inhabiting a space, generates recurrent relations and interactions between different types of beings, resulting in "plural belonging… an issue of being with rather than being like other members" (Bird David 2017, 158). This in turn generates "multispecies communities of relatives whose plural mode is supported by a diverse and together rather than a same and separate logic" (Bird David 2017, 176).

In this context, the centrality of the practices of inhabiting and navigating the sea in the social life of the coastal communities of the Atacama Desert led them to deploy constant interaction between human beings, the ocean, and its maritime fauna (either by chance encounters or hunting practices), producing dynamics of human-animal-sea pluripresence and interaction that form part of one great relational community that goes beyond the human. Co-habitation and interactivity are also expressed in the presence of maritime remains in the middens of the residential spaces, their depositing as funerary offerings, and the existence of an extensive and complex kit of instruments produced for interaction with maritime beings (e.g., Gallardo et al. 2017; Castelletti 2007; Ballester et al. 2014; Palma et al. 2012).

The recurrence of oceanic scenes and maritime fauna highlight their central position in the production of social life and collectives. Their practices of mobility on rafts, and the location of their residential camps and cemeteries close to the coastline, allowed this relational community to remain in constant interaction (practical, visual, and/or experiential), consistent with the material contexts described in the previous paragraph. The cosmopractice of making and observing rock paintings in spaces not associated with the shoreline (such as ravines or inland spaces) establishes visual relations and commonalities with being-at-sea and maritime beings, reaffirming the relational nature of the community and of its multiple participants, and acting as a generator of these articulations and pluripresences between humans, sea, and maritime fauna in inland areas.

Sea mammals thus become a part of the socio-historical and political web of these relational communities. Human and sea mammals interactivity forms this community, not only through the practices described above, but also through rock-painting practices. Every act of making rock-art involved a technical procedure (which implied a particular articulation between bodies, materials, and places), and it was also a socio-political practice that produced and reaffirmed the relational nature of the community and the necessary dependence and interaction between humans and sea mammals for the formation of their world. Rock art was a powerful display of communities' ontological commitments in spaces remote from the coast, i.e. landscapes separated and different from their everyday spaces. El Médano style, therefore, produces and articulates a particular ordering of the social collectives proper to its cosmopolitics, in which there is no separation between culture and nature.

4.2.2 Case 2: Inka Models

The communities of the interior of the Atacama Desert had a long tradition of producing rock art, going back to the start of the Late Pleistocene (Berenguer 2004; Gallardo 2018). Although we observe different sets of rock art over time, they are all characterized by the presence of camelids, and the use of painting and/or carving techniques. In the latter part of the pre-Hispanic period carved outcrops emerge as a new type of rock art (Gallardo et al. 1999). This is associated with the incorporation of the territory into the Inka State or Tawantinsuyu, with its capital in Cusco (Peru). Carved outcrops represent a new practice of marking rocks introduced by the Tawantinsuyu, as is shown by the presence of these manifestations in other territories of the State (Christie 2015; Meddens 2006; Van de Guchte 1990).

These petroglyphs consist mainly of rectangular, linear, and circular forms interpreted as representations of farming landscapes: linear carvings represent irrigation canals, rectangular and circular forms different types of agrarian fields (Christie 2015). A characteristic of these rock art forms is that they are made so that a libation of water can be poured onto their surface; the water runs along the channels and is deposited in the carved fields (Christie 2015; Castro and Varela 1994; Meddens 2006).

Although these themes are not recurrent in the Atacama Desert, they are found in different areas (Chiu-Chiu, Cupo, Tambo Bajada del Toro, Toconce), associated with sites occupied by the Inkas and agrohydraulic systems from the Late Intermediate (1000–1450 AD) and Inka (1450–1540 AD) periods (Castro and Varela 1994; Gallardo et al. 1999; Troncoso 2019; Troncoso et al. 2019).

Although these models have been interpreted as representations of agrarian fields, they exceed this definition and can be associated rather with the Andean idea of 'doubles' (Christie 2015, Van de Guchte 1996; see also Troncoso 2019). In the Andes, doubles are beings/animate materials that have the same attributes and characteristics as the 'orig-

inal'; thus, these models *are* the agricultural landscape surrounding the carved rocks, and watering them is the same as watering the agricultural landscape that surrounds them (please see Fig. 4.4). This practice and interaction between humans and models which, ethnographically,occurs at the start of the agricultural cycle, deploys a whole relational field of association and affects which goes beyond the human.

Agricultural practices in the Andes imply interacting with a set of other-than-human beings and forces of nature—especially mountains (ancestors) and the earth (Pachamama)—who provide water, fertility, and well-being for the correct performance of these labours (Van Kessel and Cruz 1992; Van den Berg 1990). These interactions occur in a context in which these beings and 'material things' have a particular personhood and form part of a relational social collective (Allen 2002). Thus, relations between humans and other-than-humans are mediated by a series of reciprocal rights and responsibilities.

In this context, watering the rocks is not only watering the local landscape, but it is feeding the earth (Pachamama) and the mountains (ancestors), entering into a reciprocal relationship in order to receive the fruits sown in the fields, and bringing a whole relational community into movement and articulation (Van den Berg 1990). As such, the models act in a double system. On the one hand, the circulation of water through the modelled channels and fields allows water to circulate through the agrarian landscape of the region; on the other, by feeding the rock, the person is also feeding the earth and the mountains, respecting the reciprocal relations established between humans and non-humans in the Andes. The visual relationship with the agrarian landscape becomes central to achieving the replication associated with the idea of doubles.

This cosmopractice and the rock materiality set in motion not only a whole cosmopolitics of beings based on these relations, but also in terms of the local history of the communities. Before the arrival of the Tawantinsuyu to the region, the great mountains of the Andes were seen as the guardian ancestors of each community, with whom humans interacted in the cycle of rights and duties involved in their everyday and agricultural practices (Castro and Aldunate 2003; Castro and Varela 1994). This was reflected in the orientation of houses and chullpas (towers) towards the mountains, and in recurrent offerings of copper on the peaks of various mountains, as well as in villages, to feed these other-than-human beings (Berenguer et al. 1984). With the arrival of the Inkas and the creation of these models, this relationship is modified. Now it is the Inka who are established as the mediators between the human members of the community and the set of other-than-human beings involved in farming: water, earth, and guardian mountains. In this way the Inka State reordered regional cosmopolitics and the position of the different beings, promoting the State as the intermediary between humans and other-than-human beings, and thus allowing successful farming practices (see also Berenguer and Salazar 2017).

This can be seen in two examples. In the models at Cupo, a protuberance of the rock resembles the local (and visible) guardian mountain that fed the pre-Hispanic irrigation system (please see Fig. 4.5). The performativity of this model implied that it was a human person who brought the water to the mountain, allowing it to circulate to the fields; the ancestors and mountains were relegated to second place in the field of relations (Troncoso 2019). In the case of the models at Chiu-Chiu and Bajada del Toro, it has not been possible to identify a relief feature that replicates a guardian mountain, but these models are deliberately placed in visual fields where the guardian mountains cannot be seen. This reaffirms the action of humans as givers of water to feed the earth and the fields, while excluding the mountain-ancestors visually (Troncoso et al. 2019).

Fig. 4.4 Visual relations of Chiu-Chiu carved outcrops to their agrarian landscape

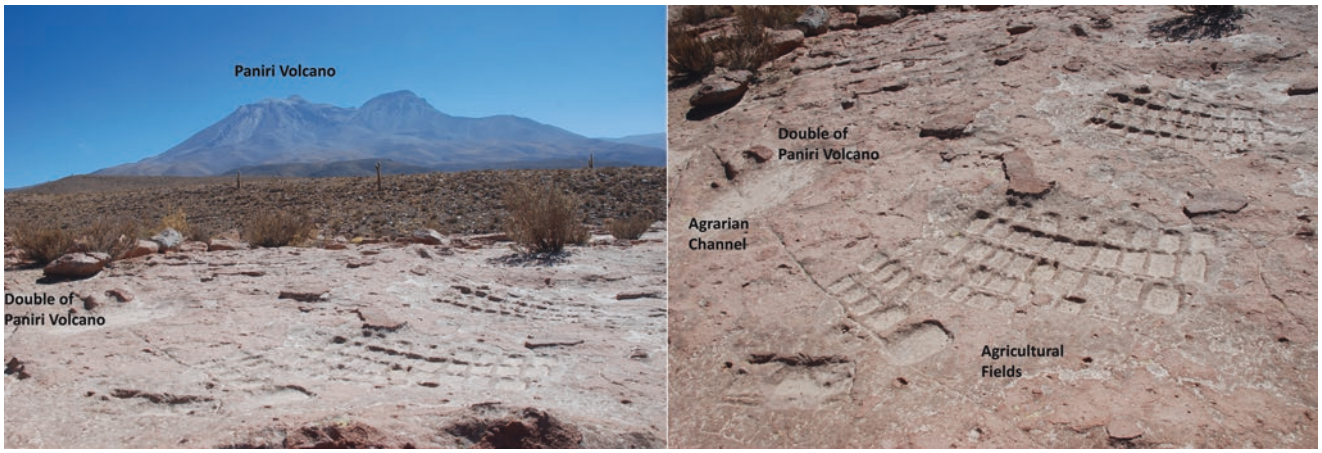

Fig. 4.5 Inka carved outcrop of Cupo and double of Paniri Volcano

This practice therefore serves to reorganize the hierarchy and distribution of beings, powers, and agentive and affective capacities in the farming cycle, but at the same time it breaks with local traditions to produce a new order and cosmopolitics in the region.

4.3 Discussion

In a recent review on the archaeology of art, John Robb (2017) highlighted the need to understand what art *does* rather than focusing on what it *means*. Understanding what art does requires us to understand not only how it unfolds its agentive and affective capacities, but also what assemblages and articulations generate the making and experiencing of art. The notions of technical and socio-historical modes of existence allow us to refer to these complementary levels of analysis to achieve this objective, to reconstruct the historical dimension and to understand the cosmopolitics deployed through this practice/materiality.

One approach to understanding these modes of existence and their affective capacities as they are expressed in rock images is through the analysis of the practices of image making. For Jones (2020; see also Ingold 2013), every act of making deploys a set of affects based on the relations between bodies and materials. While this is correct, the fact remains that these affects are historically determined, not only by the kind of materials used, but also by the TME and SHME in which these practices occur. In the case of El Médano paintings, their production was a recurrent practice over time, as is shown by the large number of known paintings. Beyond the particular affects unfolded between places, bodies, rocks, and pigments, the central nature of this activity was based on inland spaces promoting an engagement with multiples practices and beings, creating a maritime pluripresence in spaces distant from the coastline. Practices of making, therefore, deployed a mode of existence that went beyond the human bodies, rocks, and materials required to make rock paintings. This same affect subsequently generated these paintings experientially, linking these arid inland spaces with practices and beings belonging to the ocean. This situation also implied a temporality proper to these rock art experiences, which anchored them to the mobility and interaction circuits connecting the sea with the continental platform.

The Inka models show a different field of relations. The act of making in this case was a practice that implied a differential relation between bodies and materials based on the different ways of treating the rock (carving vs. painting). This carving was also based on a particular capacity of the creators: generating a double and reproducing an agricultural landscape, allowing the transfer of materials and potentialities between the surrounding agricultural landscape and the carved rock. However, this act of making was not recurrent over time, given the scarcity of these rock manifestations in the area; these practices of making may have been deployed on dates associated with the farming calendar, marking a different temporality to El Médano rock art.

The agentive and affective capacities of the two sets of rock art differed remarkably. For El Médano paintings, these capacities were oriented towards producing articulation with the sea, its practices, and beings; the Inka models on the other hand articulated multiple beings of the farming environment, starting by making water run through the models' channels in a place that is visually articulated with large, irrigated field systems. In the former case, these articulations with the sea are deployed visually in motifs made by applying materials to the rock, while in the models they are created by replicating a landscape and reproducing the territory in a rock, making a double. Due to their different intensities of production, these agentive and affective capacities are also

presented according to the temporalities and rhythms of each SHME and TME.

However, the cosmopractices of making/experiencing in both rock art cases implied articulation with a set of other-than-humans which formed part of these collectives, unfolding a particular and historical cosmopolitics. Each of these cosmopolitics was articulated with a SHME in which different beings were integrated—which acquired different types of agentive and affective capacities. The rocks themselves, through their interaction with the act of making, its temporalities, and these other-than-human beings, acquired particular positions and capacities. In the case of El Médano, nothing indicates that the painted rocks acted as doubles of the landscape, especially considering that the relation of visibility between 'double' and 'original' is central to the agentive capacity of the Inka models. These agentive capacities of the rocks also arise from the necessary interactions with other materials and images: the meshwork of pigments, maritime images, rocks, and inland spaces was crucial for El Médano, while in the case of the models, the rocks, carvings, mountains, water, and surrounding farmed territory were crucial. Both articulations, therefore, show the necessary and profound articulations between TME and SHME.

At the same time, this cosmopolitics not only gave different positions and capacities to these non-human beings, but also formed different social collectives. In both cases these went beyond the merely human. In the case of El Médano, these collectives articulated with the sea and with a series of other-than-humans that inhabited the area; in the case of the models this collective comprised mountains and Pachamama, beings that ethnography and ethnohistory have shown to be central in Andean social life and cosmopolitics.

The cosmopractice of making and experiencing rock art, therefore, was enacted and deployed within modes of existence and an historically situated cosmopolitics. Each act of making and experiencing set in motion a whole field of relations which went beyond the images, the materials, and the bodies involved; in both cases, the surrounding space was a main line weaving a whole relational field, emerging a set of agentive and affective capacities (Ingold 2015). Although today we define both of these case studies as rock art and visual representations, El Médano paintings and the Inka models are completely different materialities/practices/experientialities from one another, and enacted divergent fields of historical relations, creating and moving particular ontologized worlds.

The concepts of TME and SHME are critical to understanding the generative capacities of rock art and historicizing their practice/experientiality/materiality. They allow us to do more than provide a description of the past and these other worlds: we can understand the nature of the social collectives of the past, and how the different actors—human and non-human—performed and promoted actions within the formation of socio-political life. While both our case studies contain other-than-humans that are central to the formation of social existence, their articulation in this meshwork is differentiated. The central feature in the case of El Médano seems to be the constitution of pluripresence to compose a community of beings, without implying great differences in terms of socio-political power. In the case of the Inka models the situation is reversed: the making of the rock art seeks to position a socio-political entity and a being that we can call human—Sapa Inka—as the principal actor of fertility and agricultural productivity, controlling a series of other-than-human that previously occupied this central position. In the act of creating these models, a whole cosmopolitical strategy was unfolded to reorder the distribution of power and generative capacities of a set of other-than-humans.

The same art-making practices are articulated with these TME and SHME. If rock art generates worlds through its affective capacities, the act of making produces these worlds. As Simondon (2008) indicates, in its technical mode of existence this process of making produces a broader articulation which exceeds the encounter and interaction between bodies, rocks, and materials. The capacities and properties of the materials are not only physical, but also historical and ontological. Its historicity is not based only on the types of materials used, or the techniques applied, but also on the properties acquired in this case by the rock, which—as we have seen—enacted fields of relations that differ widely between the painted rocks of El Médano and the rocks carved to create the Inka models.

Finally, behind all these TME, SHME, and cosmopolitics, we find a distribution of social collectives, beings, and agentive capacities that goes beyond Modernity and its dichotomy between nature and culture. This situation implies the need to historicize the set of relations on which worlds are based, and to understand the different positions, capacities, and properties of humans, non-humans, materials, and places, knowing that these positions and capacities are neither static nor universal. Historicity, therefore, features as a central axis for understanding what today we call rock art, and recovering its historicity implies going beyond the object to understand its relations, knots, and deployment from its TME and SHME.

4.4 Concluding Remarks

In the previous pages, we explored an interpretation of prehispanic rock art in the Southern Andes from a perspective that combine cosmopolitics and mode of existence. While the understanding of the Inka study-case is based on archaeological, and etnohistorical sources, the example of coastal hunter-gatherer rock art relies on archaeological data and a more theoretically informed perspective. As one referee

pointed out, El Médano study-case could be seen as a theoretical construct lacking empirical evidence rather than an archaeological interpretation that combine data and theory. Although I do not share this viewpoint, it raises a pertinent discussion about the production of knowledge in archaeology and the boundaries and possibilities of the ontological perspectives to offer a different understanding of historical processes and social life. I think this point aligns well with our study-case. On one hand, the archaeological data suggests an extremely coastal-oriented way of life of hunter-gatherer which entails a specific set of practices and experiences between human and a particular group of non-humans beings. Some aspects of this relationship were enacted in the rock paintings.

On the other hand, the archaeological interpretation cannot take place without a horizon of intelligibility that recognizes the historical fabric of the modes of existence (Criado 2001, 2012). Ontological perspectives provide us with other horizons of intelligibility to question the archaeological record, assessing whether certain attributes of these horizons are in tune with the data, opening new ways for the interpretation. Our perspective aims to explore rock art and socio-historical processes in the Southern Andes is in accordance with this idea, using some ontological and ethnographical insights from hunter-gatherer regarding the engagements of human and non-humans as relevant for understanding rock art. This strategy is no different from the utilization of ethnographic and ethnoarchaeological knowledge about patterns of movement or technological strategies among current hunter-gatherers to comprehend the behaviour of these groups in ancient times. In our case, the specificity of our perspective lies in the use of certain ontological aspects related to hunter-gatherers and the recognition of the historical being-in-the-world of the groups who made El Médano rock art. Ontology and modes of existence are not mental templates, but they emerge from the historical experiences, relations, and affections that human groups unfold through the process of inhabiting the word, and rock art is one of the participants of this historical fabric.

Beyond the aforementioned, both study-cases allow us to open our minds to the existence of these other worlds and its collectives, but also to historicize them and substantiate them through understanding how they create histories, collectives, and social processes. The concept of cosmopolitics allows us to move forward, recognizing not just the role of other-than-humans in social life, but highlighting the historical character of the political beings and how other-than-humans have produced history and encouraged cosmopractices and experiences by humans.

Rock art enables us to understand and historicize these other worlds. Its recurrence in space and its persistence over long periods of time in different parts of the world give us the potential to unravel its TME and the articulations with its SHME. Its practical, spatial, visual, and material nature enables us to begin to understand and historicize these different worlds and social collectives that have inhabited the territory.

Rock art does not have the potential to reveal the 'worlding' practices of people in the past, but deciphering its TME and SHME can help us to call into question our own world and imagine others. The two examples explored in this chapter demonstrate how social collectives and the fields of relations, practice, and experience were based in worlds where the basic premise of the Western world, i.e. the separation between culture and nature, did not exist. Therefore, the presence of non-human beings was central to the formation and reproduction of social life. Exploring the worlds created by rock art opens a window to imagine, think, and produce other relations between humans and other-than-humans present in our own time and space. In a recent collection of essays on the role of rock art in today's world, Taçon and Brady (2016, 11; see also Taçon 2019) challenge us to think about the contemporary relevance of rock art, which in their work is no doubt concerned with the well-being of Indigenous communities. We believe that this principle could be extended globally. The climatic and social crises currently facing the planet require new solutions based on creating new worlds founded on forms and principles that will not only guide our social practices but will also define other types of social collectives and ways of articulating with the other-than-human that we call nature. This situation is particularly critical in South America, where the tensions resulting from colonialism, inequality, climate change, and extractive economies are demanding new models of development and a new deal between humans, places, and other-than-humans. In the name of progress (ontologically based on Modernity's opposition between culture and nature), millions of people have been removed from their territories and denied the basic resources for reproduction; additionally, the engagements, experiences, and practices that local communities deploy in their relations with the other-than-human are despised and underrated.

Rock art can do more than reveal these other worlds. Its affective capacities can bring them into the present and shake the foundations of our world. Fiore (1995–96, 256) has highlighted the creative potential of rock art to question our bases and move us to rethink our world, as she affirms: art as a social entity produces something new. In the same vein, Grosz (2020, 79) proposes that art "take[s] on the task of representing the future, of preceding and summoning up sensations to come, a people to come, worlds or universes to come… Art is intensely political not in the sense that it is a collective or community activity… but in the sense that it elaborates the possibilities of new." Its presence in space, its visuality and materiality in an inhabited territory, allow rock art to show us the cosmopolitics of the past and to construct

a new cosmopolitics. In other words, rock art was part of previous worlds, and we can use it and think of it as a resource to generate imminent future worlds, promoting the practices of encountering this materiality as transformative practices which make visible forms and relations that in our world do not appear feasible (Escobar 2018). Through these encounters we can produce new relational practices based on other cosmopolitics informed by this co-constitution of humans, places, and other-than-humans, making use of their TME and SHME for "ontologically futuring practices" (Escobar 2018, 133).

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5 Regional Reponses to Global Climate Change: Exploring Anthropomorphic Depictions in Rock and Mobiliary Art Expressions from the Kimberley and Europe During the Late and Terminal Pleistocene

Peter Veth, Sam Harper, and Martin Porr

Abstract

Northern Australia and particularly the Kimberley and Arnhem Land regions are well known for the intensive production of figurative anthropomorphs as a dominant theme by the terminal Pleistocene. Ongoing analysis and dating places the archaeological efflorescence of individual human figures and grouped scenes, often with extraordinary detail in the depictions of accoutrements, weaponry, and personal ornamentation, subsequent to the LGM (MIS 2) and across the Pleistocene-Holocene transition. In this chapter, we argue that the intensive production of human figures – in contrast to preceding millennia of predominantly figurative animal motifs – was a cultural response to ongoing loss of territory with sea level rise (and especially on the shallow continental shelves of the north), greater identity marking and emerging regionalism in northern Australia starting between 18–12 ka. While the impacts and climate details of MIS 3 and 2 were clearly different in the northern hemisphere, we believe there are complementary trajectories in Western Eurasian art bodies, which equally display regional and interregional patterns during approximately the same time period in both parietal and mobiliary art. We explore whether global drivers associated with glacio-eustatic trends, the loss of land through inundation and the emergence and subsequent relaxation of glacial refugia, might be implicated in the enhancement of anthropomorphic assemblages located on opposite sides of the world.

Keywords

Anthropomorphs · Climate change · Regionalism · Identity · Animals · Last Glacial Maximum (LGM) · Networks

5.1 Introduction

In this paper we explore the regionalisation of rock art styles in the terminal Pleistocene of Northern Australia (c. 18–12 ka) and the Late Pleistocene of Europe (c. 45–12 ka) to elucidate examples of human network building at different temporal and spatial scales (Johnston et al. 2017; Ouzman et al. 2017) (Fig. 5.1). The early development of regional rock art styles provides one important stream of evidence for how people have negotiated change and cross-cultural interaction, utilising rock and mobiliary art within social networks and for information exchange. In Northern Australia, human-focused rock art provides a rich repository of human sociality with a focus on body ornaments and perishable accoutrements not normally recovered from excavation contexts. Of particular interest in this respect is the *Gwion* (or *Gwion Gwion*) art style in the Kimberley (Northwest Australia). This sits at an important juncture of social and demographic reconfigurations, dated to the terminal Pleistocene/early Holocene transition (~12 ka) as outlined in several foundational papers characterising time brackets for earlier figurative animal art from 17 ka – 13 ka and for human *Gwion* Gwion art at c. 12 ka (Finch et al. 2020, 2021). We will discuss these findings in the light of rock art from the European Upper Palaeolithic and the transformative environmental changes that occurred during and after the Last Glacial Maximum (LGM). We explore a range of interpreta-

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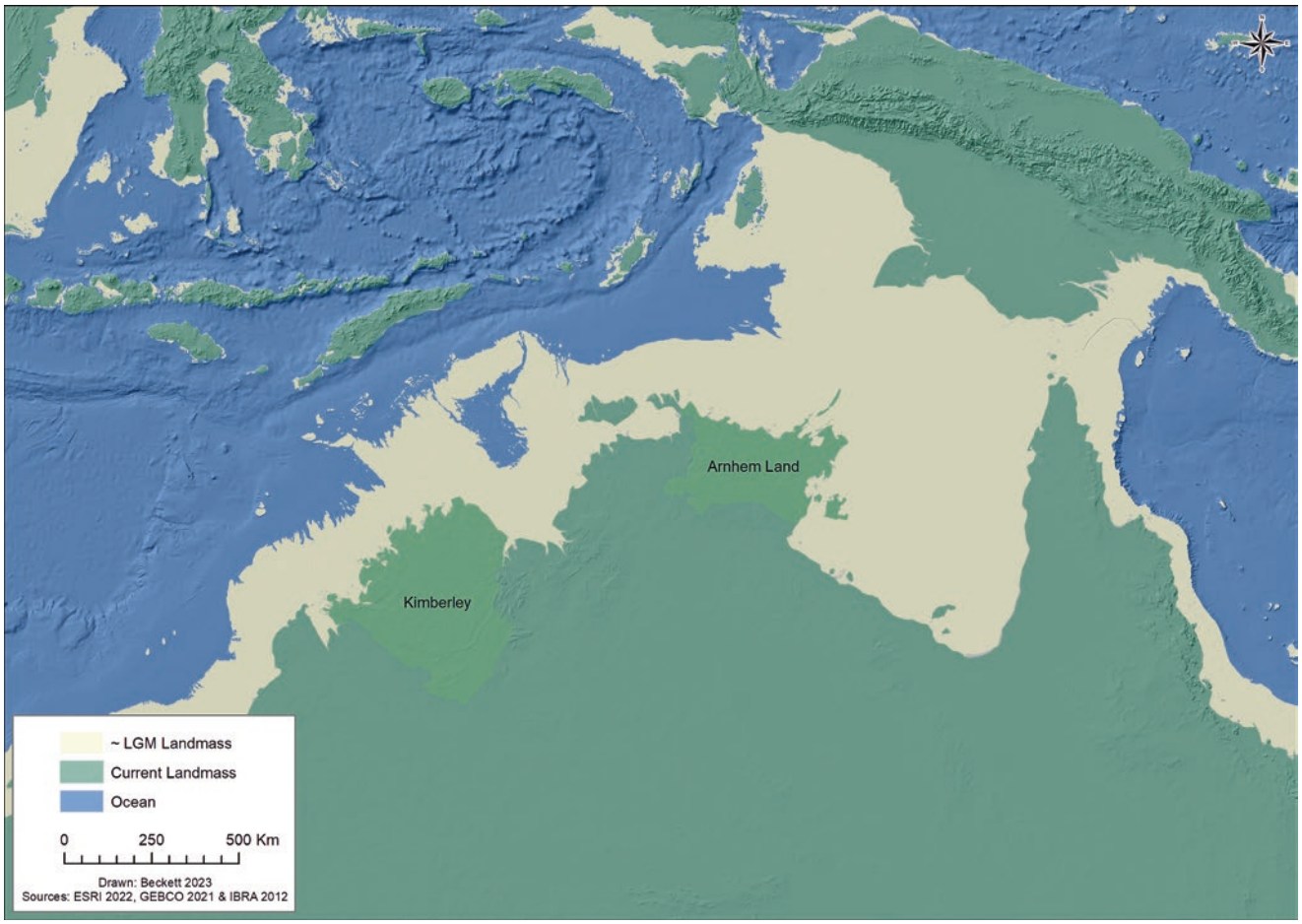

Fig. 5.1 Map of the Kimberley region and Arnhem Land showing extent of the coastal plain towards the Timor Sea at peak LGM c. 20 ka. (Map: Emma Beckett).

tions between the two hemispheres. For Northern Australia, we build upon recent and emerging research across the wider region that includes the suggestion of the existence of a tropical Pleistocene era culture bloc with possible regional cultural exchanges (Florin et al. 2020; Veth et al. 2021). In the context of European Palaeolithic art, we consider the intersection of past social and cultural meanings at different scales. For both the northern and southern hemispheres, we contextualize the respective phenomena in relation to recent archaeological evidence, new radiometric dates, emerging palaeoclimatic frameworks, and modelled changes in social organization. Through our analysis, we want to explore late and terminal Pleistocene networks through rock art and mobiliary figurative expressions. Our explorations will draw attention to the existence and persistence of past regional relationships that emerged at opposite ends of the world and perhaps in response to similar global glacio-eustatic drivers (see discussion in Aubert et al. 2018). While these networks should not be regarded as historical precursors to the age of globalization that characterises the modern world, they allow insights into the sometimes vast, spatial dimensions of human flexibility, adaptability, and fundamental sociality through deep time. We aim to explore the tensions between global narratives – here profiling the expanding and contracting worlds and human responses due to glacio-eustatic and climatic changes – and local cultural expressions that see forager-gatherer-hunters engage in intensive production of anthropomorphic form(s) in both the southern and northern hemispheres, yet unquestionably as unique local expressions with clear emblematic differences.

5.2 Art, Regionalisation, Globalization, and Networks

One of the most persistent topics in the study of past hunter-gatherer societies is the attempt to understand and model their spatial behaviours. Before the widespread adoption of farming and animal husbandry practices after ca. 10 ka ago, virtually all human populations relied on different forms of mobility and territorial marking to fulfil their social and economic needs. Both within hunter-gatherer studies and in relation to the need to develop a systematic basis for archaeological

inferences, studies into mobility patterns and related causalities have increased rapidly over the last several decades (Kelly 1992; Perreault and Jeffrey Brantingham 2011; Whallon 2006). From the 1960s onwards, an era which can be described as the modern phase of hunter-gatherer studies, the crucial role of the environment was thoroughly recognised and explored in increasingly sophisticated ways. Probably the most influential early paper in this respect was Binford's (1980) *Willow smoke and dogs' tails*, in which he proposed a basic distinction between a forager and a collector mobility pattern. This distinction is fundamentally connected to the spatial and temporal distribution of resources in an environment and the respective human responses to these challenges. From these insights, a range of conclusions can be drawn about a wide range of human behaviours at different temporal scales and with reference to the impact on different material cultural expressions ranging from the pattern of sites across landscapes, the structure of camp sites and down to preferred hunting equipment (see e.g., Bleed 1986). However, while such a human behavioural ecology approach has its clear merits, human societies and behaviours do not exist in isolation and thus issues of demography, the creation and maintenance of social networks, and the mechanisms for the exchange of information within and between populations need to be equally considered. In this paper, we aim to explore some of these wider themes in relation to the possible roles of rock art and mobiliary art objects (after Conkey 1989).

Explicit attempts have been made in Australia to theoretically engage rock art styles with archaeology and palaeoenvironmental studies and many of the polarities inherent in previous approaches (for example, informed versus formal; symbolic versus functional; ritual versus mundane; gendered versus ungendered) are now being unpacked in more nuanced ways (chapters in McDonald and Veth 2012; Veth et al. 2016, 2021). The fact that rock art can signal information at many levels and has agency between culture groups and across time and space as well as inter-generationally is a recurrent theme as is its organising role in ideational, sensory, social organizational, religious, hierarchical, territorial, and economic domains. The information content of rock art, when viewed within its larger archaeological and environmental contexts, can inform on multiple facets of past behavioural systems (Porr and Veth 2017). And as such, we can use different theoretical approaches for different scales of analysis.

At a broad scale, an evolutionary approach has the significant advantage in that it does not assume (or require) 'uniform' human intentionality for the continuities and changes in the styles used. Put another way, proliferation events in successive rock art style phases and gradual changes between these (Travers 2015) can be viewed as patterned symbolic behaviours that are the human evolutionary outcomes of new ecological states. The same pressures will influence other non-symbolic social and economic behaviours (such as group mobility and stone artefact technological systems) and, therefore, these archaeological records are coupled with changing art production modes. An example would be the greater degree of homogeneity in rock art styles across arid regions due to the low density and high mobility of groups, and with a high degree of language/dialect permeability (McDonald and Veth 2013a, b). Innovation, learning and adoption of rock art operate as humanly mediated outcomes. However, the success of its transmission through space and time will be influenced by the direction and intensity of environmental, climatic, and hydrological changes.

In evaluating rock art style phases covering many millennia, we argue that the temptation to use single prime movers to explain change (such as climate, demography, or artistic convention) should be avoided. Changes are likely to be multi-factorial and coupled rather than deterministic, with longer-term processes favoured. We suggest that these explanatory frameworks can encompass evolutionary social biology approaches and Group Boundary Formation (GBF) theory (Foley and Lahr 2011); climate drivers and biome changes as these influence hunter-gatherer mobility patterns (Kuhn et al. 2016); and changing information-exchange networks (McDonald and Veth 2013a). Additionally, the repeated and recursive use of places and existing art (McDonald and Veth 2013b) and cladal, non-progressive models, for changing art styles (Johnston et al. 2017; Travers 2015; Veth et al. 2016; Welch 2016) should also be incorporated as these are well-documented human behaviours over time. Settlement and aggregation behaviours can be understood according to GBF and Information Exchange Theory (IET; and see Veth et al. 2021). Using GBF and IET, different settlement and mobility patterns are modelled to be in *phase* with – and not determined by – different environmental settings (Veth et al. 2000; Whallon 2006). That social groups would have experienced various stressors with these environmental, territorial and consequent demographic changes is not in question. We argue that changes in a group's boundary maintenance and information exchange behaviours are often expressed and managed most visibly via rock art styles, a theme developed in detail by Conkey (1978, 1980 and 1984, also see Wobst 1977). Style phases are a specific coding of a group's self-image and subsistence as groups engage with environmental and cultural drivers. In the Australian case studies discussed below, during higher precipitation regimes, more 'closed' information systems tend to occur with greater emblematic group-identifying behaviours and higher stylistic heterogeneity. In contrast, arid phases generally tend to result in more 'open' information systems where more stylistically homogeneous schemes occur across permeable group boundaries and over larger landscapes (McDonald and Veth 2013a). While some of these latter aspects can also be discerned in European Palaeolithic art, it also needs to be recognised that the dimensions discussed so

far generally do not explain all aspects of figurative imagery. Material culture is always polysemic and meaning is established relationally (e.g., Motta and Veth 2021). This applies both to past meanings and those created through modern research questions and analyses (Porr 2018). Material culture items can generally be related to different causalities and different rhythms that operate at different temporal scales. At smaller scales, social meanings and particular contexts of use and consumption can often be discerned while at lager scales regional and interregional social networks become relevant as they relate to particular environmental conditions.

5.3 Europe

Europe comprises the western portion of the Eurasian subcontinent which is the largest land mass on the planet (Fig. 5.2), stretching from the Atlantic Coast to the Eastern shores of Siberia. This enormous region has a human history that covers at least two million years as evidenced by early hominin sites in Georgia and China (Muttoni et al. 2018). However, here, we will focus on a much later period and 'constrained' area, the Upper Palaeolithic of Europe, which is broadly dated to between ca. 45 and 12 ka ago. During this time, Neanderthals were replaced by *Homo sapiens* populations and from ca. 40 ka ago, Europe was exclusively inhabited by the latter (Higham et al. 2014). The ability to create regional or interregional networks might have significantly contributed to the survival rates and expansion of *Homo sapiens* populations during times of environmental stress. As French (2021) has argued, the Neanderthal-to-*Homo sapiens* transition marks an important threshold in the demographic history of Eurasia. It is the time that saw a crucial expansion of social lives and an increase in the connectedness of human societies on increasingly larger scales. Populations, "while still small, were no longer 'small-scale'" (French 2021, 173).

5.3.1 Environment and Palaeo-Climate

The time period that is relevant for the European Upper Palaeolithic falls within Marine Isotope Stages (MIS) 3 and 2. Most importantly, it encompasses the Last Glacial Maximum (LGM), which is currently dated to between ca.

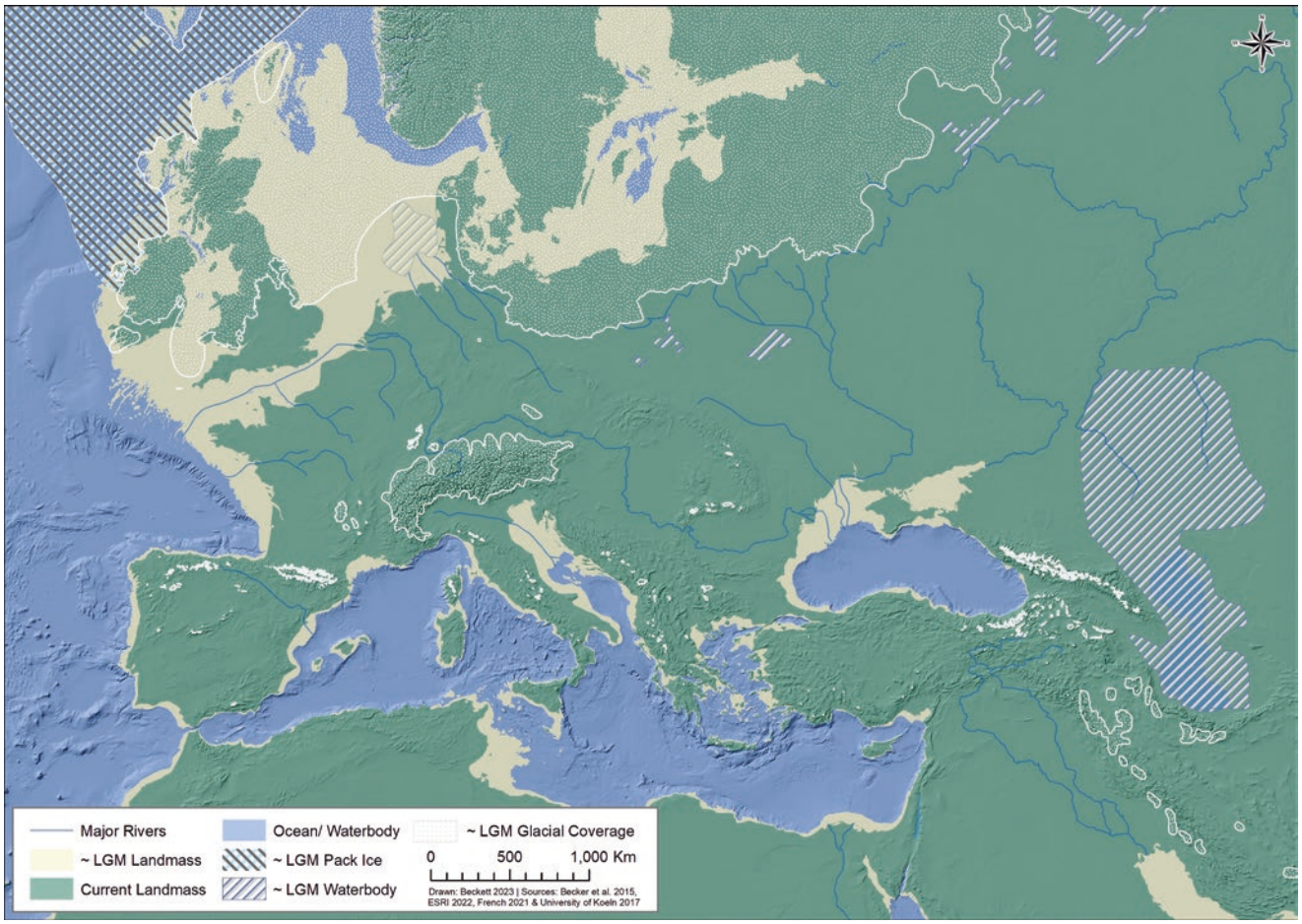

Fig. 5.2 Map of the Eurasian subcontinent showing key regions discussed in this paper. (Map: Emma Beckett)

27 and 20 ka. While significant climatic fluctuations still occurred, the LGM was characterised by generally very cold conditions and a considerable extension of Alpine and Scandinavian glaciers, which made occupation of the northern latitudes of the continent challenging for human populations. It is clear that large parts of the current temperate zone of Europe were unoccupied during the LGM (Maier and Zimmermann 2017). The climatic downturn was followed by a complex but generally rapid phase of amelioration. The retreat of the glaciers was followed by the establishment of open steppe and tundra habitats, which were superseded by both open and increasingly closed coniferous and deciduous forest types. The first modern humans entering Eurasia sometime between 50 and 40 ka would have encountered deciduous woodlands in the southern parts of the region, for example, around the current Mediterranean and Black Sea, and coniferous forests that stretched across the whole northern sections of the continent. Overall, during MIS 3, habitats exhibited much variability, offering a range of adaptive opportunities, including mountainous and coastal environments. With the cascading down of temperatures, these opportunities partly narrowed but others were enhanced or emerged. The period between ca. 27 and 20 ka saw the expansion of boral and tundra conditions further towards the south, impacting the productivity of plant and animal resources. However, during this time, Europe also became part of one of the most significant and rich glacial environments connected to one of the most iconic Ice Age animals. The concept of the so-called 'mammoth steppe' was first proposed by Guthrie (1990), who argued for the existence of this specifically Middle and Late Pleistocene habitat that does not have a clear current ecological equivalent. This steppe was the product of a unique combination of relatively low temperatures and marked aridity during the Pleistocene, which both created conditions for a rich soil and abundant growth of grasses. This environment supported an extraordinarily rich biomass of grazing animals (mammoths, bison, horses, woolly rhinoceros, reindeer etc.) together with communities of large predators (lions, leopards, wolves, and hyenas) (Gamble 2013, 232–236). When climatic conditions deteriorated further around the LGM, however, human populations retreated towards refugia in the south of the continent, for example in Southwestern Europe. Accordingly, the amelioration of climate after ca. 18 ka allowed populations to expand again northwards and resettle regions that were either previously covered by glaciers or had endured arctic conditions during the LGM.

5.3.2 Archaeology

The climatic and environmental changes described above equally presented challenges and opportunities for human occupation. After the initial occupation of Europe by *Homo sapiens* groups, these populations followed complex patterns of expansion and contraction interacting with geographical, environmental, and climatic variables. The first fully established Upper Palaeolithic technocomplex is the so-called Aurignacian (ca. 45 to 28 ka). It is generally accepted that the Aurignacian was exclusively associated with *Homo sapiens*. Compared to the preceding Middle Palaeolithic, it is characterised by a much higher standardisation in lithic and organic technologies, which are recognisable from the Iberian Peninsula to the Caucasus. These similarities seem to reflect more integrated and stable social transmission mechanisms that operated over vast distances and for several 1000 years (White et al. 2015). The Aurignacian is also the time during which personal ornaments become much more common in the archaeological record. They were made from a range of organic materials and were often highly standardised in their shapes and decorations. It has been argued that the distribution of these implements across Europe reflects the existence of ethno-linguistic groupings during the Aurignacian (Vanhaeren and d'Errico 2006). At a smaller scale, it appears that differences in ornamentation' allowed for the differentiation of local social groups inhabiting neighbouring valleys (Dutkiewicz et al. 2018). Despite these undeniable complexities, the settlement patterns across Eurasia were rather diffuse and population densities were probably quite low (Schmidt and Zimmermann 2019). At a local level, however, differentiations between habitation sites and locales for other and probably restricted purposes can be observed, for example, for some cave sites in the Swabian Jura, Southwest Germany (Porr 2015).

During the subsequent Gravettian phase (ca. 28 to 20 ka), the increasingly cooler and dryer conditions allowed human populations to make use of the opportunities presented by the mammoth steppe environment (Bicho et al. 2017). While the Aurignacian was mostly restricted to Europe and parts of Anatolia, the Gravettian became a true Eurasian technocomplex and typical tool types from this period can be found over vast distances across Europe and the Eurasian Plain. The presence of large and predictable herds of herbivores allowed the development of much more focused settlement patterns and demographic expansion. Large numbers of mammoths and other grazing herbivores were not only utilised for food. Their bones were also used to construct massive open-air habitation structures that were possibly occupied on a semi-permanent basis enabled by food storage practices. Most of these mega-sites occur along the Desna/Dnieper river system and are integrated into large settlements of up to 10,000 square metres (Soffer et al. 2000). From this period, there are also a number of complex multiple burial sites containing rich grave goods that point towards the emergence of social stratification (Pettitt 2011).

These complex social and economic structures were disrupted during the height of the LGM, which severed lifeways and communication pathways operating across the Eurasian plain (Maier and Zimmermann 2017). During the coldest periods of the LGM, large parts of Central and Eastern Europe were uninhabited. Subsequently, Europe was resettled from Southern European refugia while Eastern Europe was recolonised from refugia along the Caucasus and other Central Asian Mountain ranges. In Western Europe, the main post-LGM technocomplex was the Magdalenian that can be found as far as present-day Poland. In Eastern Europe, so-called Epi-Gravettian technocomplexes show more continuity with pre-LGM traditions but in both cases, the trajectories were leading towards various Late Palaeolithic technocomplexes of highly mobile foragers in a world of increasingly forested environments (Wygal and Heidenreich 2014; Gavrilov 2021; Miller 2012; Lengyel et al. 2021).

5.3.3 Rock Art and Mobiliary Art

It has long been noted that the emergence of Upper Palaeolithic technocomplexes across Eurasia appear to be connected with the regular occurrences of unequivocal figurative imagery in the archaeological record (Lorblanchet and Bahn 2017). While different archaeological artefact categories do not map neatly onto art/stylistic categories in the European record, already during the Aurignacian the imagery shows a high level of diversity and occurs both in the form of rock art and mobiliary objects. The latter include the famous Grotte Chauvet and the ivory statuettes of the Swabian Jura Mountains (Floss 2015; Clottes 2003). During this early period, figurative representations, which overwhelmingly depict animals, are not as standardised as organic or lithic tools. The spatial patterning seems rather to follow the evidence of personal ornaments, outlined above, with broadly shared conventions and regional variations. The sample size for figurative representations is, however, very small and thus no quantitative analyses are possible. A qualitative comparison between the Grotte Chauvet and the mobiliary art of the Swabian Jura caves shows a broad similarity in the choice of motifs (with a preference for lions) and some stylistic conventions but also a lot of variability (a trend first observed by Clottes 1995 and elsewhere). Cave art appears to be absent from Central and Eastern Europe, instead being restricted to Southwest Europe. Overall, the available evidence appears to mirror the structure of Aurignacian demography with relatively low population densities and a high degree of social and cultural variability. The tension between shared conventions and expressions of individuality can also be seen in some of the collections of figurative art themselves. In the Swabian Jura statuettes, the depictions of mammoths and lions show coherent references to animal behaviours (along a carnivore/herbivore opposition) but little stylistic standardisation (Porr 2010a). Figurative imagery also exhibits a complex dialectic between change and continuity through time, which is evidenced by the initial occurrence of a female statuette at Hohle Fels cave (Germany) and a comparable depiction at Chauvet Cave (France) during the Aurignacian, long before the proliferation of this motif during the Gravettian period (Porr 2010b). Figurative imagery does not simply change with environmental conditions and adaptive strategies; it also follows its own rhythms.

Some of the most well-known figurative forms from the European Palaeolithic are the female statuettes from the Gravettian period. The most famous of these statuettes is the so-called Venus of Willendorf. These representations occur mostly as mobiliary or portable items, however other expressions are also known such as the famous engraving at Laussel, France (Gaudzinski-Windheuser and Jöris 2015). One particularly striking feature of these female statuettes is their enormous geographical range. They occur from Iberia to the Baikal region of Siberia. Across this enormous area and despite some significant variations, the statuettes share several common features: they are usually carved in stone or ivory, they often depict unclothed and, less commonly, clothed women. In Western Eurasia, they seem often to depict mature women with sometimes exaggerated sexual attributes. Contextually, the statuettes almost always occur in habitation sites, and they appear, therefore, to be connected to a domestic and public sphere. They are a regular feature in the extensive habitation structures mentioned above. In a seminal paper, Gamble (1982) argued that the statuettes reflect extensive networks of interactions and alliances which operated to mitigate risk during the harsh climatic conditions of the LGM. The statuettes were consequently interpreted as "visual mechanisms of information exchange designed to establish and maintain alliance networks between groups living up to thousands of kilometres apart" (French 2021, 242). The Willendorf-style motifs are, therefore, interpreted as evidence for the existence of open social systems, which is consistent with the ecological structure of the mammoth steppe, as outlined above (e.g., Conkey et al. 1997; Soffer et al. 2000). This inference is further supported by demographic reconstructions that seem to suggest that Gravettian interaction networks allowed for the survival of viable populations, linked as nodes, during the LGM despite local extinction events (Maier and Zimmermann 2017).

The role of rock art and mobiliary art during the European Upper Palaeolithic has also been explored for post-LGM societies. The proliferation of mobiliary art objects and

painted cave sites in the Franco-Cantabrian region in Southwest Europe after ca. 18 ka has been explained as a reflection of demographic refugia effects and the necessity to negotiate increased population densities (Conkey 1987; Rivero and Sauvet 2014; Gravel-Miguel 2016; Fuentes et al. 2019). In terms of the interrelatedness between figurative imagery and social networks, the re-colonisation of Central and North-western Europe was also accompanied by the emergence of new and widely distributed motifs (Maier 2012). During the Late Magdalenian period between ca. 16 and 13 ka, the so-called Gönnersdorf-style female figurines emerge (Bosinski 1987). They are characterised by highly abstract and standardised depictions of the female body. Most famous in this context are the numerous engravings on slate plaques at the site of Gönnersdorf, Germany. Here, they are arranged in groups and seemingly engaged in communal activities or rituals (Bosinski et al. 2001). They also occur as mobiliary objects and were apparently personal items. These objects were, for example, found at the Magdalenian sites of Oelknitz and Nebra (Fig. 5.3) (see Braun 2018 for an overview). Finally, in some exceptional cases, they were also manufactured from lithic materials as evidenced by some extraordinary findings in Poland (Fiedorczuk et al. 2007). It has been argued that these representations are connected with the rapid (re)colonisation of post-LGM habitats (Maier 2015, 2017). They possibly reflect the establishment of networks between pioneering groups with their level of abstraction acting to suppress individual expression. Gaudzinski-Windheuser and Jöris (2015, 312) have argued that the respective long-distance communication networks "focused on the mandatory functioning of individuals within a group to ensure survival. Thus, the individual sphere must have been subordinate for the group and was presumably reflected in the absence of depictions of individuals". While the details of this interpretation need to be addressed in future contextual analyses, during the Late Palaeolithic period, mobiliary art clearly played a crucial role in the establishment and maintenance of large-scale cultural entities and reflects open systems of social interaction.

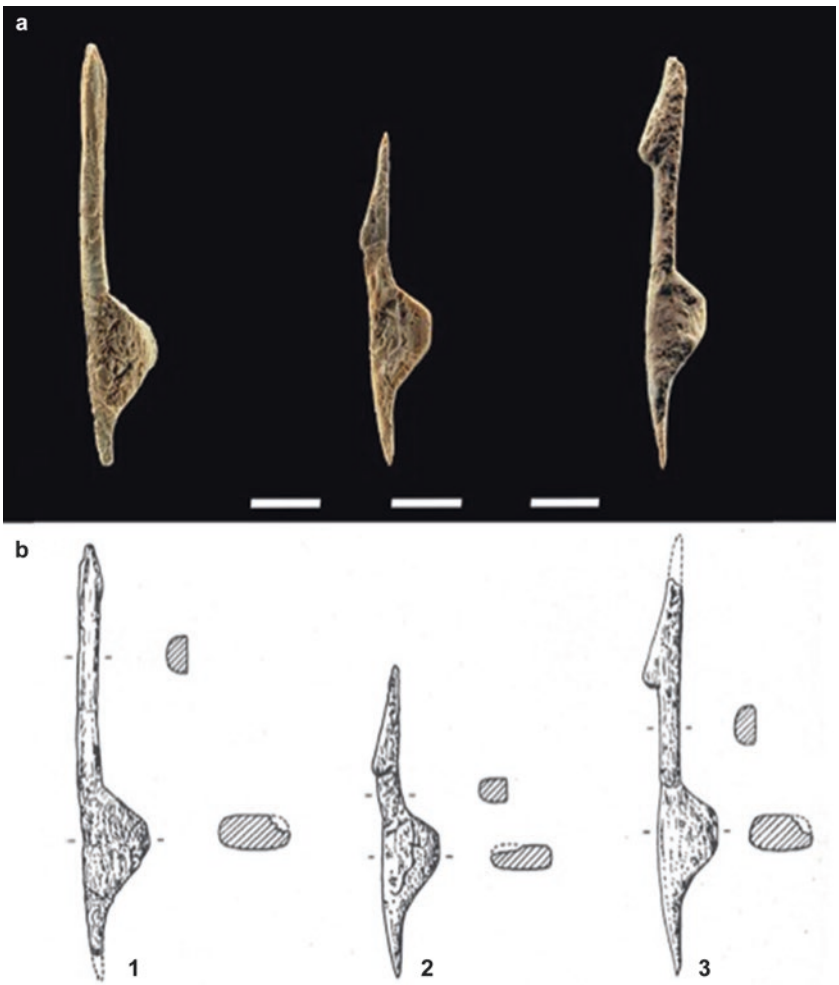

Fig. 5.3 So-called Gönnersdorf-style female figurines characterised by highly abstract and standardised depictions of the female body from the Magdalenian site of Nebra, Germany. (Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt; photo: Juraj Lipták)

5.4 Northern Australia and Sahul

5.4.1 Environment and Paleoclimate

Our modelling for northern Australia considers changes in the intensity of the Australian–Indonesian summer monsoon, rainfall, temperature, and sea levels. Sea level modelling shows that between 14 and 12 ka vast areas of the coastal plain (~200 km of coastline of the Bonaparte shelf), representing significant estates for NW Kimberley peoples, was drowned due to sometimes rapidly rising sea levels (Ishiwa et al. 2016; Williams et al. 2018), and especially between Meltwater Phase 1A and 1B (Finch et al. 2021). This is precisely the time which sees a switch between large naturalistic animal depictions dating to times of lower sea level (and possibly to the peak of the Last Glacial Maximum at 19 ka) towards the efflorescence of anthropomorphic images reflecting the demographic packing of populations slowly relocating to interior estates. In the case of the Kimberley region (some 424,000 km^2), the effects of the possible loss of the Indo-Australian Monsoon before the Last Glacial Maximum (LGM); the drowning of the Bonaparte Basin after the LGM; ENSO intensification from 4 ka and then relaxation of ENSO during the last 1.5 millennia, resulted in significant changes in precipitation, available territory, and seasonality (Veth et al. 2016). While the LGM reconfigurations of northern Australia did not act to isolate groups in glacial refugia as occurred in Eurasia, parts of some bioregions may have been used less frequently or intensively (Law et al. 2021; Veth et al. 2022). During the LGM a coextensive land bridge emerged between the Kimberley and Arnhem Land to the east, accompanied by the emergence of style regions in each culture bloc, between which there could have been some degree of information exchange, as expected in an open and permeable exchange mode Lewis 1988). Major falls in sea level up to -130 m at the peak of the LGM (c. 19 ka), created contiguous cultural landscapes over the broad and shallow continental shelves of the north, which were then subsequently drowned and lost entirely by 6 ka.

5.4.2 Archaeology

The Kimberley was a vast and continuously occupied hunter-gatherer landscape as deduced from both the archaeological record (Vannieuwennhuyse et al. 2017; Veth et al. 2019, 2021) and recent genomic studies (Bird et al. 2018; Malaspinas et al. 2016). The known occupational history of the Kimberley extends back to at least 50 ka (Norman et al. 2022; Veth et al. 2019; Wood et al. 2016), with strong evidence that it has likely acted as a large-scale refugium in the larger Australian context through all of this time (Veth 1993; Williams et al. 2013; Wood et al. 2016). Because the region extends from the interior to the sea including plateau, riverine and plains hosting desert, riparian, woodland and (sub) tropical vegetation we might expect very different human adaptive strategies through time. And that is precisely the patterning emerging (Fig. 5.1), with detailed site-catchment archaeologies being described from the edge of the Great Sandy Desert (Balme et al. 2019; Veth et al. 2009), along the Devonian reef and sandstone plateau (O'Connor and Fankhauser 2001; O'Connor et al. 2014; Veth et al. 2019) and from the western and northern maritime zones and subcoastal riverine catchments (Dortch 1977; O'Connor 1999).

There are marked introductions of technologies and practices through time, such as the edge-ground axe and ground bone points at 46 ka, application of ochreous pigments by 40 ka, and a sequence of very different rock art styles dated from at least c. 20 ka. There is also the long-distance transport of shells for ornaments and implements at 30 ka, and bifacial and backed point production by 5 ka (Hiscock et al. 2016; Langley et al. 2021; Maloney et al. 2014). Through the lenses of Information Exchange and Group Boundary Formation Theory, different scenarios of cultural/economic and symbolic sharing can be expected across the Kimberley depending on (a) sea level and position on the continental shelf, (b) latitude, (c) catchment types and (d) resource patchiness in addition to predominantly social trajectories (Motta et al. 2020; see summary in Veth et al. 2021). Distinct regional material cultures are in place by the terminal Pleistocene and unquestionably by the mid-Holocene. Against the backdrop of changes in sea levels, monsoonal intensity, and vegetation structure, is the emergence of the material signatures of distinct polities, likely also of related language and dialects, which show both persistence and flexibility in long-term residence patterns across the Kimberley. The case for continuity is overwhelming as is the complexity of technological and symbolic practices associated with these non-Pama-Nyungan speakers. The central role of the Kimberley region in the settling of Australia (Bird et al. 2018), emergence of complex symbolic practices (Veth et al. 2021), and regionally distinct land-use and resource extractive practices (Hiscock et al. 2016; Ouzman 2021) makes it the ideal landscape to examine issues of regionalism and long-distance exchange and connection. Unsurprisingly, in many respects it shares some of the long-term occupational patterns and regional symbolic variabilities seen in Arnhem Land to the east (Lewis 1988).

5.4.3 Rock Art

Across northern Australia, advances in scientific dating techniques are confirming terminal Pleistocene ages for human

Fig. 5.4 Panel of early Irregular Infill Animals, here three life-size kangaroos in red ochre with, selective battering of anatomical features, King George River. (KV_BAC_KGR_020: BAC/UWA, and Ambrose Chalarimeri)

figures in rock art; specifically, age constraints of 12 ka for *Gwion Gwion* figures and an earlier date and brackets for Irregular Infill Animal Art of 17–13 ka (Finch et al. 2020, 2021; Jones et al. 2017, 2020). This research provides opportunities to develop a more robust chronology and to explore how we understand the role of style, and how linear the progressions may be, in these regions. Superimposition sequences in both areas are indicative of early figurative traditions that change in significant ways through time (Chaloupka 1993; Walsh 1994; Welch 2016). In both the Kimberley and Arnhem Land, two of the richest bodies of figurative rock art globally, earliest art styles are dominated by naturalistic animals which currently have absolute age brackets from AMS as early as 17 ka (Finch et al. 2021; Jones et al. 2020) with very few figurative human depictions (Fig. 5.4). Humans are more obviously present via handprints and stencils. However, by around 12,000 years ago, a significant shift happens in northern Australia to focus on humans, in scenes, rich with dress and material culture displays (Fig. 5.5). This is happening at a time of significant territorial loss with sea level rise and inferred social responses, which include the proliferation of Gwion and Dynamic figures. That this pattern is observed in both regions suggests dynamic cultural exchanges are being reflected in shared rock art traditions (Lewis 1988; May et al. 2018; Taçon et al. 1999; Veth et al. 2011).

What concerns us here is why two contiguous areas of the northern Australia, the Kimberley and Arnhem Land (Fig. 5.1), should have both witnessed a proliferation of rock art focusing on grouped (read socialized) humans. Both regions show prolific details in headdress, hair belts, necklaces and bangles, dilly bags and pubic aprons, as well as wooden artefacts including spears, digging sticks and ceremonial 'staffs'. While the schemata are not identical, with

Fig. 5.5 Large Gwion figures with details of headdress, shoulder arm and wrist ornamentations, tassel waist band and carrying dilly bags, King George River. (KV_BAC_KGR_003: BAC/UWA, and Ambrose Chalarimeri)

Fig. 5.6 Transitional Elegant Action Figures showing animated and juxtaposed humans, kangaroos and therianthrope on shelter roof, King George River. (KV_BAC_KGR_028A: BAC/UWA, and Ambrose Chalarimeri)

Kimberley Gwion figures generally shown in more erect and formal stances (in contrast to subsequent dynamic Elegant Action Figures – Walsh 2000), in comparison to the Dynamic Figures of Arnhem Land, there are many common attributes which allows us to think about these as 'cousin-styles'.

The most recent phase or substyle amongst Gwion art is the shift to dynamic figures (Fig. 5.6), labelled 'Elegant Action Figures' by Walsh (1994, 2000). This shift sees a move away from the codified, large Gwion scenes of parallel, richly garbed humans suggestive of ceremony, to scenes of life, such as hunting, sex, and camping. With this shift, there are increasingly gendered figures which are smaller, with a simplification of form and reduction in dress, and the inclusion of animals, largely macropods, appearing as key figures within scenes. Additionally, the highly visible placement of earlier Gwion is no longer dominant, and in contrast, discrete panels that engage with the less obvious features of the rock (e.g., an erosion stain; a rippled under-ceiling surface) are incorporated into placement choice.

5.5 Discussion

Both study areas from the northern and southern hemispheres have experienced significant environmental changes during the Late Pleistocene. The impacts of climatic fluctuations around the LGM on Eurasia and Northern Australia (Kimberley and Arnhem Land) have been substantial with significant impacts on the mobility of human populations. In each example, we can track human adaptive and social responses. Although these are not seen as simple reactions to changing environmental conditions and resource distributions, we can discern coherent patterns emerging in both regions in both mobility configurations and forms of visual communication. Across the Kimberley and Arnhem Land, there are comparable visual repertoires between approximately 17 ka and after 12 ka (see Jones et al. 2017, 2020), which follow a largely similar trajectory over time. In both regions, and dating from the tail end of the LGM, the earliest phase of figurative rock art is dominated by naturalistic depictions of large animals. This imagery appears to have a mostly public character for the following criteria (a) the motifs are generally on single panels most of which have wide viewscapes, (b) animal types are aggregated in related scenes (c) they are portrayed as life-size motifs with peripheral infilling, and (d) they exhibit communal and complex relational ontologies (see Motta and Veth 2021). This latter characteristic is shared with the following phase of art where it switches to a range of elaborately decorated human figures, the *Gwion Gwion* style phase, often engaged in communal and seemingly ritual activities (Fig. 5.5). This phase is followed by a diversification of the art, which becomes more stylistically encoded and restricted, whilst less elaborate (Fig. 5.6). Finally, during the early Holocene and from the mid-Holocene onwards, publicly displayed art forms begin to dominate again, and these seem to articulate with a stronger local focus and the formation of estates within larger interconnected cultural blocs. Across Europe, the changes in the art over time seem to relate to an initial settlement of the continent by modern human groups, who were connected with each other but still displaying a considerable degree of variability, and especially in their figurative visual repertoires. This phase was followed by a long phase of vast open networks between hunter-gatherer populations, who sometimes followed strategies of reduced mobility accompanied by an increase in social complexity. These open networks continued throughout and after the LGM in different forms and at different scales. Only with the onset of the Post-

Pleistocene reforestation, did populations increasingly form locally focused social and economic strategies.

Art forms reflect and mediate these changes in complex ways. Across Europe, mobile art and rock art seem to reflect the nature and reach of communication networks that articulate with broad environmental changes and the availability of resources. Only in Southwest Europe and under demographic refugia conditions, do local focus areas appear, being created around communal and highly elaborate rock art sites. These are now some of the best-known Palaeolithic painted caves. They reflect a highly structured and complex social landscape, which most likely relates to social group formations and respective restrictions, rules, and interconnections. In terms of motif choices, no dramatic switches in the overall repertoire can be discerned. Human and animal depictions are continuously created in parallel. However, animal imagery continues to dominate throughout, and human depictions remain under-represented (Rivero and Ruiz 2019, 6). This is a slightly different pattern than the mobiliary art of the Gravettian and Epigravettian, which shows a greater proliferation of human depictions in the form of female statuettes. However, these findings need to be considered with regard to taphonomic processes, which negatively impact parietal art in caves more than rock art. Throughout, animal and human depictions are highly contextual and the female statuettes may have had a role in negotiating social identities across domestic and ritual spheres. While they reflect large-scale patterns, they probably played more active roles in the negotiations of social life than in the establishment of communication networks themselves.

Across the two Northern Australian regions we argue that rock art has played a crucial role in the negotiation of social formations, places, and boundaries. We believe two key drivers for change over time were the loss of significant habitable land areas and the associated changes in available resources. Consequently, the dynamics of GBF (Veth et al. 2021) are reflected in the appearance of stylistic heterogeneity and boundary marking and differentiation; whilst the paired transition across these regions with inferred encoding of information readable across the northwest, indicates continued exchange of visual strategies, as understood through IET. The initial period of naturalistic depictions of animals, the 'external gaze', appears to reflect a focus that is arguably similar to some European Palaeolithic art. As recent research in Indonesia has established, this focus also has a similar antiquity in Borneo and Sulawesi (Aubert et al. 2019; Brumm et al. 2021). In Southeast Asia and Northern Australia, they do not appear to have been spatially focused to the same degree. They seem to reflect a more flexible spatial and social organisation of interconnected hunter-gatherer groups. During the subsequent period of rapid inundation of the coastal plain (c. 12–8 ka), visual systems in the Kimberley and Arnhem Land begin to exhibit a less diffuse spatial pattern. Emergent regionalism occurs from the terminal Pleistocene with loss of territory and the reconfiguration of smaller and bounded groups. Interestingly these two adjacent regions fall within the northerly and more ancient non-Pama Nyungan language family, independent of the Pama-Nyungan family spreading across the rest of the continent during the Holocene (Bouckaert et al. 2018).

The visual repertoire from c. 12 ka onwards shows a high degree of standardisation together with a strong focus on human depictions, as outlined above. The land becomes marked with representations of ritual activities, with people invested in rituals themselves. It is difficult to avoid the impression that the art played a role in negotiating or renegotiating the relationships between human groups in often expressive and publicly visible forms. The general switch from a focus on animal to human depictions represents the greatest difference between the Northern Australian and the European art repertoires examined in this paper.

In Southeast Asia, a similar switch has been recently described from rock art imagery in Borneo. The so-called *datu saman* figures exhibit a close similarity with some Gwion art in the Kimberley (after Aubert et al. 2018). Interestingly they are dated to only 1.6 ka earlier at 13.6 ka than *Gwion*. It would be tempting to infer the existence of a system of interrelated cultural areas between Northern Australia and Southeast Asia during the Late Pleistocene in the form of a 'trans-Wallacean tropical cultural interaction shere'. The current radiometric dates seem to suggest that the situation cannot easily be resolved, and it rather appears that we are dealing with parallel developments of the negotiation of social identities through visual expressions of ritual activities. Nevertheless, these may be rooted in similar deep cultural and ideological foundations and perhaps shared common drivers associated with the LGM.

During the latest stages of the Pleistocene and in the Holocene, rock art becomes less and less central across Europe for the establishment of social relationships. The reforestation across the temperate zone of the continent pushed communities towards less large-scale mobility and economic patterns. Visual systems of communication become more difficult to discern with more material expressions made from perishable materials (see Rivero and Ruiz 2019 for an overview). In contrast, across the Kimberley and Arnhem Land, hunting and gathering groups started to organise themselves in local estates and created a complex social and cultural landscape. This configuration articulates well with the recent Monsoonal weather pattern and the respective environments and resource availability patterns.

Based on ethnographic records, these estates were connected to spiritual ancestors such as the famous Wandjina of the Kimberley. These areas were, nevertheless, connected with each other and it remains an open question if human groups and individuals actually stayed within these estates or

expanded their ceremonial ranges, as recorded ethnographically (e.g., the Kunapippi ceremony). Within this system emerges the *Wunan* network, a Kimberley-wide social network and trade system with reciprocal obligations, that sees the movement of valuable objects, such as pearl shell from the coast into the arid zone (Akerman and Stanton 1994; McCarthy 1939). These trade routes, driven by individuals responsible for links within the chain, endure into the recent past (Bradshaw et al. 2021). Archaeological and ethnographic evidence supports the deep interconnectedness of people at different scales. Exchange networks not only encompassed the Kimberley or Arnhem Land, but also adjacent desert groups. In both case studies, the available evidence from the rock art, mobiliary art, archaeological and environmental contextual information allows us to gain important insights into the development of local, regional, and interregional patterns of connections that sometimes reach almost global dimensions over many thousands of kilometres.

5.6 Conclusion

Our comparison of largely figurative art rock art schema between Europe and northern Australia uncovered some parallel developments in art repertoires, with a common foundation of dominant figurative animal iconographies followed by subsequent shifts in style and theme due to environmental challenges associated with the Last Glacial Maximum. These environmental vectors included glacial refugia in the north and sea level changes in the south. In tracking such global responses, this paper speaks to global drivers with local responses. While the post-LGM response in northern Australia, and possibly in the broader trans-Wallacean region, was a distinctive switch to predominantly socialised human figures, European rock art shows a more complex pattern, although human representations do also become more common in some regions. Whilst we argue for open information exchange systems in both regions, interactions in Europe were facilitated through different media with a distinct focus on mobiliary art such as the Willendorf-style and Gönnersdorf-style figurines. While environmental drivers associated with the LGM create globally shared phenomena, specific cultural responses are localised and regionally constituted, as evidenced in the unique inter-regional patterns demonstrated in this paper.

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Part II

Comparative Views on Global Art

6 The Divide Between 'European' and 'Indigenous' Rock Arts: Exploring a Eurocentic Bias in the Age of Globalization

Oscar Moro Abadía and Amy A. Chase

Abstract

Rock art studies are a field of research that includes many different (and diverse) national traditions. While most of these traditions have their own research histories and trajectories, during most of the twentieth century, rock art literature was marked by a certain prominence of European Palaeolithic art. The privileged position of the European record was the result of a combination of factors, including the traditional focus on European archaeology, the abundance of and research support for decorated caves in Southern France and Northern Spain, and, especially, a number of ethnocentric prejudices against Indigenous peoples. However, in a context marked by globalization, a number of developments in the past decades have called into question the divide that favours European cave art at the expense of other rock art corpuses. For instance, new dating techniques have showed that the traditional belief that the temporal 'origins' of rock art was in Europe cannot be sustained. Similarly, innovative theoretical approaches mainly based on Indigenous rock art have generated many new avenues of research for the meaning, the making, and the context of rock images. With reference to the history of research, we argue that we need to overcome the divide that privileges the European record in rock art research. However, the favoured position of the European caves is deeply rooted in many conscious and unconscious biases. For this reason, we explore in this paper a number of strategies that can help us to counteract Eurocentrism, including the abandonment of traditional narratives, the focus on the materiality, making, location, and contents of rock images, and the development of new styles of theorizing.

Keywords

Globalization · Divide between European and non-European rock art · Palaeolithic art · Eurocentrism · Rock art narratives

6.1 Introduction

While it would be an exaggeration to assert that rock art studies have been shaped by a Eurocentric bias (after all, this is only true from a Western European perspective), it is fair to affirm that, during most of the twentieth century, the European caves were favored 'places' in rock art research (David 2017; Moro Abadía and Tapper 2021). For instance, at that time, archaeologists, anthropologists, and art historians took for granted the idea that global rock art originated in Europe at the beginnings of the Upper Palaeolithic. Similarly, until recently, renowned practitioners were persuaded that Palaeolithic cave art was almost exclusive to Southern France and Northern Spain (see, for instance, Mellars 2006). This Eurocentrism has been somewhat reinforced by a powerful imagery that has privileged the European record for more than a century. For example, rock art textbooks typically feature on their covers a number of images that, until very recently, were inevitably chosen from emblematic European caves, such as Altamira, Lascaux, and Niaux (Conkey 2010). The same can be said about the images illustrating the news related to rock art research in websites and social media. This situation has significantly evolved in the last decades, at least in the academic milieu. In fact, recent discoveries such as Sulawesi or Blombos, together with the development of new dating techniques (see Georges Sauvet's chapter in this volume), have made clear that the traditional European view

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about the origins of rock art is incorrect, and that Europe is just one among many regions in which rock art making occurred (something of which non-European specialists have been long aware).

Although the view that favors Europe over other places can be considered one of the factors preventing the advent of a genuinely global discipline of rock art research, Eurocentrism has received little scholarly coverage in comparison to other aspects of rock art research (Porr 2019; Moro Abadía and Tapper 2021). This may be related to a number of factors. In particular, 'Eurocentrism' itself is, in a way, a Eurocentric view of rock art research: i.e., a view that 'peripheralizes' a number of rock art traditions that developed independently from the European one. For instance, the American rock art tradition developed separately from the European one, and the same can be somehow said about the Australian and South African traditions (even if these two were more connected to Europe due to the ties between their universities and the British ones). This may explain the lack of interest in Eurocentrism as a topic of research. However, the fact remains that, still today, explicit ethnocentric views are not rare, especially in Europe, and a number of more or less unconscious biases still operate in rock art research. In this setting, the correct identification of the many facets of Eurocentricity seems crucial in order to promote an alternative paradigm in rock art studies. Furthermore, it is important to keep in mind that Eurocentrism is not just an evil that we can exorcize by naming it; rather, it is a deeply-rooted set of views that has heavily shaped (and continues to shape) our understanding of rock images since the beginning of the twentieth century. For these reasons, reflection on Eurocentrism is relevant not only to better understand the foundations of our discipline but, more importantly, to promote effective action in regard to the marginalisation of non-European rock art (especially in Europe).

In an attempt to counter Eurocentrism in a productive way, this chapter explores the divide that, from a European perspective, has historically separated Palaeolithic cave art in Europe from other rock art traditions. By 'divide' we mean the view establishing that European cave art is intrinsically *different* from (and artistically *superior* to) other deep-time rock images. This European view is the product of a number of factors. To begin, it is related to the richness of the European record. Without negating the importance of other, worldwide, imagery manifestations, no one can deny the extent and richness of the European Upper Palaeolithic caves. Similarly, while some old art has been reported in other places (see, for instance, recent discoveries in Indonesia and Australia), the concentration of decorated Pleistocene caves in Europe is certainly remarkable. Admitting these facts is the first step in suggesting an acceptable alternative to the Eurocentric view. However, the privileged position of European cave art is in fact grounded on a number of biases and prejudices. For instance, this is related to their more 'realistic' and 'naturalistic' styles, attributes that are more highly valued in the Western conceptions of 'art.' Similarly, as we examine in this chapter, the primacy of Eurocentrism in Europe is also grounded on a number of prejudices and biases about Indigenous peoples, prejudices that are particularly relevant in this part of the world.

As we examine in the second section, Eurocentrism in European rock art research has its origins in the years immediately after the authentication of Palaeolithic cave art in France in 1902. At that time, European archaeologists assumed that the decorated caves from Europe were older, more sophisticated, and artistically more relevant than the so-called 'primitive' art from Australia, South Africa, and America. These conceptions remained largely unchallenged during most of the twentieth century. As we show in the third section, it has been only in the last three decades that a number of developments have converged to call into question Eurocentrism. First, the internationalization of archaeological research, together with new technical developments, has showed that many of the boundaries that differentiated European Palaeolithic art from other rock art corpuses are, in fact, European constructions. Second, in a milieu marked by the postcolonial critique, archaeologists have become more aware of the prejudices that have oriented their research in the past. These developments have generated a demand for the constitution of a global discipline of rock art research beyond traditional constructs. However, as we examine in this section, this is easier said than done. The mere proclamation of our anti-ethnocentrism does not automatically suspend Eurocentrism. For this reason, we conclude by examining a number of strategies to abolish the 'great divide' (i.e., the divide between European and non-European rock art) that has oriented rock art research in Europe for a long time. In particular, we suggest that we need to (A) discard a number of traditional narratives, (B) promote approaches that focus on the making, materiality, location, and context of rock images (rather than on chronology, culturally constructed notions of 'style,' and relative sophistication), and (C) develop agile forms of theory that can operate at multiple levels and in multiple directions.

Before examining these questions, three methodological clarifications are in order. First, this chapter is mainly circumscribed to the European case: i.e., we are mainly referring to the European Palaeolithic (not global) research. Second, and related to the previous point, we focus on Palaeolithic cave art without referring to Holocene art. We understand that, in Europe, Palaeolithic art is just one among many other rock art traditions (including Mesolithic art from Northern Scandinavia; Levantine art, macro-schematic and schematic art from Spain, Atlantic Megalithic art, and Iron age rock art; see, for instance, Robb 2015), but the analysis of such an extraordinary variety of more recent rock art

imagery is far beyond the scope of this paper. Moreover, it is our impression that, for a number of reasons that we seek to unravel in this chapter, in Europe, Pleistocene cave art has occupied a privileged position in the interpretation of rock images. Finally, we use the notion of 'Indigenous arts' to refer to a diversity of rock images – including those from Pleistocene age contexts – from many places around the world. While this label is Eurocentric itself (i.e., it contributes to reducing an extraordinary variety of images and image-making contexts and histories into a single monolithic category), one of the goals of this paper is, precisely, to understand the reasons why very different images (from very different places) have been uncritically amalgamated into the homogeneous category of 'Indigenous art.'

6.2 Rock Art Divided: Palaeolithic Art *Versus* Indigenous Arts

Narratives about the 'discovery' of rock art illustrate, probably better than any other episode in the history of research, how European scholars established very early a 'divide' separating the European record from other rock art traditions. In many prehistoric textbooks, we are told that rock art was authenticated at the beginning of the twentieth century when, following the discovery of a number of caves in France, Émile Cartailhac authenticated the Altamira paintings discovered by Marcelino Sanz de Sautuola in 1879 (e.g., Bahn and Vertut 1997: 17–22, Clottes 2002: 1–2). The plot typically starts when Sautuola's eight-year-old daughter, María, first noticed the paintings on the ceiling of the cave. It continues with Sautuola's enthusiastic fight to support the prehistoric antiquity of the paintings against the skepticism of French and Spanish archaeologists. The story happily concludes when Sautuola, who had passed away in 1888, was vindicated by Cartailhac's paper (1902). This narrative has transcended archaeological literature (see, for instance, Hugh Hudson's film *Finding Altamira*) but it is not without problems. Besides the fact that the idea of the 'discovery' of rock art is a very Eurocentric one (these images have been made and used by different people for centuries), in places such as Australia and North America, rock images were documented and published long before the 'discovery' of Altamira. For instance, in North America, Cotton Mather reported the petroglyphs of Dighton Rock in Massachusetts as early as 1714 (Keyser and Whitley 2006: 3). More significantly, two continental synthesis of North American rock art were published long before Cartailhac's paper. In 1851–1857 Henry Rowe Schoolcraft published his *Historical and statistical information respecting the history, condition and prospects of the Indian tribes of the United States* in which he suggested that the images made by the ancestors of Algonquian peoples were a form of "picture-writing" (Schoolcraft 1851–1857, 333). Similarly, Garrick Mallery (1894) suggested that rock images were a form of picture-writing in his *Picture-writing of the American Indians* (for a more detailed account, please see the introduction to this volume).

If the authentication of Palaeolithic cave art at the turn of the twentieth century did not mark the beginnings of rock art research, in Europe this event was the starting point of two related processes: First, for European scholars, the notion of 'primitive art,' which was originally developed to fit the art of living Indigenous communities, was expanded to incorporate European Palaeolithic art. Second, in Europe, the first years of the twentieth century witnessed the establishment of a divide *within* the concept of 'primitive art,' i.e., a split that separated Palaeolithic cave art from other forms of the then-called 'primitive rock art.' This boundary was already evident in *La Caverne d'Altamira à Santillane, près Santander (Espagne)*, one of the foundational texts of Palaeolithic art studies (Cartailhac and Breuil 1906). In the first part of the book, Cartailhac and Breuil reviewed the recent discoveries of Palaeolithic art in Europe, including those at Altamira, La Mouthe, Pair-non-Pair, Chabot, Les Combarelles, Font-de-Gaume, Marsoulas, Mas d'Azil, Bernifal, and Teyjat. Their examination included two chapters on mobiliary (portable) art. In the second part of the book, the authors focused on the 'art of living primitive people' (*l'art des primitifs actuels*'). In fact, they devoted almost one hundred pages to examining the art from the Indigenous peoples of America, African Indigenous populations, and Australian Aboriginal peoples.

Two ideas are recurrent in Cartailhac and Breuil's account (and in most European accounts): First, the notion that European cave art was artistically more sophisticated than non-European rock images and, second, the idea that it was significantly older. To begin, with the exception of some South African images "worthy of our Quaternary painters" (Cartailhac and Breuil 1906: 191), Cartailhac and Breuil depicted Indigenous arts as inferior to the "grandiose and truly artistic" Palaeolithic cave paintings (Cartailhac and Breuil 1906: 145). For instance, talking about the rock art of the United States, they wrote: "This is not the style of our Paleolithic engravings and paintings. Figures are never so fine, so exact, so skillful" (Cartailhac and Breuil 1906: 155). Concerning Australian Aboriginal peoples, they argued that "the singular blend of convention and natural representation that is characteristic of their paintings is hardly better, artistically speaking, than what young children do" (Cartailhac and Breuil 1906: 222). This was related to their claim that "most of these drawings [did] not seek to satisfy an artistic need," but they were created for ceremonial purposes (Cartailhac and Breuil 1906: 241). In the second place, Cartailhac and Breuil took for granted the idea that European cave art was significantly older than the rock art from Australia, South Africa, or the United States. For instance,

while they situated the origins of European cave art at the end of the Aurignacian and the beginning of the Solutrean, they argued that North American rock art originated only just before the arrival of Europeans (Cartailhac and Breuil 1906: 156) and South African rock images were probably (only) about four hundred years old (Cartailhac and Breuil 1906: 178). The idea that European rock art was significantly older than other rock images is relevant because it allowed these (and other) European authors to place sites such as Altamira and Font-de-Gaume at the beginnings of art history. The emphasis on chronology, early dates, and the highly valued search for 'origins' has long influenced European narratives about image-making.

La Caverne d'Altamira also inaugurated an approach in the search for the meaning of cave images (the so-called 'art-as-magic theory') that established a particular kind of relationship between Palaeolithic art from Europe and non-European rock art. While Cartailhac and Breuil were certainly not the first to use ethnographic parallels in archaeology, in Europe they were pioneers in using them for elucidating the sense of rock images. In a context very much marked by evolutionism, Cartailhac and Breuil's hypothesis was straightforward: Palaeolithic and Indigenous peoples lived in a primitive stage of cultural development and, therefore, their images had to reflect similar concerns and views (Cartailhac and Breuil 1906: 146). Following Salomon Reinach (1899, 1903), they suggested that rock images were related to "superstitious ceremonies" (Cartailhac and Breuil 1906: 241). For instance, they evoked the case of Australian Aboriginal people (e.g., the Arrernte people) to illustrate the use of rock art for promoting successful hunts. Hunting-magic became pervasive theorizing in rock art studies for most of the twentieth century. This theory was rooted in an asymmetrical interpretation in which 'Indigenous arts' served to 'explain' European images, but European cave art was rarely evoked as elucidating the meaning of other rock images. Moreover, while the paintings from Spain and France were placed at the beginnings of art history (on the basis of their high antiquity and 'striking realism') and, therefore, they were studied by archaeologists and art historians, Indigenous rock arts were often excluded from the Western European history of art and fell under the domain of anthropologists and the anthropology of art.

In short, by the 1910s, the 'great divide' was established in Europe (please see Fig. 6.1). That said, and while this split remained largely unchallenged on this continent during the twentieth century, the ways of conceptualizing the relationship between European and non-European rock art changed through time. For instance, the first half of the twentieth century witnessed an interesting discussion among European scholars about the relationship between European cave art and African rock art. The publication of the paintings from El Cogul in 1908 (Breuil 1908) was followed by the finding of numerous rock art sites generally attributed to the so-called 'Levantine art' of eastern Spain (Breuil and Cabré 1909, Cabré 1915). While these images differed from the cave art of Northern Spain and Southern France in a number of ways (for instance, human representations were much more common in Levantine art), Breuil and his Spanish-German archaeologist colleague Obermaier believed that "the paintings of eastern Spain [were] unquestionably of Paleolithic age […] the animal pictures common to both regions betray the same realism, the same artistic conception, the same style and finish- similarities that could hardly be a coincidence" (Obermaier 1924: 254; see also Breuil and Cabré 1909: 20). Moreover, Breuil, Obermaier, and others suggested then that the makers of the rock art from Eastern Spain were related to the Capsian, a Palaeolithic North African culture different from the industries of Northern Spain and Southern France. In light of a number of similarities with Saharan rock art, they argued that the rock art from Eastern Spain was, in fact, contemporary with the Aurignacian cave art from the Franco-Cantabrian region. The interesting point is that, for the first time in the history of research, European archaeologists suggested an African origin of (some) Palaeolithic images. This, however, did not diminish the Eurocentrism dominant in this part of the globe at that time. During the first half of the twentieth century, European scholars commented on the "surprising similarities [between] these Capsian paintings and those in South Africa which are commonly ascribed to the Bushmen" (Obermaier 1924: 218). For instance, Leo Frobenius argued that "the African branch of this [Capsian] culture […] had moved even southward towards the moist interior, that it had penetrated as far even as South Africa […] Bushmen of South Africa today actually still paint pictures on the rock […] there was still the question to be faced of whether or not these daubs could be a last remainder, degenerated to be sure, but still a remainder of a culture which had flourished once in Spain" (Frobenius 1937: 16). Similarly, Breuil suggested that the most 'advanced' paintings from South Africa were probably related to the 'exotic' influence of Mediterranean civilizations "dating back to a fairly remote era" (Breuil 1954: 34). For instance, he argued that the "fullness and majesty" of the so-called 'White Lady of Brandberg' (Namibia) was "of a pronounced Mediterranean type" (Breuil 1954: 40). In Breuil's mind, the West always remained "the homeland of great rock art" (*L'Occident, patrie de l'art rupestre*, Breuil 1957) (Fig. 6.2).

In Europe, Eurocentrism was reinforced during the 1960s and the 1970s. To begin, the theory of an African origin of Palaeolithic paintings was progressively abandoned. As we have mentioned, this theory was founded on the belief that the rock paintings from Eastern Spain belonged to a Capsian culture that had originated in Africa during the Palaeolithic (e.g., Obermaier 1924: 218, Breuil and Lantier 1959: 247).

Fig. 6.1 The divide between European and non-European rock art

	European Paleolithic Art	**Non-European Rock Art**
Chronology	Mostly Pleistocene art (older than ca. 11,000 years ago)	Mostly Holocene art (younger than ca. 11,000 years ago)
Kind	Mostly cave art	Mostly open-air rock art
Location	Mostly Southern France and Northern Spain	The 'colonial outpost' (Australia, Africa, North America, South America)
Studied by	Mostly art historians and archaeologists	Mostly anthropologists then archaeologists
Style	Mostly sophisticated, figurative, and realistic	Mostly non-realistic, schematic, and abstract

Fig. 6.2 Henri Breuil and Leo Frobenius in an expedition to Southern Africa (1928–1930). (Photo number FoA 09-10144, Frobenius-Institut, Frankfurt am Main, Germany)

However, starting in the 1960s, numerous authors adopted the ideas of Hernández Pacheco (1924) and Cabré (1925), suggesting that these Levantine paintings were, in fact, post-Palaeolithic (e.g., Jordá 1966; Ripoll 1968). The establishment of the Neolithic chronology for Levantine art resulted in the widely held belief that Palaeolithic art was exclusive to Northern Spain and Southern France. This Eurocentric view was fuelled by the prevalence of the 'human revolution' model in the fields of paleoanthropology and human evolution in the 1970s and 1980s (e.g., White 1982; Chase and Dibble 1987; Mellars 1989). This theory suggested that the most important changes in the archaeological record had occurred in Europe associated with the replacement of archaic populations (Neanderthals) by anatomically modern people (*Homo sapiens*) within a short period of time (the transition from the Middle to the Upper Palaeolithic). The 'explosion' of artistic behavior associated with the emergence of *Homo sapiens* was considered one of the defining traits of this 'revolution.' In the field of cave art, this theory is implicit in Annette Laming-Emperaire and André Leroi-Gourhan's works. In the 1960s, they suggested that cave art was first developed by *Homo sapiens* during the Aurignacian. Interestingly, these French scholars discarded the use of ethnographic parallels in rock art research. They warned against "the dangers of ethnographic comparison" (Leroi-Gourhan 1958: 307) and proposed to instead carry out careful examinations of the location and the content/subject matter of Palaeolithic cave art (Laming-Emperaire 1962: 289). In this setting, Laming-Emperaire and Leroi-Gourhan showed little interest in other rock art traditions. More significantly, their ascendency in European rock art research explains why rock art scholars in this part of the world paid little attention to other contributions to the field. For instance, early rock art researchers in Australia, John Clegg (1971, 1981), Leslie Maynard (1979) and Peter Ucko (1977) generated new theoretical approaches to style and form in Aboriginal art. In South Africa, the works of Patricia Vinnicombe (1976), and David Lewis-Williams' early works (1980, 1981) provided new insights into the understanding of San rock art. Similarly, in Canada, Vastokas (Vastokas and Vastokas 1973), Jones (1981), and others showed the connections between Algonquian rock images and the landscapes of which they are part. The importance of these contributions was rarely recognized in Europe.

In short, from the 1960s to the 1980s, European scholars typically ignored developments in rock art research from Africa, America, and Australia. In the 1990s, however, the situation started to evolve. At that time, substantial research on shamanism was conducted in South Africa and the

Americas, a phenomenon that marked a theoretical resurgence of Indigenous arts in rock art research (e.g., Lewis-Williams 1992; Whitley 1992; Lewis-Williams and Clottes 1998). In this context, the center of rock art research somewhat shifted to places other than Europe, and European scholars evoked shamanistic interpretations to interpret European caves. For instance, Jean Clottes argued that people who are at a similar stage of cultural development tend to elaborate similar ways of thinking (Clottes 2002: 115). Additionally, he suggested that 'caves are universally considered another world […] as many modern explorers have experienced, caves often have a kind of hallucinogenic character, where cold, humidity, darkness, and sensory deprivation facilitate visions. We can logically suppose that in ancient times people also experienced caves in this way" (Clottes 2002: 117–118). The impact of shamanistic theories marked the beginning of a new relationship between European and non-European rock art, even though many scholars were critical towards the shamanism model (e.g., Quinlan 2000; McGall 2007; Bahn 2010).

6.3 Beyond the Divide Between European and Indigenous Arts

As we have seen in the previous section, the divide that privileged the European record at the expense of other rock art traditions was rooted in three widely held beliefs among European scholars during most of the twentieth century: (A) The assumption that the rock paintings from France and Spain were artistically more sophisticated than any other rock image; (B) the idea that European cave art was significantly older than the rock art from America, Africa, and Australia; and (C) the notion that cave art (at least the oldest images) was, if not exclusive to Europe, mainly located in the Franco-Cantabrian region. In the last three decades, however, a number of social, scientific, and intellectual developments have converged to call into question these beliefs.

From the turn of the twenty-first century, social scientists have exposed the complex ways in which Eurocentrism has shaped scientific research since the nineteenth century. These scholars have questioned colonialism and have insisted on the capital role that Western imperialism played in the foundations of social sciences. While critical accounts on colonialism can be traced back to the 1970s and 1980s (e.g., Said 1978; Spivak 1987, Ashcroff et al. 1989), it was from the 1990s to the 2000s that these views developed in an unprecedented dimension, also in Europe. Postcolonial studies originated in literary studies as a trend to document and challenge the marginalization of non-Western literatures (e.g., Ahmand 1992; Bhabha 1994; Lazarus 2002, 2004). The swift popularity of postcolonialism "rapidly migrated beyond literary analysis, to find a happy home in other disciplines. It was most visibly in history and anthropology, but its influence soon spread to other scholarly domains" (Chibber 2013: 1). Postcolonial authors argued that "most of the world has been affected to some degree by nineteenth-century European imperialism" and they sought to "make clear the nature and impact of inherited power relations, and their continuing effects on modern global culture and politics" (Ashcroff et al. 1998: 1). Since the turn of the millennium, the postcolonial critique has diversified in a number of ways. Initially, postcolonialism found an echo in recent critiques of globalization, capitalism, and subaltern studies (e.g., Amin-Khan 2012; Chibber 2013; Slobodian 2018). Then, in countries such as the United States and Australia, the critique of colonialism was entwined with recent developments in Indigenous and Native land rights and studies (e.g., Byrd 2011; Simpson and Smith 2014). In anthropology, for instance, the development of community-based and participatory projects has greatly contributed to make practitioners more aware of the prejudices and biases that have shaped their research.

In this globalized context, archaeologists have also been critical of Eurocentrism (e.g., Orser 2012; Montón-Subías and Hernando 2017). For instance, in the past years, paleoanthropologists have called into question the traditional privilege of the European record in the field (e.g., Ames et al. 2013; Trinkaus 2018). Broadly speaking, this began in the 1990s when analysis of mitochondrial DNA suggested that Anatomically Modern Humans originated in Africa around 200,000 years ago. While the 'Out-of-Africa' hypothesis did not necessarily contradict previous interpretations, it enabled archaeologists to look at the archaeological record of Africa with fresh eyes. For instance, in 2000, Africanist researchers Sally McBrearty and Alison Brooks published an influential paper in which they argued that the 'Human Revolution' model "[stemmed] from a profound Eurocentric bias and a failure to appreciate the depth and breadth of the African archaeological record" (McBrearty and Brooks 2000: 453). They suggested that many of the archaeological signatures of modern human behavior traditionally claimed to appear in Europe about 50 thousand years ago had originated or could be evidenced in Africa thousands of years earlier. While their viewpoint was still Eurocentric (they evaluated the African record with reference to the criteria used to define the transition from the Middle to the Upper Palaeolithic in Europe), their paper opened new avenues of research. For instance, a number of authors have suggested that the package of cultural innovations traditionally used to define 'modern human behavior' (new lithic technologies, new occupation strategies, long-distance procurement of raw materials, new symbolic behaviors including rock art and symbolism) may be adequate for explaining the European record, but it cannot be used in places such as Australia (Habgood and Franklin 2008, but see Balme et al. 2009). Others, such as John Shea, have warned against the danger of using concepts such as

'behavioral modernity.' According to him, "using one region, even a well-known one such as Europe, as a model for global patterns of human evolution inevitably risks equating the uniquely derived characteristics of human adaptation in that region with universal trends" (Shea 2011: 6–7). In the past decade, the discontent with Eurocentrism has increased and has led some authors to propose a more radical decolonisation of human origins (e.g., Porr and Matthew 2020; Steeves 2021).

It is in this context that archaeologists and anthropologists have questioned traditional views of rock art. To understand this process in Europe, we need to consider several factors. To begin, during most of the twentieth century the field of rock art research was dominated by French scholars (Capitan, Cartailhac, Breuil, Leroi-Gourhan, Laming-Emperaire, etc.). However, beginning in the 1980s the French hegemony in Europe began to decline. This was partly related to the fact that French scholars kept publishing their works in French and Spanish, marginalizing themselves in a context now marked by the dominant Anglophone world. Additionally, with the global expansion of the university system and scientific research, scholars from other places began to play a major role in the transformation of rock art studies (Moro Abadía and Tapper 2021). These scholars called into question the idea according to which "the technical, naturalistic and aesthetic qualities of European Paleolithic images remain unique for the moment" (Bahn and Vertut 1997: 27). As archaeologists and anthropologists started to look at rock images with less biased eyes, it became evident, also for European scholars, that many Aboriginal, San or Algonquian images (to quote a few examples) were technically and conceptually as complex as any parietal painting from Europe. Additionally, historians of science demonstrated how rock art scholars' traditional fascination for naturalistic paintings in fact replicates the prevalence and privileging of realism in traditional art history (Moro Abadía et al. 2012).

In the second place, the development of new dating methods has challenged the belief in a European origin of rock art (Taçon et al. 2012, Sauvet et al. 2017, please see also Brumm et al.'s paper in this volume). In particular, the application of radiocarbon and U-Th dating to rock images has demonstrated that Pleistocene art was by no means exclusive to Europe (for a more detailed account, see Aitor Ruiz, this volume). The cases of Australia (Finch et al. 2021) and Indonesia (please see also Brumm et al.'s paper in this volume) illustrate this point. In this part of the world, the past fifteen years have witnessed an extraordinary number of rock art 'discoveries' based on new scientific techniques, some of them very old. For instance, the dating of Nawarla Gabarnmang in the Arnhem Land Plateau in Australia in 2006 significantly pushed back the antiquity of rock art production in Australia. At this place, archaeologists reported a charcoal painting circa 28,000 years old framed in a stratigraphic context dated between circa 13,000–40,000 years BP (David et al. 2013). Similarly, a number of recent discoveries in Indonesia have revolutionized our ideas about the 'origins' of rock art. In 2014, archaeologists dated the calcite layers covering a number of representations in Sulawesi. Using U-series dating, they were able to establish a minimum age of ca. 35,000 for a babirusa (a 'pig-deer') and almost 40,000 years for a stencil (Aubert et al. 2014). In 2018, the same team found similar representations (animals and hand stencils) at the cave site of Lubang Jeriji Saléh in Borneo. Interestingly, U-series dating provided a minimum age for these paintings very similar to that of Sulawesi (Aubert et al. 2018). More recently (Brumm et al. 2021), archaeologists reported a minimum age of 45.5 thousand years ago for painting of a suid (a wild pig) at Leang Tedongnge (Maros-Pangkep). Besides the fact that Leang Tedongnge is the oldest figurative art in the world to date, these discoveries demonstrate the existence of distinctive rock art making in Indonesia about 40,000 years ago. Additionally, today it is pretty obvious that Pleistocene art (i.e., rock art older than 11,000 years) is not exclusive to Europe, Australia, and Indonesia. For instance, in Africa, the painted stone plaquettes from Apollo 11 (that archaeologists have known since the 1970s), dated to about 28,000 years ago, indicate the existence of rock painting in the Middle Stone Age. More recently, in 2005, a team of archaeologists discovered petroglyphs covered by deposits of wind-blown sediments at the site of Qurta in Egypt (Huyge et al. 2011). Optically stimulated luminescence (OSL) provided a minimum age of about 15,000 calendar years for these deposits. In America, an impressive number of red-ochre rock art images – including humans, animals, and geometric figures – have been located in the rock shelter walls of Serranía La Lindosa in the northwest Colombian Amazon. The paintings, which include a number of now-extinct animals, are archaeologically associated with populations from the late Pleistocene. This suggests an early colonisation of the area between ca.12,600 and 11,800 cal BP (Morcote-Ríos et al. 2021). For an excellent and comprehensive publication on the many rock art images at a global scale, see Fritz (2017).

As these examples illustrate, European paintings are neither necessarily more sophisticated nor older than rock art from other areas. That said, the extraordinary concentration of rock art sites in Europe remains unique in many ways. This leads to different and more interesting questions, anthropologically speaking. As we have suggested elsewhere, it remains true that "Europe is still the area that has yielded the greatest number of Pleistocene artworks in the world" (Moro Abadía and Tapper 2021: 69). There are several contributing factors to this abundance, which include the preservation characteristics of limestone caves in regions where there has been easy access, as well as an abundance of researchers and research support for more than a century. While there is no contradiction between recognizing the

richness of the Franco-Cantabrian Upper Palaeolithic record and calling into question the traditional Eurocentrism of rock art research, it is important to keep in mind that in places such as Australia and South Africa there are thousands of rock images that remain to be recorded and dated. In this setting, with the development of new scientific methods and support for increased research, the geography and distribution of rock art will significantly change in the next decades.

6.4 Conclusion

The Eurocentric orientation of rock art research was the product of a number of beliefs and a specific research history that have been progressively challenged and discarded during the past decades. In Europe, reflecting on the history of these beliefs and assumptions is a necessary step to challenge the view that favors European rock art over other traditions, but it does not offer practical ways to set aside this polymorphous phenomenon. For this reason, we conclude by suggesting three interrelated strategies to destabilize the still-prevailing Eurocentrism on the European continent: (A) The discarding of biased and uncritical narratives, and their replacement with new, less-biased and less-uncritical narratives more closely aligned with the archaeological evidence; (B) the development of global comparative programs of research; and (C) the elaboration of new ways of theorizing.

To overcome the Eurocentric tendencies that dominated rock art research in Europe for almost a century, we need first to discard biased narratives that may not be relevant in the present context. These narratives are in conflict with archaeological evidence and *also* with now outdated evolutionist and originalist assumptions. To begin, rock art research in Europe (and probably everywhere else) has been marked by the search for origins (for a critique of this approach, see Wobst 1983, Conkey and Williams 1991, Gamble and Gittins 2004). The title of a number of recent papers can illustrate this point (Hoffmann et al. 2018; Brumm et al. 2021). While it is understandable that archaeologists keep looking for the 'origins of art' (they need the recognition and support of funding organizations, journals, and academic institutions who seem to privilege origins research and the 'earliest'), in light of the current evidence, it seems that image-making is a pan-human skill that arose independently in many different places depending on a number of circumstances. In this setting, the old European question of "who did it first?" is simply of little relevance in modern professional research (although it is perhaps more significant in the public's mind). Similarly, we need to abandon the aesthetic prejudice that, still today, privileges 'realistic' images (see Gombrich 1960). In fact, 'naturalism' is one among many styles of representation, is culturally defined, and there is no reason to consider images that are perceived by some viewers as naturalistic to be superior to other images. We need to reject the primacy of realism as culturally-constructed and focus on understanding the complexity and the contexts of rock images and their making, no matter what the so-called style.

Further, instead of establishing fictitious boundaries between European cave art and other rock art corpuses, we should concentrate on a number of elements that are relevant to different image-making traditions, no matter their location. As John Robb (2015) has recently suggested, rock art has been rarely treated as a global specialized form of material culture. This is somewhat surprising since almost any rock image can be examined with reference to a number of cross-cultural criteria, including its making, materiality, location, content, and sociocultural contexts. In fact, if we consider all forms and contexts of rock art as equally important, then comparative research may constitute a significant step forward in the process of transforming rock art studies into a more global discipline. Moreover, developing comparative programs of research does not mean to reduce the diversity of rock images into a number of already-established categories. Rather, these programs can help us to understand the *diverse* ways in which different groups face similar problems.

There are four areas of comparative research that may be particularly fruitful in this regard. First, groups separated by thousands of kilometers (and/or years) often use similar materials for creating their rock images. In this setting, studies on the materiality of rock art (from the chemical analyses of rock images to pigment characterization) can shed new light on the material basis of rock images. Second, and related to the previous point, comparative approaches can also be relevant for a better understanding of the actual making of rock art. While image-making technologies vary from group to group, rock art makers employ a number of similar techniques and are subjected to similar physical/environmental constraints. Third, as many recent landscape studies have demonstrated, the location of rock images is essential to the act of image-making. Landscapes not only constitute the physical and ecological place of rock images, but they are active and sentient in an ontological way. In this sense, we need more global studies examining the different ways in which the relationship between location and image is structured and made manifest. Fourth, research on the content of rock art may also be relevant for studies dealing with global diversity. In fact, despite the great variation of themes and images all around the world, there are also important analogies. For instance, recent discoveries have demonstrated that certain motifs traditionally claimed to be exclusive to Europe (hand stencils) also appeared in Indonesia at a very early stage and have been claimed to be almost 'universal,' albeit with probable different motivations and social contexts. It would be interesting to examine why people separated by thousands of kilometers – and indeed globally – developed analogous imageries.

Finally, we argue that there is a pressing need for a critical reflection on the ways in which we think about theory in rock art research. Traditionally, Europe occupied a privileged position in world archaeology. This was related to a number of factors, including the preeminence and privileged role of Europe in archaeology, the initial identification of a rock art concentration in Western Europe, and the Eurocentric biases against Indigenous arts. As we have examined in this paper, in Europe, Indigenous arts were initially evoked only to elucidate the meaning of the 'great' European cave art: not only how they could be similar (in motivation), but also how they were different. This consolidated a unidirectional mode of theorizing in rock art studies in which information derived from understandings of Indigenous art were applied to European cave art. However, once the privileged position of Europe has been dismantled, we need to develop and elaborate new theoretical frameworks that are multidirectional (from European rock art to Indigenous arts *and vice versa*). The distinction between these two categories certainly needs to be called into question. A new conceptualization of a theoretical framework that can be brought to any corpus of rock art is, after all, happening in certain areas of rock art research. For instance, during the past decades, Indigenous arts have had a huge impact on ontological approaches to rock images in many places around the world, and they are now starting to be applied to the European record (see, for instance, the collection of papers in Moro Abadía and Porr 2021). This is a nice example of how Indigenous rock images can be a source of theory that can help us to think about rock art in new and more productive ways.

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7 Rock Art Research and Knowledge-Production in the Context of Globalizations. A Comparative Approach to the Cases of Patagonia-Argentina and Eastern Canada

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Abstract

In this chapter, we discuss the impacts different globalizations (in plural) have had on the development of rock art research in Argentina and Canada over time. In particular, we focus on: (1) the initial or pioneer views on deep-time rock art in Eastern Canada and Patagonia (those of voyagers, explorers, militaries, and missionaries); (2) the development of archaeologies of art in the strict academic sense of the term (e.g. culture-history and stylistic approaches as well as processual approaches, following and creatively adapting international academic trends); and (3) a number of new theoretical approaches associated with post-processualism, including landscape archaeology, ecological approaches, materiality, and, more recently, the 'ontological turn'. These three periods in the history of Western thought on deep-time rock art emerged in different contexts and under specific historical conditions, yet are characterised by the globalization of theoretical concepts from central areas of traditional academic theoretical production (i.e. Europe and USA), towards South America and Canada. In sum, we show how interpretations of deep-time Indigenous rock art in Eastern Canada and in Argentinean Patagonia were conceived under different conceptual frameworks according to different contexts of globalizations over time.

Keywords

Rock art · Patagonia · Eastern Canada · Globalizations · Research histories · Invisibilised peripheries

7.1 Introduction: Exploring Rock Art from the Peripheries of the Globalised World

In this chapter we examine the histories of rock art research in Eastern Canada and Argentinean Patagonia, seeking to reveal the effects that globalizations have had in both regions. Following the standpoint of several researchers, we argue that globalization is a multifaceted worldwide process but which cannot be considered as a single phenomenon; rather, there have been multiple stages throughout human history with different effects upon the various regions and societies impacted (Bartolomé 2006; Sheffield et al. 2013; Mir et al. 2014). We also show how the discourse on globalization often refers to plural and multi-directional interactions among nations within a 'global village', while what happened in the past, and is still happening today, is a mostly uni-directional interaction between 'centres' and 'peripheries', following a neo-colonial logic which is only starting to get fully deconstructed. Taking Eastern Canada and Argentinean Patagonia as two different kinds of 'peripheries', we explore how these regions not only incorporated theories, methods and values from the academic 'centres', but also adapted these in creative ways and even produced

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original theoretical and methodological positions and frameworks which have remained comparatively invisible within the international dialogue. Relevant factors underpinning such invisibility in global academia are pinpointed in this chapter.

Our case studies are located at both ends of the Americas. Rock art is found across Eastern Canada, the area comprising Ontario, Québec, and the Atlantic provinces (approx. 2.8 million km^2). The vast majority of the estimated 800 pictograph sites (mainly red ochre paintings) unevenly dispersed across the Canadian Shield (from Saskatchewan in the west to Québec in the east) are concentrated in northern Ontario. Petroglyphs sites are rare in the Shield, but are the dominant type of rock art in the Atlantic Canada. Most rock art is thought to date from the Woodland period onward (within the past two millennia), although some sites postdate European contact and a few continued to be made until the early twentieth century. The graphic content comprises a wide range of figurative and abstract imagery that includes animals, objects of material culture, powerful other-than-human beings, anthropomorphs, and geometric and indeterminate figures. Ethnohistorical and ethnographic sources indicate that much rock art was based in shamanism and the animisms of the various Algonquian-speaking peoples of this huge region. In the Maritime provinces of Atlantic Canada, rock art is also closely related to Indigenous experiences of European contact and colonisation.

In turn, Argentinean Patagonia extends over an area of 787,291 km^2 (including Tierra del Fuego) and its landscape consists of three main biogeographical areas: the Andean mountain ranges and foothills in the west, including a number of river valleys, lakes and some glaciers; a central portion characterised by plateaus and canyons, steppe vegetation and desert climate; and an eastern flatland portion which reaches up to the beaches, dunes and cliffs of the Atlantic coast, where the main rivers that intersect Patagonia from west to east flow into the sea. Archaeological evidence shows that Patagonia has been inhabited from at least 11,000 years BP by hunter-gatherer groups. Historical-ethnographic sources indicate that continental Patagonia is the ancestral territory of a number of First Nations, including Mapuche, Gününa-Küna and Aonikenk. Currently, more than 1000 rock art sites have been reported. These are characterised by painted or engraved images of guanacos (*Lama guanicoe*), negative hand stencils and positive hand prints, animal and human footprints, numerous geometric motifs (both simple and complex) and some anthropomorphic figures. Horse-rider figures attest to Indigenous rock art production during contact, invasion and colonisation by European populations. Detailed reports on the findings and interpretations of rock art sites in Patagonia can be found in Podestá (1996) and the subsequent chapters published quinquenially in the edited series *Rock Art News of the World*.

In order to explore the histories of research in both regions within a global setting, we first present some key concepts regarding globalization and academia.

7.2 Theoretical Framework: Rock Art Research in Globalised Academia

The initial date and characteristics of globalization are a matter of current debate among experts in a number of disciplines, including economics, political science, history, sociology and anthropology. We consider globalization to be a multi-dimensional process of intensification of international relations and connectivity through which raw materials, manufactured goods, financial resources, information, ideas, values and people circulate at an intercontinental scale, generating economic, political and socio-cultural effects in each and every region involved in the process (Bartolomé 2006; Sheffield et al. 2013; Mir et al. 2014). Such circulation is neither random nor symmetric among the involved parties, insofar as it follows the economic logics of capitalism—it is "uneven and asymmetric in pace, scope and impact" (Hodos 2017, 4). Some authors identify the end of the Cold War between the capitalist USA and the former communist USSR as the historical moment linked to the onset of contemporary globalization (e.g. Hodos 2017). This process led to the growth of capitalism 'in extension'—achieving its expansion at a global scale—and also 'in depth'—increasing the imposition of liberal free market rules in otherwise different countries.

However, 'globalization' is by no means new to human history. This process somewhat replicates, at a different scale and using different policies and technologies, what happened in the Americas since the onset of colonialism during the sixteenth century. At that time, the establishment of a global economy was based on a true colonial 'triangular market' characterised by: a) the transportation of enslaved African persons to do forced labour in the Americas, where Indigenous peoples were also enslaved, dominated or killed in order to invade their ancestral lands and to exploit their natural resources; b) the transportation of resources to Europe to produce manufactured goods, and c) the consumption of these goods by local privileged classes and by élites in the newly established colonies. Following complex socioeconomic and technological changes driven by the industrial revolutions (from the late 18th to early 20th centuries), the capitalist system replaced enslaved workforces with 'free' workers who were often paid minimum wages. Parallel to this socioeconomic process, a number of political changes occurred: former colonies achieved their independence,

starting with the United States of America in 1776. Later, the *Declaration of Independence of the Provincias Unidas del Río de la Plata* (1816) led to the formation of Argentina, while the passage of the *Constitutional Act* (1791) and the *British North America Act* (1867) established the Dominion of Canada as a self-governing entity within the British Empire. In time, these socioeconomic and political changes led to the repositioning of some countries from peripheral to central positions, the USA being the clearest example of all.

Rooted in colonial times, the international division of labour persists into the present, and constitutes a world-system structured along a centre/periphery logic which endorses not only an unequal economic system but also an unequal flow of ideas—albeit with different impacts on different 'peripheral' countries, according to their specific socioeconomic and cultural trends (Wallerstein 2004). However, a number of authors have also noted that globalization entails not just a cultural expansion from centre to periphery, but true hybridisations, convergences and heterogeneous mixtures which are often inharmonious, convoluted and even contradictory (García Canclini 1997; Hodos 2017). It is for this reason that we contend that several globalizations (plural) have occurred throughout world history and are still operative today (e.g. Sheffield et al. 2013). Qualification of the world-system model avoids simplifying the centre/periphery relationship and allows us to explore the complexity of the connections between and within 'central' countries and number of 'peripheral' territories. We argue that the consequences of colonial and post-colonial[1] globalizations go much further than the economic arena, and involve the circulation of people (e.g. voyagers, merchants, scientists, etc.) and information (e.g. Eurocentric theories, methods, practices etc.) that deeply affected/affect rock art research. We focus here on two different kinds of peripheries: Eastern Canada (situated in a 'developed country') and Patagonia (situated in a 'developing country'), each with their own histories and written sources on rock art—starting in the seventeenth century in Canada and in the nineteenth century in Argentina.[2]

We suggest that from this centre/periphery system stems a mainstream/marginal logic in academia. In particular, this has led to a 'central rock art discourse *versus* a peripheral rock art discourse' dichotomy, which has operated internationally and has deeply affected the development of rock art research within the peripheries. Any literature review can demonstrate that the former has often had a much wider platform, better visibility and greater academic recognition than the latter. However, as will be shown below, rock art studies conducted in the 'peripheries' have long and rich histories, which go beyond the mere existence of interesting, deep-time rock art sites.

Consequently, we propose that there was, and remains, a 'periphery effect' operating in the production, dissemination, discussion and application of rock art research within global academia. Bearing this centre/periphery relationship in mind, we draw attention to the changes that occurred throughout the histories of rock art research in Eastern Canada and in Argentinean Patagonia, and to the contradictions between discourse and practice in the current globalization context of rock art research.

7.3 Eastern Canada: Idolatry, Picture-Writing, Landscapes and Ontologies

7.3.1 17th–18th Centuries: 'Devilish' Rock Art in the Early Colonies

The European colonisation of North America was integral to the formulation of the modern international economy, and "the encounter between these two worlds amplified the process of realisation of the modern project" (Delâge and Warren 2001, 311). Essentially, modernity could not have emerged without the counterpoint of the so-called 'non-modern,' yet Indigenous participation in this modernity was qualified. First, within a pervasive degenerationist paradigm, Indigenous peoples were considered primitive and barbaric outcasts, having lapsed as a result of their remoteness to Christendom (Ouellet and Tremblay 2001, 163). Later, Enlightenment ideas of 'progress' recast them as the "childhood of humanity", rendering them analogous to 'prehistoric Europeans' (Trigger 2006, 92, 116). While considered to share psychic unity with Europeans, representations of Indigenous people "ran the full range from child of Eden to descendant of Cain" (Ouellet and Tremblay 2001, 160). Whether scorned or admired, Indigenous cultures were deemed to have yet achieved the hallmarks of civilised societies, such as the production of art (e.g. Thwaites 1989–1901: Vol. 7, 7–9).

The earliest accounts of rock art date to the seventeenth century, and in the context in which European descriptions of the beliefs and image-making of Indigenous peoples promulgated racist stereotypes of the 'savage,' 'blood-thirsty Indian' or the 'superstitious Indian' (Francis 1992; Ellingson 2001), rock images were generally treated by missionaries and

[1] In the Americas, the colonial period starts with the foundation of settlements by European immigrants in traditionally Indigenous territories; it evidently differs in date and length according to the different regions and countries. The post-colonial period designates the independence of each country and is not intended to imply the homonymous theoretical position.

[2] As part of the Commonwealth, Canada is not a socioeconomic 'periphery' in Wallerstein terms; however, as we will argue in this chapter, it does function, or has done in the past, as a 'periphery' in academic research traditions. Its comparison to the Argentinean case will shed light on the existence of different kinds of academic peripheries operating in a global network –see discussion below.

explorers with disdain (Zawadzka 2016, 171). For example, in the Canadian Shield, in what is now Québec and Ontario, the dearth of direct references to rock art somewhat reflects a general disregard or even hostility towards it among European explorers and missionaries. While they observed the ways in which their Indigenous companions undertook travel-related rituals—such as at the famous Rocher à l'Oiseau site on the Ottawa River (e.g. Caron 1918, 37; Sagard 1939[1632], 171; Thwaites 1896–1901: Vol. 10, 165, 167)—they made no mention of the rock art found there (Zawadzka 2016, 60) (Fig. 7.1). Few explorers and fur traders mentioned what was actually depicted on the rocks—they simply noted "red figures" (Mackenzie 1902: Vol. 1, cxxi) or "various figures of animals &c" (Gates 1965, 84–85)—but none discussed the potential meanings of these images. In other instances, rock art sites, as well as rock effigy sites, were often deliberately targeted and destroyed by missionaries who considered them idolatrous (de Bréhant de Galinée 1875, 41–42; Thwaites 1896–1901: Vol. 55, 193; Vol. 58, 43). In these cases, the other-than-human persons –*manitous*—considered to reside in these significant places were variously termed 'Devils' and 'Demons' by the missionaries (Thwaites 1896–1901: Vol. 10, 167). Today, toponyms including the word 'Devil' are common across the rock art landscapes of Eastern Canada (Zawadzka 2016). These early accounts, in which rock art was treated as a superstition or curiosity, were part of a larger trend of derogatory descriptions of Indigenous spirituality which continued well into the nineteenth and sometimes twentieth century (Zawadzka 2020). While colonial encounters during this period were largely characterised by European economic opportunism (Greer 2019), interpretations of rock art were often framed within a religious centre/periphery model with Europe at the centre, and North America at the periphery.

Fig. 7.1 Rocher à l'Oiseau rock art site on the Ottawa River was the site of Indigenous travel-related rituals in the seventeenth century although the rock art itself was not mentioned by the European explorers. In recent years many of the red ochre pictographs have been damaged and obscured by modern graffiti. In the panel on the bottom-right pictographs underlying graffiti are visualised using DStretch. (Images. D. Zawadzka)

7.3.2 1800–1950s: 'Picture-Writing' and 'Othering' in the Time of Nation-Building

The nineteenth century was the beginning of rock art studies in North America. With the emergence of evolutionist anthropology, the earliest syntheses of North American rock art were framed within the unilineal cultural evolutionism that would culminate in Lewis Henry Morgan's *Ancient Society* (1877). For example, in opening his six volumes on the history of the Indigenous peoples of the United States, ethnologist Henry Rowe Schoolcraft (1851–1857: Vol. 1, v) wrote that, "the antiquities of the United States are the antiquities of barbarism, and not of civilization." He suggested that the perceived cultural inertia among Indigenous groups in the three and a half centuries following European contact reflected biological and cognitive inferiority. He wrote that Indigenous people did not exhibit "progressive physical development" and that they appear to have "no intellectual propulsion, no analytical tendencies. It [the Indian mind] reproduces the same ideas in 1850 as in 1492." (Schoolcraft 1851–1857: Vol.1, 41).

This notion of a stagnant culture was coupled with extinction tropes, such as the Romanticist notions of the 'noble savage' and 'vanishing Indian' or accounts that asserted the primacy of European settlers in civilising and ordering the continent (Ellingson 2001; O'Brien 2010). Essentially, Indigenous peoples were regarded as ahistorical, and were denied modernity and the ability to change. These ideas were expressed in the concept of "picture-writing" where rock art was seen by the leading ethnologists and archaeologists of the period as a developmental stage leading to writing (Schoolcraft 1851–1857: Vol. 1, 333; Mallery 1886; Boyle 1896, 44) (Fig. 7.2). In *The Indians of Canada*, John Maclean (1892, 91) wrote, "Picture-writing is the lowest stage of writing in use amongst men." In his *magnum opus*, *Picture-Writing of the American Indians*, Garrick Mallery (1893, 26) asserted:

> The importance of the study of picture-writing depends partly upon the result of its examination as a phase in the evolution of human culture. As the invention of alphabetic writing is admitted to be the great step marking the change from barbarism to civilization…. It is inferred from internal evidence, though not specifically reported history, that picture-writing preceded and generated the graphic systems of Egypt, Assyria, and China, but in America, especially in North America, its use is still current. It can be studied here without any requirement of inference or hypothesis, in actual existence as applied to records and communications.

These evolutionist ideas about Indigenous pictography, heritage and material culture emerged during a period of colonial nation-building (Canadian confederation began in 1867) and a widespread Social Darwinism that denigrated the Indigenous cultures that Euro-settler governments were seeking to assimilate, and which were ultimately used to justify the ongoing seizure of land and resources (McNeil 1999; Klotz 2020). For example, between 1864–1912, archaeological evidence debated by the Nova Scotian Institute of Science (NSIS) concerning the origins of the Mi'kmaq was implicated in the colonial government's policy of Indigenous assimilation (Lelièvre 2017). During this period the NSIS was an active participant in global Victorian scientific enquiry in which prehistoric and evolutionary archaeologies were developing in Europe (Trigger 2006, 163; Lelièvre 2017, 408). For example, the 'Stone Age' category of Thomsen's Three Age System was used to organise precontact material culture (e.g. Piers 1896). In this context, theories of "progressivism", "antiquation", "migrationism" and "degenerationism" were variously used to separate contemporary Mi'kmaq from their precontact past while also placing them within a "narrative of progress that underlay the nationalistic settler project in Nova Scotia" (Lelièvre 2017, 401; see McNiven and Russell 2005). At this time, Mi'kmaw petroglyphs from Kejimkujik Lake in southwest Nova Scotia were described as "picture-writings" by Mallery and among these petroglyphs he also identified non-Mi'kmaw (settler) inscriptions as "marked outlines… …made by civilized men or boys" (Anon. 1888, 4).

The idea of rock art as an early form of writing was widespread in North America and beyond (see Mallery 1893), and its roots can be traced back to the eighteenth century French philosopher Condillac who proposed that language and art derived from a primeval gesture language and to the rationalist idea that visual expression is subordinate to language (Molyneaux 1977, 5–6). This led to the application of philological approaches to the study of rock art (e.g. Schoolcraft 1851–1857). Nevertheless, some researchers also entertained the idea of 'art for art's sake' where art is divorced from any social function. For example, Mallery (1893, 469) wrote: "Micmacs… …had gained the idea of practicing art for itself, not merely using the devices of pictography for practical purposes, such as to record the past or to convey information." In concluding his volume, Mallery pondered that "markings may be mere graffiti, the product of leisure hours, or may be of… [a] … more serious [nature]" (Mallery 1893, 769). There was also, then, the inkling of an emerging valorisation of Indigenous visual practices as "the first crude efforts of graphic art" (Boyle 1896, 45).

Interpretations of rock art during this period were founded in anthropological and archaeological theories imported from Europe and the United States. Yet, with the development of Boasian anthropology and culture-history archaeology at the beginning of the twentieth century, more nuanced understandings of the cultures and spiritual lives of Algonquian-speaking peoples began to emerge (e.g. Jones 1905; Radin 1914). Nevertheless, the interest in cultural rela-

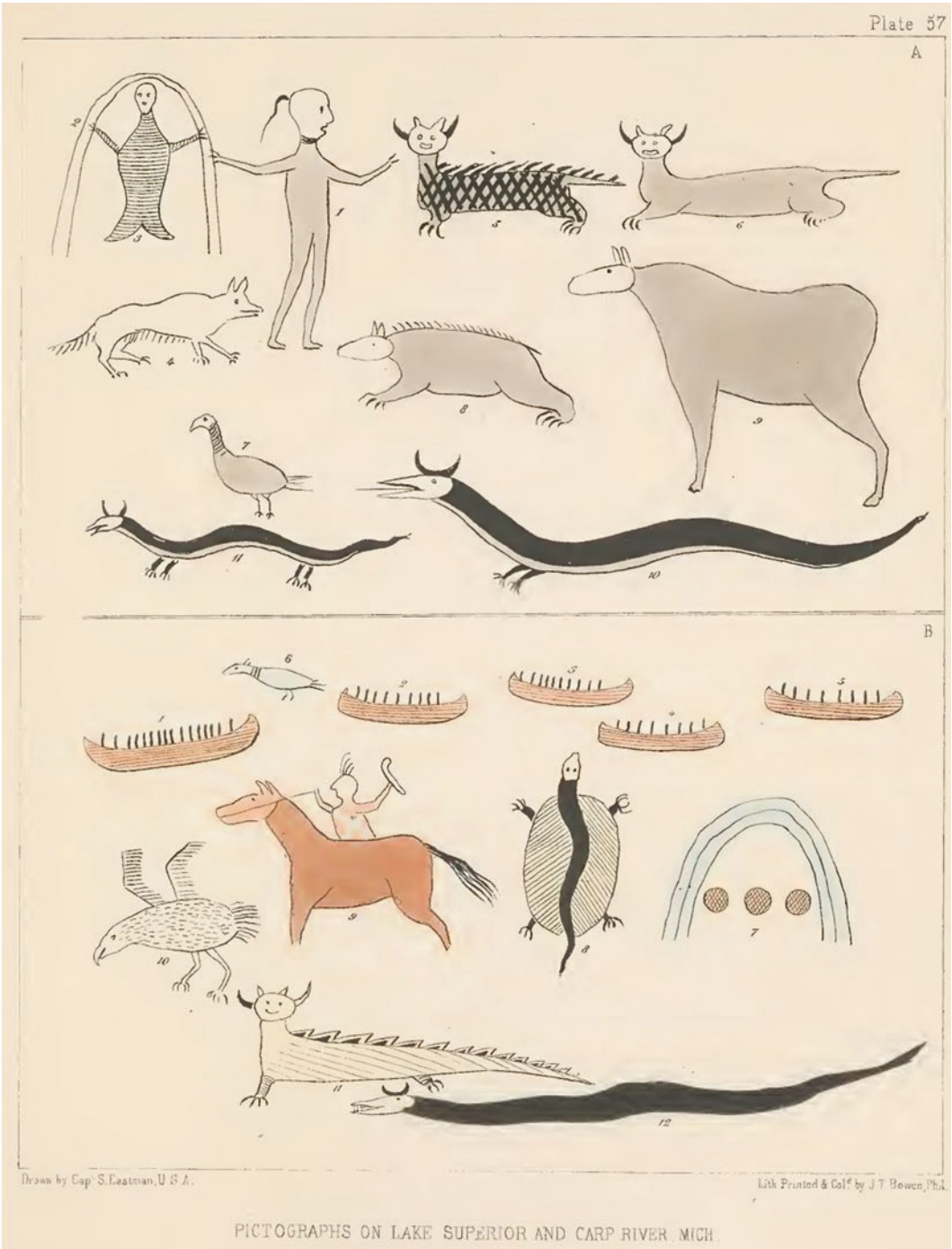

Fig. 7.2 Extract from Schoolcraft (1851–57: 1, Plate 57) showing pictographs ('picture-writing') from the shores of Lake Superior. Those shown in Plate A are reproductions of images made on birchbark, which were themselves copies of pictographs recorded on the Namabin/Carp River in Michigan, United States. Plate B shows a reproduction of Chingwauk's recollection, also made on birchbark, of pictographs recorded at the Agawa rock art site in Ontario

tivism and historical particularism emphasised the acquisition of "ethnographic and linguistic data about Indigenous peoples…before their old ways disappeared… [and meant] … there was little government funding for archaeological research [in Canada] before the 1960s." (Trigger 2006, 312). In this context, the difficulty of ascertaining the cultural affinity and chronology of rock images along with a general disinterest for art and religion in archaeology, meant that there was a lull in rock art research in Canada during the first half of the twentieth century (Zawadzka 2016, 66).

7.3.3 1960s Onward: The Emergence of an Archaeology of Rock Art

A resurgence in rock art research began in the late 1950s with the first comprehensive catalogue and typology of Canadian Shield rock art from around the Great Lakes (Dewdney and Kidd 1962). Within the broader context of the emergence of New Archaeology, pioneers such as Selwyn Dewdney (e.g. 1969) strove to apply the scientific method in their work (although it does not appear that Dewdney conceived his research in terms of processual archaeology). Yet, even though researchers sought to elaborate styles and various dating methods (e.g., Dewdney 1970; Rajnovich 1981), attempts to produce generalised chronological and stylistic classifications of Canadian Shield rock art (e.g. Maurer and Whelan 1977; Whelan 1983) faltered because styles were never properly determined (Molyneaux 1981; Zawadzka 2016, 57), and researchers began to identify geographically distinct cultural traditions (e.g. Rajnovich 1981; Conway 1984). Nonetheless, the development of innovative methodological approaches to record, protect and conserve rock art were predominant concerns well into the early 1990s as researchers attempted to document the wealth of data (e.g. Wainwright 1985, 1990; for a summary see Zawadzka 2016, 68–76).

From the beginning, researchers had sought to reveal the meanings and purposes of rock art from their Indigenous guides and informants, although according to Dewdney "most of the little I could glean was hearsay or conjecture" (Dewdney and Kidd 1962, 13). Yet, the resurgence of ethnographic fieldwork and interest in symbolism and contextualism that occurred during the 1960s and 1970s prepared the ground for interpretations increasingly informed by Indigenous knowledges and oral histories. This enabled researchers to reflect on the ideological drivers of making and using rock images (e.g. Vastokas and Vastokas 1973; Rajnovich 1989; Conway 1992). In fact, it has been argued that the 'ontological turn' widely discernible in archaeology since 2010 was actually "foreshadowed" in shamanistic rock art research in North America much earlier, but has been overlooked in current theoretical debates (Whitley 2021, 66). In Eastern Canada, "the road towards relational ontologies was initiated in the early 1970s" (Zawadzka 2021, 271), which in the work of Joan Vastokas (1973, 31) emphasised the importance of acknowledging the "world view" of Algonquian groups in the interpretations of the materiality and landscape significance of imagery.[3] In some ways, her work and that of others (e.g. Molyneaux 1980, 1983) can be considered to have pre-empted some aspects of landscape archaeology and the interest in phenomenology and materiality that emerged in the 1990s in Europe. However, it is noticeable that such pioneering work has seemingly had limited impact beyond Canada because its rock art was poorly known outside of the country. Furthermore, the interest in rock art landscapes was not limited solely to symbolic and religious concerns. Some researchers (e.g. Reid 1980; Rajnovich 1981; Lambert 1983) also examined how landscape characteristics were implicated in site selection. For example, observations of riverine and lacustrine topography, the cardinal orientation of sites, and their relation to habitation places indicated that visibility and sunlight may have played important roles in determining rock art locations (Zawadzka 2016, 79–80).

These landscape-based approaches prepared the ground for rock art research in Eastern Canada that from the late 1990s began to echo and frame itself within global trends in rock art discourse. In particular, the discovery of deep-time parietal and mobile art in Africa, Asia, Australia and the Americas meant that some former 'peripheries' came to the fore in global rock art research in which the collaboration between archaeologists and Indigenous peoples significantly reorientated and advanced theoretical and methodological approaches in the discipline (Chippindale and Taçon 1998; Moro Abadía and Tapper 2020). In Eastern Canada, an initial concern with the exploration of sacred landscapes and landscape phenomenology (e.g. Arsenault 1998; Zawadzka 2008), was followed by an interest in the multifunctional nature of rock art that transcended preoccupations with the sacred (Norder 2003; Zawadzka 2013). More recently, the so-called 'ontological turn' has drawn attention to the relationality of rock images in the creation and maintenance of reciprocal relationships between communities of humans, non-humans and other-than-humans in the landscape (Creese 2011; Norder 2012; Zawadzka 2019) (Fig. 7.3). Furthermore, while rock art research has, historically, mainly been conducted by non-Indigenous researchers, recent years have seen the growing contribution of Indigenous scholars (e.g. Allen et al. 2008; Allen et al. 2013; Weeks 2012; Norder 2012; Twance 2017). Increasingly, rock art research in Eastern Canada has the potential to contribute to international theoretical archaeological debates that advocate relational approaches that acknowledge and privilege Indigenous realities and which challenge, compliment and extend conventional archaeological methods (e.g. Norder 2012; Creese 2021; Zawadzka 2021).

Today, many rock art sites found throughout Eastern Canada are thought to have originated in the dream visions of medicine people seeking spiritual power and guidance from other-than-human beings, or else with the vision questing experiences of youths undertaking rites of passage (Dewdney and Kidd 1962; Vastokas and Vastokas 1973;

[3]The work of Joan Vastokas has been particularly important in re-orientating rock art research, not only in Canada but also in the United States (Schaafsma 1985). Vastokas was one of the few rock art scholars with an academic appointment in Canada, and she and her students had a significant influence on the discipline throughout the 1970s, 1980s and 1990s.

Fig. 7.3 (Left) Fairy Point is an important pictograph site on Missinaibi Lake, Ontario. Located on a major travel route, the various motifs indicate that the site likely served multiple purposes. (Right) Landscape characteristics have long been studied by rock art scholars. At this rock art site on Lake Anima Nipissing in northeastern Ontario, a large crack bisects the cliff and white precipitate covers portions of the rock's surface. As with many rock art sites in the eastern Canadian Shield, the images tend to be abstract. Here, a series of parallel lines (visualised using DStretch) are among the most prominent motifs. (Images. D. Zawadzka)

Rajnovich 1994; Zawadzka 2019). Yet, it is also apparent that rock art sites served other purposes too, they structured human engagement and memory in the landscape (Creese 2011; Norder 2012), they were used to help people navigate the labyrinthine networks of waterways throughout the boreal forests (Zawadzka 2013), and were used to negotiate the social boundaries of group territories (Zawadzka 2016). They also served to document Indigenous experiences of European contact and adaptations and responses to colonisation (e.g Molyneaux 1988; Tapper 2021). Furthermore, archaeometric studies of Canadian Shield pictographs have begun to throw light on the various technical processes and social complexities involved in the acquisition, manufacture and application of ochre pigments in the creation of rock art (e.g. Aubert et al. 2004; Bonneau 2016; MacDonald 2015). In sum, it is evident that recent research in Canada continues to contribute to the production of original theoretical insights rather than just importing them from hegemonic global centres.

7.4 Patagonia: Inscriptions, Styles, Communication and the Materiality of Art

7.4.1 Walichus and Inscriptions in the Nineteenth Century

Although written records about Patagonia and its Indigenous inhabitants go back to the sixteenth century, the first texts reporting rock art date to the nineteenth century. Two of these sources were written by European authors, and two by Argentinean authors. Their attitudes towards the images ranged from merely descriptive to highly value-laden interpretations; they show the application of what were current academic concepts mostly created in Europe.

Swiss naturalist Georges Claraz, who explored central Patagonia in 1865–1866, mentioned the presence of yellow, white, red and black "drawings" in two different caves (Claraz 2008, 158). He noted that red was the best-preserved

colour—an early observation still accurate in the twenty-first century.

From 1876 onwards, Argentinean naturalist Francisco P. Moreno, who founded and directed the Museo de La Plata, described motifs found on a *Walichu* (sacred stone) in Northern Patagonia, and noted that Indigenous people "seem to see there some ostrich [*Rhea americana*] tracks and human and lion [*Puma concolor*] footprints" (Moreno 1876, 188–189). In this description, Moreno provided the first and most direct evidence of an Indigenous interpretation of what later would be defined by Menghin as the 'footprint style' (see below). In 1879, Moreno (2004) published his findings from Punta Walichu in Southern Patagonia, in which he described geometric images, "shapeless animal figures" formed by red dots, and what we now call 'positive' and 'negative' hands. He considered these images to be "signs" or "inscriptions" likely to have been made by "an extinct race", constituted by "men who were morally more perfect" than their descendants—the contemporary Tehuelche (Moreno 1876, 188–189). Such contempt for the Tehuelche reflected a degenerationist approach towards their artistic capabilities. Moreno (2004, 366–367) stated that the interpretation of these "ancient American signs" would require "an American Champollion"[4]—thus making an explicit connection with Egyptian hieroglyphics. He (2004, 365–372) also made an explicit analogy between these "extinct men" and those of the French Stone Age, who shared "the same mode of life and the same degree of intellectual culture" in zones which were geographically apart, but ethnographically close. Though avoiding hyper-diffusionism, such intercontinental comparison shows that Egyptology and Palaeolithic archaeology were key—central—standards for interpreting other—peripheral—regions.

A few years later, in 1887, Argentinean army officer and first Governor of Santa Cruz territory, Carlos Maria Moyano, published the results of his explorations, where he describes a number of "bows, hands, arrows, ostrich feet and other capricious strokes" painted in red and yellow pigments in a cave near *Guer-aiken*. He refused to consider these paintings "hieroglyphs" or "conventional signs," since he thought that "prehistoric Indians" were "barbarian" populations unable to produce them (Moyano 1887, 20–22). Instead, he attributed these images to contemporaneous Indigenous women, following an implicit evolutionist rationale.

Finally, German naturalist Karl Hermann Burmeister, who directed the Museo Argentino de Ciencias Naturales in Buenos Aires, published the results of his expedition to Santa Cruz, including a description of *Yaten-najen* canyon, where he found painted geometric drawings in a cave, and ostrich and puma tracks chiseled or pecked on open-air walls—the first engravings reported in Patagonia (Burmeister 1892). He suggested that the Indians must have engraved these during their "spare time" (Burmeister 1892, 238), thus showing an early use of the European 'art for art's sake' concept applied to rock art.

In sum, the first reports on Patagonian rock art in the nineteenth century drew on both evolutionist and degenerationist conceptions of 'Indigenous otherness,' as well as on contradictory conceptions of Indigenous images as 'signs' *versus* 'non-signs'. What unified all these perspectives was their Eurocentric origin and partial reliance on Palaeolithic chronologies.

7.4.2 Modernity in the Periphery: The Stylistic Era in Patagonia and its Links with Post-World War II

The first half of the twentieth century saw an increase in the number of expeditions to Patagonia that reported rock art data. These trips were still led both by European and Argentinean academics, and while some research was highly empiricist, and other publications retained European classifications as key guidelines for archaeological practice, it was during this period that Patagonia's stylistic sequence was first constructed.

Empirical descriptions were abundant in the early twentieth century, such as those made by German naturalist Carlos Bruch (1902, 173), who published site-specific reports from Northern Patagonia, including the first observations of "painted sculptures", thus offering an early account of an infrequent mixed technique consisting of painting previously engraved motifs. Some years later, Felix Outes, an Argentinean pioneer in ethnology and archaeology who worked at the Museo Nacional de Historia Natural de Buenos Aires, co-authored with Bruch *Los Aborígenes de la República Argentina*, in which they summarised information about the European Palaeolithic, Neolithic, Bronze and Iron ages, and applied these periods to the *Prehistoric Peoples of Argentina* (Outes and Bruch 1910). They also presented information about the "Historical Peoples of Patagonia" and included rock art within a section on "Linguistic characters", where they explained that the Patagones, like other "primitive Americans" who lacked an alphabet, drew on rocks and caves "signs, ostriches, human feet, etc… …maybe to remember diverse facts" (Outes and Bruch 1910, 119).

However, original approaches to rock art were also occurring locally. For example, when reporting the art of Piedra Museo (Santa Cruz), Argentinean archaeologist Francisco De Aparicio (1933–1935) included details on groove depths and made inferences on the sequence of stages required to

[4]Note that the term 'American' refers here to a person born in the Americas, the two continents, not to the citizenship of a person born in the United States of America, the latter concept being a product of recent globalization led by the USA.

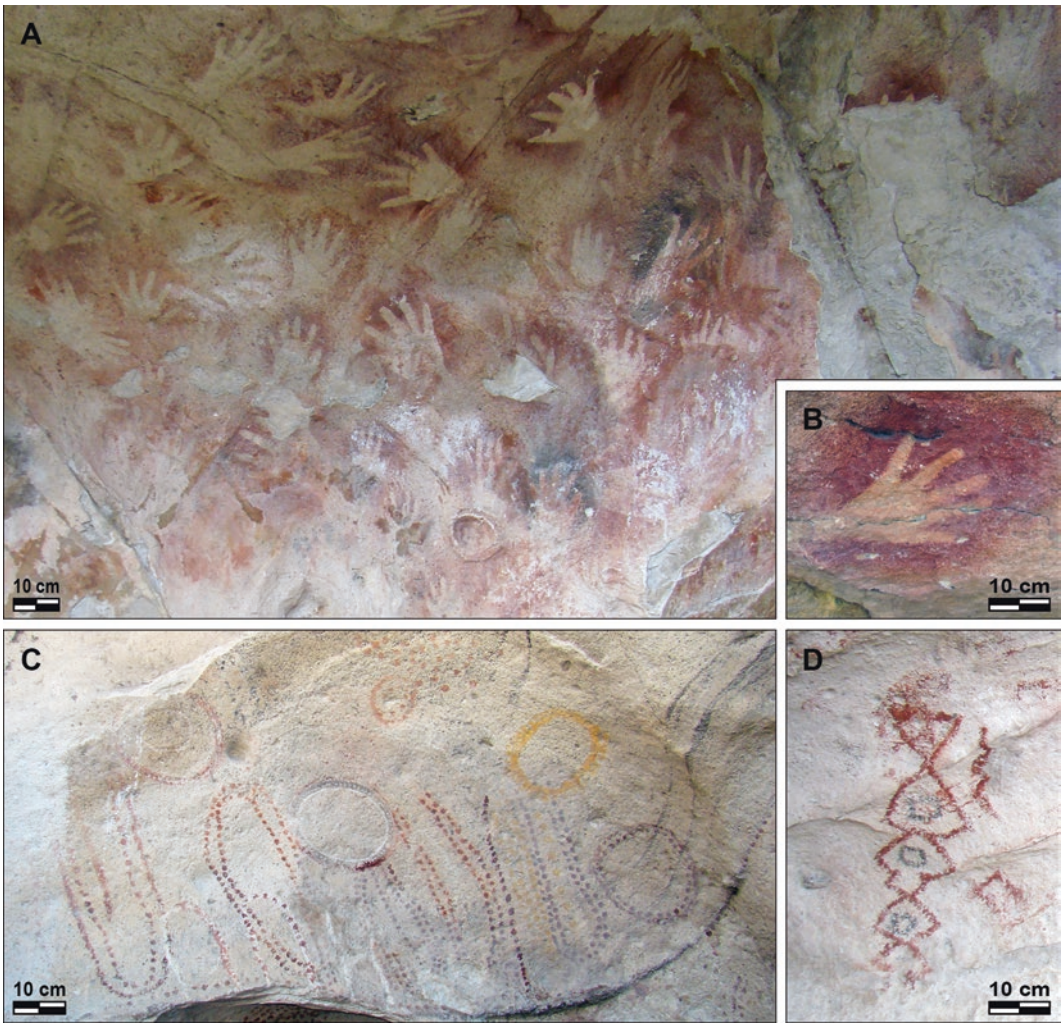

Fig. 7.4 Examples of: (**a–b**) hand stencils; (**c**) dotted geometric motifs; (**c**) grecas motifs at Viuda Quenzana locality, Santa Cruz province, Patagonia, Argentina (Images. D. Fiore and A. Acevedo)

make the engravings. This anticipated, by several decades, what would later develop as the study of rock art techniques.

A foundational milestone in Patagonian rock art research was produced by Austrian archaeologist Oswald Menghin, who had initially worked at the University of Vienna for several years and as the Minister of Education in the Anschluss-Cabinet for a brief period during the Nazi regime. He moved to Argentina in 1948 in the post-war context, where he became a professor at the Universidad de Buenos Aires and the Universidad Nacional de La Plata.[5] After visiting a number of sites in Patagonia, Menghin (1957) defined seven rock art styles: hands, scenes, footprints, frets [grecas], parallels, miniatures and complex symbols—the first four are still currently in use (Fig. 7.4). He also proposed criteria to develop relative chronologies in order to create a diachronic stylistic sequence.

The 'stylistic era' was thus inaugurated in the archaeology of art in Patagonia. Menghin's work was permeated by German/Austrian culture-history concepts and approaches, including: (1) the use of diffusion as a key mechanism to explain the presence of certain styles in Patagonia; (2) the search for the origin of such styles outside Patagonia, in other regions and even in other continents (i.e. hyper-diffusionism); (3) the association between cultural diffusion and migrations of "racial groups"; (4) the essentialist notion that a style is originally a pure and homogenous entity whose change implies "degeneration" and/or which can be "replaced" or "contaminated" by a new style; and (5) the notion that some zones were more receptive to the "triumph" of new "more advanced and disciplined" styles, while other more "conservative" zones preserved their "ancient and

[5]In 2011 the Universidad Nacional de La Plata decided to remove the name of Oswald Menghin from one of its lecture rooms, due to his links to the Nazi regime.

primitive" styles (Menghin 1957, 81). Finally, Menghin (1957, 61–62), also proposed some symbolic interpretations of the images based on associations with ethnographic information and landscape features (e.g. springs), although he noted that "the same ritual manifestations might correspond to two or more different aims," thus addressing the issue of equifinality at an early stage of the history of the archaeology of art.

Not only were theoretical and methodological approaches still being imported from the global centre, but, as a peripheral actor within the world-system, Argentina admitted Menghin within the academic staff of two of its key universities. The event stands as a painful paradox in the history of Argentinean archaeology and as a concrete metaphor of the effects of globalization: the first rock art sequence of Patagonia was built by a European researcher suspected to have been linked to the Nazi regime.

7.4.3 From Theory Importation to Theory Creation: Adapting processualism and Addressing Materiality

The second half of the twentieth century was partly characterised by: (a) the refinement and expansion of the stylistic sequence initially proposed by Menghin; (b) the original work of local researchers who adapted processual concepts to the analysis of Patagonian rock art, and (c) the first involvement of female archaeologists as rock art researchers.

A refined version of Patagonia's rock art sequence was first presented to an international audience by Carlos Gradin at the *XXXVII Congreso Internacional de Americanistas*, held in Argentina (Gradin 1966). Using culture-history criteria which moved away from the German/Austrian diffusionist framework used by Menghin, and which were closer to the normative French and American frameworks, Carlos Gradin, Annette Aguerre and Carlos Aschero published the stylistic sequence of the key site of Cueva de las Manos, and soon after they broadened it to cover the whole of the Río Pinturas locality (Fig. 7.5). They defined a sequence of six stylistic groups (A, B, B1, C, D and E) which they correlated with diachronic cultural levels, thus forming the backbone of the Patagonian rock art stylistic periods (Gradin et al. 1976, 1979) (Fig. 7.6). Subsequently, Gradin (e.g. 1988) redefined each of these styles into 'stylistic modalities' and 'stylistic trends', and through mapping motifs found at numerous Patagonian sites contributed to the foundation of a macro-regional archaeology of rock art. Such research was accompanied by the first archaeometric analyses (e.g. x-ray diffraction) carried out on rock art pigment samples and on pigment residues found in dated layers of Cueva de las Manos (Iñiguez and Gradin 1977).

Another key breakthrough of this period was the adaptation of Schiffer's (1972) archaeological-context/systemic-context flowchart by Carlos Aschero to model the activities involved in the production of rock art paintings, in order to predict the archaeological residues generated by each activity (Aschero 1983, 1988). This model was used to interpret the archaeometric results of samples from site Cerro Casa de Piedra 5 in Southern Patagonia and represents the earliest known application of this kind of processual approach to the study of rock art. This local adaptation of the imported model entailed an original line of reasoning, which led to the explicit recognition of rock art as part of the archaeological record, breaking away from its artificial separation from the rest of the material culture evidence that had pervaded most of rock art research worldwide (and still does, in some countries). Later, a more complex production sequence model was presented to the 1995 *IFRAO International Rock Art Congress*. This model emerged from a theoretical perspective that explicitly broke away from the Cartesian mind/body split that had associated rock art with ideology/symbolism, and focused on its economic side instead. The model involved three interrelated *chaînes opératoires:* one dealing with tool production, one dealing with paint production and one dealing with image-making itself. It aimed to provide analytical tools to address and disentangle the diverse technological processes and choices—e.g. raw materials, tools, technical gestures, etc.—and economic aspects—e.g. resources management, labour organization, labour investment—underlying the creation of painted and engraved images (Fiore 2007).

By the end of the 1990s, the first attempt to date rock art in Northern Patagonia was produced via a collaboration of Argentinean and British researchers (Boschín et al. 1999). In 1999, Cueva de las Manos was inscribed on the UNESCO World Heritage List due to its "outstanding collection of prehistoric rock art which bears witness to the culture of the earliest human societies in South America" (https://whc.unesco.org/en/list/936/). Archaeometric studies, site management and conservation practices gathered pace at this and other Patagonian sites, leading to more informed analyses combined with more sustainable archaeological practices (e.g. Wainwright et al. 2000; Onetto 2006). The pioneer collaboration between Wainwright, Podestá and other Argentinean colleagues working in Patagonia deserves to be highlighted here as a key 'periphery/periphery' contribution which led to concrete results in the archaeometry of rock art paintings, including both the production of detailed information about paint recipes and conservation processes. This, in turn, is a good example of how a developed country such as Canada provided a developing country such as Argentina not only with sheer results, but with valuable methods and criteria which paved the way for future archaeometric studies.

Consistent with the increasing hegemony of the USA within the world-system, and partly as a result of the military dictator-

Fig. 7.5 Examples of: (**a**) guanacos; (**b**) schematic antropomorphic figure; (**c**) stenciled hand and rhea footprints; (**d**) superimposed hunting scenes at site Cueva de las Manos, Santa Cruz Province, Patagonia, Argentina (Images. D. Fiore)

ship in Argentina (1976–1983) which had re-oriented the country's socioeconomic links with this new global centre, processualist concepts and archaeometric techniques were mostly imported from the USA. However, new links emerged—such as those with Canada –, while the links with Europe were still operative. In all cases, however, what becomes evident is the active role taken by Argentinean researchers in the production of original insights on Patagonia's rock art.

7.4.4 Originality Also Emerges from the Periphery

The final decades of the twentieth century and the beginning of the twenty-first century led to the development of a number of regional archaeologies of rock art across Patagonia. In spite of the usual shortage of funding, numerous (sometimes dozens) of sites within specific regions were—and still are—regularly studied over several decades by the same research teams, thus producing consistent results. The research questions, models and/or hypotheses used by these researchers express a great variety of underlying theoretical frameworks, which include both the application of ideas found in foreign bibliographies, as well as the proposal of original concepts and/or methodological techniques.

Several approaches are based on an ecological-evolutionary framework, which has its adepts in Patagonia, although it has not often been applied to rock art research at the international scale. This includes: a) analyses of rock art images as 'systems of information transmission', tackled via the study of the number, frequency and proportion of motif types in the Cardel-Strobel region (Re 2010); b) 'mutual information networks' which have been used to track motif correlations and their spatial distribution in Northwest Patagonia, with the aim of determining the paths followed by cultural transmission processes (Caridi and Scheinsohn 2016); and c) 'formal network analysis' used to detect the topology of different communities, contrasting these with

Fig. 7.6 Contact period motifs: (**a**) horse-rider, geometric motifs and grecas motifs at site Puerto Tranquilo 1, Isla Victoria, Parque Nacional Nahuel Huapi, Río Negro Province, Patagonia, Argentina; (**b**) images in photo "a" visualised using DStretch; (**c**) schematic horse-rider, anthropomorphic figure and geometric motifs at site El Trebol, Río Negro Province, Patagonia, Argentina; (**d**) engraved initials reproducing branding marks made to livestock by cattle drivers (*arrieros*) at Yaten Guajen canyon, Northern Margin of Santa Cruz River region, Patagonia, Argentina. (Images a, b and c: courtesy of Emmanuel Vargas; image d: D. Fiore)

their environmental locations, for example forest *versus* steppe in Northwest Patagonia (Vargas et al. 2019).

Other authors have followed a post-processual standpoint, focusing on rock art's capacity to contain symbolic information both in the images themselves and within the landscape where they are displayed, thus being an active form of 'dwelling' (Carden 2013).

New conceptions contributing to the 'material turn' in rock art studies have also emerged from Patagonia. Spatial analysis has yielded the notion of 'rock art landscapes,' which has been proposed as a concept that reveals the ways in which people engage with space and transform it through visual marking—thus rendering their agencies archaeologically visible. The study of rock art landscapes via the application of GIS-based viewshed analyses of the Southern Deseado Massif have demonstrated how the variety, frequency, density, and distribution of motifs and motif types reflect different strategies of occupation and resource acquisition in the past (Acevedo et al. 2019). In turn, the materiality of rock art has also been theoretically addressed by revealing the relationships between technology, economy and cognition that underlie the practices of making and engaging with rock art. Case-studies from Santa Cruz province show that labour investment seems to have been oriented towards maximising image visibility and enduring erosion/weathering, more than towards minimizing effort in its making. The study of large databases (e.g. 366 sites) shows that labour investment was partly in line with a cost-benefit logic (e.g. by displaying engraved images in unsheltered panels), but partly defied it (e.g. by engraving harder

bedrocks and painting softer ones) (Fiore 2018). In addition, the identification of certain motif types which maintained their designs through space-time but were produced using different techniques, indicates that the former had a slower rate of change than the latter, probably due to the fact that such designs carried more—but not all—informative/symbolic/ideological contents and/or aesthetic values (Fiore 2018) (Fig. 7.7). In addition to this, theoretical and methodological proposals originally emerging from—and applied to—Patagonian rock art are now circulating at an interna-

Fig. 7.7 Examples of engraved motifs: (**a**) human footprints, geometric motifs and bolas, Yaten Guajen canyon sector I; (**b**) bird and feline footprints, Yaten Guajen canyon sector II; (**c**) anthropomorphic figure, Yaten Guajen canyon sector I; (**d**) guanaco figure, El Lechuza canyon; (**e**) irregular accumulation of pecked dots, El Lechuza canyon; (**f**) circles and zigzags, La Barrancosa (LB08-UT06) (Images. D. Fiore and A. Acevedo). All these localities are in Santa Cruz Province, Patagonia, Argentina. Notice the design similarities of these engraved motifs with some of the painted motifs in previous figures

tional scale. This includes, for example, the presentation of a systematic method to identify painting episodes and analyse colour superimpositions in order to build diachronic rock art painting sequences (Carden and Miotti 2020); and a new method which provides criteria to identify and interpret "minimal", "maintenance", "recycling", "obliteration" and "circumstantial" motif superimpositions (Re 2016). These original contributions also deal with the proposal and discussion of new concepts which are applicable not only to rock art but also to portable art and body art, such as "techno-visual affordances" and "performative affordances", which shed new light on different aspects of human engagement with images-objects and image-making techniques (Fiore 2020). As a result, theoretical perspectives which were originally created and used in South America, such as the "*economy of art*" framework, are now starting to be applied in other continents: this is the case of recent studies of Levantine rock art in Spain (Santos Da Rosa 2019).

Finally, the development of experimental approaches to rock art (e.g. Alvarez et al. 2001; Carden and Blanco 2016) which have also circulated internationally, as well as of archaeometric analyses carried out entirely by Argentinean teams using local equipment (e.g. Aldazabal et al. 2019) or as part of international collaborations (e.g. Rousaki et al. 2018), also illustrate the new effects of globalization in the current state of rock art studies in Patagonia. Presently, all these collaborations tend to involve not just a one-way importation of ideas but a two-way interactive endeavour, in which Patagonia does not only offer interesting sites, but interesting researchers—many of whom are women.

7.5 Discussion: Deconstructing Invisibility from the Peripheries

The histories of rock art research in Eastern Canada and Patagonia show a number of similarities and differences linked to the global development of the disciplines of anthropology and archaeology in relation to Europe. In Eastern Canada, 17th and 18th centuries references to rock art based in religious discourses disregarded rock images as non-artistic idolatrous manifestations of the beliefs of 'degenerate' Indigenous peoples. In Patagonia, early European settlers did not mention rock art sites.

In the nineteenth century, earlier Enlightenment notions of 'progress' were reinforced by anthropological applications of evolutionist theories which promulgated colonialist notions resulting in Indigenous peoples (in both Eastern Canada and Patagonia) being considered culturally inchoate (e.g. 'noble savage') or else degenerate versions of ancestral groups (e.g. 'lazy Indian'). In this context, Indigenous rock images were described as 'figures' or 'drawings' and conceived as 'signs,' 'inscriptions,' 'picture-writing' or 'hieroglyphs,' associated with early forms of writing considered indicative of pre-modern cultures. In Eastern Canada, this resulted in evolutionist interpretations in which rock images reflected the stagnancy of Indigenous cultures (e.g. Schoolcraft 1851–1857; Mallery 1893), whereas in Patagonia rock images were framed within both degenerationist (e.g. Moreno 1876) and evolutionist (e.g. Moyano 1887) terms. In either case, Indigenous rock images were framed within Eurocentric chronologies using Palaeolithic/prehistoric sequences as a key comparative standard (e.g. Mallery 1893; Outes and Bruch 1910): thus, past and living Indigenous peoples were cast as analogies of prehistoric European populations. However, some scholars began to accept the 'artistic' nature of rock images by implicitly applying the European notion of 'art for art's sake'—a clear example of how globalization of archaeological theory was already following a unidirectional path (e.g. Burmeister 1892; Mallery 1893, 469). In the application of the 'art for art's sake' concept we also detect heterogeneous and even paradoxical attitudes towards Indigenous peoples: while some authors considered that Indigenous societies could afford the 'leisure time' to make rock images, other authors stereotyped Indigenous people as 'savage' and 'lazy'. In this context, the socio-economic hegemony wielded by colonial governments allowed anthropologists and archaeologists to relegate Indigenous ontologies to the positions of mistaken epistemologies (see Alberti and Marshall 2009).

While rock art research experienced a lull in Canada during the early part of the twentieth century, Patagonian rock art research experienced an increase in empirical approaches relating to the recording of sites. Later, this would culminate with the start of the 'stylistic era' in Patagonia, setting a key milestone in the archaeology of South American rock art. Such a milestone, however, was based on culture-history approaches imported from central Europe by a suspected Nazi: as noted above such an event epitomises the effects of globalization over the periphery. In both Eastern Canada and Patagonia, the culture-history approaches that dominated research from the late 1950s to early 1970s developed models of regional rock art styles and various relative dating methods. However, the correlation between styles and diachronic cultural levels that characterised Patagonian work gained less traction in Eastern Canada where largely abstract imagery, a lack of superimpositions and ability to associate images with secure archaeological contexts hindered attempts to produce chronological and macro-regional classifications.

From the 1980s onward, the impact of processualism was modelled in original ways in both regions. In Patagonia it was mostly adapted towards the characterisation of rock art production processes (e.g. Aschero 1983), which was later complemented with the use of French concepts. In turn, some Canadian researchers had begun to recognise the limits

of deductive epistemology, since the distribution of rock art sites could not be predicted solely on the basis of archaeological and environmental criteria (e.g. Reid 1980; Rajnovich 1981).

Both regions also pioneered approaches to key aspects of rock art which later constituted mainstream frameworks in the archaeology of rock art. Some researchers in the Canadian Shield showed an early interest in the landscape archaeology and materiality of rock art sites (e.g. Vastokas and Vastokas 1973; Molyneaux 1980) which heralded more contextual approaches that recognised the importance of Indigenous worldviews in the interpretations of images. In Patagonia, early proposals on how to delve into the technological, economic and landscape features of rock art have largely superceded empirical accounts to tackle ways in which people engage with the materiality of images (e.g. Aschero 1988; Fiore 2007). Later, diverse approaches to the systematic study of the communicative aspects of rock art viewed from ecological-evolutionist perspectives (e.g. Scheinsohn 2011 and others quoted above) opened new conceptual and methodological insights. Interestingly, each country has led these changes from different epistemologies and towards different directions. Thus, Canadian researchers anticipated elements of post-processual approaches, such as the focus on the phenomenological aspects of archaeological landscapes, as well as the importance of Indigenous knowledges to rock art interpretation as emphasised in the 'ontological turn' over the past decade. Conversely, while in Patagonia Indigenous knowledges have been only partially incorporated into academic rock art studies (Moreno 1876; Casamiquela 1960), some Argentinean researchers have developed ecological approaches to art as communication based on neopositivist epistemologies. Others have contributed from an early stage to the 'material turn,' which is currently in full swing at an international scale. Interestingly, in both countries, rock art research stresses the socio-ideological dimensions of rock art. Both Eastern Canada and Patagonia also show an increase in the archaeometric studies of rock art, occasionally engaged with other 'former peripheries' in the Canadian case (e.g. South Africa; see Bonneau 2016) and with 'current centres' of the global system in the Patagonian case (e.g. Europe and USA). Collaborations between both 'peripheries', such as the Canada-Patagonia partnership led by Wainwright and Podestá mentioned above, also emerged during this process.

When comparing these two histories of research, the growth of original insights that emerged from Eastern Canada and Patagonia is quite apparent. Nevertheless, there are several barriers that have hindered the effective flow of ideas from these 'peripheries' to the historic 'centre' of rock art research—Europe—and to the new 'centres' of rock art research that emerged in the 1990s as part of the latest globalizations—i.e. USA, Australia, South Africa. It is evident that, historically, rock art has been poorly known outside of the regions under discussion—the Patagonian case being the least well known. It is also evident that the centre/peripheries academic interactions have reproduced the logics of the globalised world-system triangular market: Europe and the USA have long operated as active centres of theoretical and methodological innovation, while peripheries (many of which are former colonies of European states) have tended to be relegated to passive roles of 'consumption' of such innovations, with their contributions to conceptual discussions in rock art research often unacknowledged and unused. Thus, peripheries have been reduced to the role of suppliers of the only apparently possible relevant contribution to global archaeology: empirical data, particularly those dealing with early sites and imagery of such outstanding significance that is worth considering as 'world heritage'.

To conclude, we argue that the limited visibility of Eastern Canadian and Patagonian rock art research is related to the existence of three main barriers: language, funding and implicit cultural biases operating within academia. First, a major impediment continues to be the language barriers that exist in the processes of global archaeological publishing. Given the prevalence of English in academia, research written in Spanish and French (e.g. Québec) remains, relatively, less visible, resulting in scholars from the 'linguistic periphery' facing obstacles when seeking to publish their work (Canagarajah 2002, 34–43). This linguistic barrier hinders the connectivity and flow of ideas emanating from the peripheries where English is not dominant. Moreover, even when non-native speakers publish in English, their literature tends to be less frequently cited, which, for example, exacerbates the invisibility of the theoretical and methodological contributions made from Argentina (Ramírez-Castañeda 2020 and references therein).

Second, the scarcity of funding evidently affects the development of rock art research—this factor is more evident in the Patagonia case, given its location in a developing country. However, while lack of funding limits fieldwork, laboratory work and, particularly, archaeometric analyses (which are currently standard in international academia), the development of theoretical concepts and low-tech methods can be—and has been—achieved even in low-funding 'peripheral' contexts. It is their dissemination, discussion and use at an international scale, what is still lacking at present.

This leads us to the third key factor: global academia, led by the 'centre,' has fetishised 'peripheral' rock art by placing an emphasis on certain properties such as its antiquity, size, complexity or perceived 'authenticity', thus celebrating the exotic rather than valuing the richness, and depth of analyses, interpretations and management strategies associated with them. In these terms, much of the rock art of Eastern Canada has failed to capture the attention of international

audiences, while rock art in Patagonia is often narrowly identified with the Cueva de las Manos World Heritage site. Such attitudes contradict the academic published discourses regarding multivocality and decolonisation, insofar as, in practice, the voices of researchers working from peripheral countries often remain invisibilised and unheard by those at the centre. However, recent publications do show an increasingly open attitude towards contributions from these 'peripheries' (e.g. Troncoso et al. 2018; Nowell and Davidson 2021; Moro Abadía and Porr 2021; Smith 2021).

It is evident that Eastern Canada and Patagonia have long and rich histories of research, that not only demonstrate the similar historical relationships that these so-called 'peripheries' have had with the global world-system 'centres'—i.e. Europe, USA –, but which also produced innovative approaches that attend to the unique characteristics of the rock art of both regions. Such approaches have much to offer international rock art research, including a contribution to the ongoing readjustment of the historic centre/periphery model that has long dominated the discipline—in which this very book plays a part—and an open attitude towards a truly international dialogue that fosters a constructive interaction involving academics, Indigenous groups and communities as a whole. Yet publishing original theory and methods authored by academics from developing/peripheral countries is only a first step: if colleagues in developed/central countries are not prepared to read them, cite them and open a dialogue with them, then the virtuous circle will never be completed, and invisibility will prevail.

As part of such dialogue, this chapter has sought to raise awareness of a fundamental paradox created by globalization: while its discourse promotes homogeneity of rights and respect for cultural heterogeneity within the 'global village', in practice, it reproduces inequalities rooted in colonial times. If we are to break away from the negative globalization effects in constructive partnership with colleagues at the global 'centres', it is by challenging those discourses and practices from the very margins of the world-system.

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8 The Framework for Ochre Experiences (Foes): Towards a Transdisciplinary Perspective on the Earth Material Heritage of Ochre

Elizabeth C. Velliky, Tammy Hodgskiss, Larissa Mendoza Straffon, Heidi Gustafson, Ann Gollifer, and Magnus M. Haaland

Abstract

Ochre is a mineral pigment that has been used by humans for more than 300,000 years. It appears in archaeological, historical, and contemporary settings across vast distances of time and space, and increasing evidence shows ochre use by ancestral hominins as well as by certain animal species. Because of its unique behavioral, functional, contextual, and temporal breadth, it is a topic of study from a range of disciplines. There has been considerable debate amongst them; in particular, on which concepts and empirical methods are the most useful in deciphering ancient ochre practices on an individual, societal, or evolutionary level. However, if we want to understand the significance of ochre from a range of perspectives, we first must acknowledge that ochre formation and use involves different processes operating across all these domains simultaneously. The diversity of ways in which humans interact with ochre relies largely on individual backgrounds and experiences, which is often reviewed at an operational level. Here, we offer an ambitious framework to describe and explore the exceptionally broad role of ochre throughout geological, biological, and cultural evolution, titled the Framework for Ochre Experiences (FOES). We use this framework to realize the complex histories, properties, and uses of ochre; not within a specific domain – but of the entire earth-human system, operating from deep time and into the future. To do this, we bring together several voices to promote a reflective and insightful interaction between different types of *ochre actors*. We believe this experiential and transdisciplinary approach is not only important for improving our understanding of ochre use in the deep past, but also necessary if we are to appreciate, preserve and actively engage with this unique earth-material heritage now and in the future.

Keywords

Ochre · Pigment · Transdisciplinary · Archaeology · Human-environment interactions · Visual art

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8.1 Introduction

Elizabeth Velliky, archaeologist

Ochre is a unique material. It came into my life during my bachelor's degree, where I became fascinated by the cave paintings from the European Upper Paleolithic. I followed this fascination by continuing to a Master of Arts where I examined rock paintings in British Columbia that were created with red ochre, and the possible sources of ochre that were the origins of the pigments used the pictographs. One PhD and postdoc later, I am still studying ochre, albeit on a different continent, in a different period, which both speak to the breadth of ochre in human existence. I have excavated ochre at numerous archaeological sites. I have looked at ochre with my eyes in the landscape, on rock walls, in caves, in my hands, under a microscope. I have measured thousands of pieces diligently, describing their shapes and features, colors, and textures. I have looked at the insides of ochre pieces

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as they were captured in micromorphological and geological thin sections. I have crushed ochres for various analyses to understand the complexities of their composition and movement across landscapes and across time. I have crushed ochres to create my own "paint" to put on my skin, and to mix with different binders to see which ones worked better than others. I have even eaten ochre to relieve a stomachache, as was suggested to me by someone who does it regularly (it worked). I have seen ochres on ancient shell beads, ivory beads, stones, bones, in hearths and used to create thick ochre surfaces, an archaeological feature in and of itself. I have seen ochre for sale in markets, being used as a paint mixture or colorant by contemporary artists, and as a dye or additive in beauty products being sold on the shelf today. The use of ochre by humans is vast in time, space, and experience. Just as ochre pigments permeate rock walls, bones, and beads, it has permeated many aspects of human life, potentially before our evolution into *Homo sapiens sapiens*. Ochre pigments form such a part of our identity that it is difficult to disentangle the use of ochre from the human experience.

When publishing aspects of my research on ochre, only about 1% of the written work encompasses what I have physically experienced and witnessed when interacting and engaging with this material. On the one hand, as a researcher, I know that transferring knowledge from the real-world to a paper is limited by the very nature of the prevailing academic discourse, of the scientific strive for "objectivity". Furthermore, I believe that empirical observations of prehistoric ochre use are vital for establishing robust interpretative frameworks of the past, and thus permitting us to infer what past ochre behaviors were possibly like. On the other hand, I cannot help but think that there is a profound inconsistency in how researchers like myself and how people in general, both in the past and at present, experience(d) ochre and how we share and discuss these experiences amongst ourselves, and I am certainly not the only one. Over the last few years, after publishing several papers on the geochemical properties of ochre, amongst others, there seems to be a fundamental gap between how active ochre actors (i.e., users) engage with ochre, as opposed to how passive ochre actors (academic observers) investigate and report these materials through peer-reviewed dissemination channels. I have asked myself why is this the case?

Due to the nature of the scientific discipline, the only scholarly acceptable results from ochre studies are those that are objective, empirically based, observable and replicable. For these observations to be of archaeological value, they must in turn be contextualized within the larger scope of predefined models of prehistoric human behavior, whether it be subsistence, symbolism, societal and cultural structures, paleoenvironments, or climate. The room for exploring a more varied range of human experiences within these fixed behavioral frameworks can be quite limited, a theme which has been raised and discussed in archaeology already (Sterling 2015; Schneider and Hayes 2020; Atalay 2006; Conkey and Spector 1984; Supernant et al. 2020). One's interactions with materials, in this case ochre, the emotional engagement and narratives, self-taught and indigenous ochre expressions, the phenomenology of ochre landscapes or the physical preservation and accessibility of geological ochre sources are all examples of ochre-related topics that do not seem to fit the academic standards or expectations of discipline-specific journals. Scientific results are thus primarily read and evaluated by ochre actors that have the same type of background and experiences. As such, we are talking in a restricted, regulated arena with little room for personal experiences, reflections, and expressions.

8.2 The Limitation of the Current Ochre Discourse

The current academic knowledge production concerning past ochre use is often disconnected from the fact that ochre or pigments are still in use today, and that the full value of prehistoric ochre does not solely rest in its status as a memory-inducing artifact of the past or the present (i.e., a passive ochre perspective). Ethnographic accounts of ochre use in indigenous or descendant communities are frequently reported, but the link between these seemingly *authentic* communities and our past is usually emphasized more than their link to our contemporary societies in general. This type of asymmetric analytical disconnect also works the other way. Archaeological ochre artifacts can, in theory, also be appreciated and evaluated based on a less scientific, more experiential engagement, rather than only from their historical value or significance. Contemporary artists and children are experts in these types of engagements, not because they relate pigments to their abstract meaning, but because they relate emotional, sensory, and visual appeal to the shapes and color of pigments. Seldom, however, are their experiences, thoughts or perspectives used to enhance that of the scientifically calibrated narrative of ochre use in mainstream discourse.

The authors of this paper believe that the lack of transdisciplinary conversations among different types of ochre actors is limiting the thematic breadth of the current archaeological ochre discourse. There is the *intuitive* use of ochre by some animals and our earliest ancestors, the *intentional* use of ochre from the more recent past until today, the perpetual creation and recycling of ochre through geological processes on the planet, and the permeation of color use into numerous aspects of many daily lives in all parts of the world. Many of these aspects are often scientifically acknowledged, yet only by using methods, models, words, and channels that are accepted and understood by very few. In this paper, we argue

that many of the disciplinary discussions within archaeology and ethnography have not been able to fully grasp or address the temporal, geological, biological, cognitive, aesthetic, and cultural diversity associated with earth pigment use. We hypothesize that to understand the significance of ochre use in human history and evolution, we first need to acknowledge that ochre formation, acquisition, and use involves different processes operating across all these domains simultaneously.

Art studies, from contemporary to deep time, are answering the call for plurality brought about by the challenges of globalization. Ochre as a substance is more frequently seen as a component or raw material of art rather than a form of art in and of itself. However, we believe ochre has been fundamental in shaping and allowing modern human art and aesthetics to emerge and develop. Moreover, ochre use may well be the longest-lasting human artistic behavior. We engage with the globalization of ochre-use studies in the two directions highlighted in this volume: as a human universal, and as a topic whose research requires cross-cultural and transdisciplinary perspectives. In an effort to explore new ways of "seeing and thinking ochre" we delve into the spectrum of ochre exploitation, from intuitive to intentional, and from passive to active, and examine a diversity of collective and subjective ochre experiences and practices at a planetary level.

The integration of these different approaches into a single framework of ochre experiences, spanning from deep time to the present, allow us to define ochre as a veritable earth material heritage. This framework brings ochre studies into a twenty-first century global perspective, while acknowledging its temporal depth and including all communities of ochre actors. Bringing together diverse entities and levels of ochre experiences may prove instrumental to developing a global deep art history in which "what has been called 'prehistoric' may participate in a dialogue with the contemporary" (Kaufmann 2021).

8.3 Creating an Experiential Ochre Framework

Arguably, the greatest difference between an academic and beyond-academic approach to ochre is the degree of physical and emotional engagement between the actor and the material. While an archaeological researcher might personally engage with the artifacts they study, most scientific reporting remains largely devoid of private or even subjective observations, despite calls for more humanistic and even post-humanistic approaches in archaeology (see Supernant et al. 2020). This mode of ochre experience we refer to as *passive* because the core of the experience stems from the act of describing, measuring and abstractly analyzing the material. Within the discipline of archaeology, these practices are routinely conducted on assemblages with the sole purpose of scientifically describing, analyzing, and interpreting the materials.

For (non-academic) *active* ochre actors, their core ochre experience largely starts with a personal initiative, often involving collecting, producing, experimenting, sharing experiences, and exploring materials. It should, however, be emphasized that an academic with passively acquired knowledge of prehistoric ochre use most certainly can also have actively induced ochre experiences, e.g., through experimental archaeology. Similarly, it is not impossible for an engaged artist or knowledgeable citizen to team up with researchers, such as by providing informed, experiential views on the tactile properties of ochre or identifying the location of possible sources.

The challenge is not necessarily the lack of multi- or interdisciplinary communication between active and passive ochre actors – archaeologists and artists routinely engage with descendant communities (and vice versa) for knowledge and experience sharing (e.g., Joyce 2020). The main challenge is discovering how to integrate the breadth and diversity of all types of ochre experiences found within both informal and formal knowledge-producing systems in a transdisciplinary way. Alternative to multidisciplinary and interdisciplinary collaborations, which represent different degrees of cross-thematic, largely scientific collaborations; a transdisciplinary team acknowledges that there are multiple ways of gaining meaningful knowledge of the world. The team may consist of a much broader range of members, with each member contributing their own specific knowledge and experiences in a joint effort to create new conceptual, theoretical, methodological, and translational innovations. Each members' perspective transcends each other to form a new framework of knowledge, in which the outcome or result is not simplistically predicted based on the individual disciplinary contributions.

In this chapter, instead of reviewing ochre as a research field within and outside of archaeology, we worked towards a transdisciplinary framework, covering a range of *ochre experiences*, not limited to just the accepted or traditional scientific ones. Through this framework, we firstly aim to highlight the contributions of specific disciplines in ochre research, while simultaneously evaluating their inevitable blind spots and encouraging the expansion of certain thematic foci. We hope the framework will help facilitate people from different disciplines and societal contexts to connect more easily and openly by facilitating a common language and allowing different ochre actors, from artists to scientists, to identify with at least one part of the framework. Our second aim is to map the *earth history of ochre* from deep time until today as to better appreciate the rich and complex relationship that exists between our physical earth, animals,

humans, and the ways in which all these actors experience ochre and each other. This is what we refer to as the *collective ochre experience*.

We acknowledge that our attempt to create a transdisciplinary collective ochre framework is highly ambitious, and we therefore explicitly state that it should only be viewed as a thinking tool. That is, we have attempted to account for a wide array of possible interactions and different participants involving ochre materials, but we do not regard it to be exhaustive, final, or universally valid. Our largest obstacle while making the framework was to overcome the anthrocentric perspective that ochre is primarily a human construct: for example, the formation of ochre by geological processes happens regardless of whether humans collect and manipulate the end-product. Furthermore, animals, such as bearded vultures, use ochre (Margalida et al. 2019; Tributsch 2016) and bacterial life forms create useable ochre (Hashimoto et al. 2012) independent of human influence. We also consider the scope of time – ochre creation by geological processes occurred before any hominin species sought to acquire it, and its geological existence will outlive our lineage. The framework, as we currently present it, includes ochre experiences taking place in deep time, the recent past, the present and the future.

8.4 The Framework of Ochre Experiences (FOES)

With the purpose of articulating and visualizing the variety of ochre experiences on earth, we created the Framework of Ochre Experiences (FOES) shown in Fig. 8.1. The framework is formed by the ochre actors (those directly or indirectly interacting with ochre) and ochre practices (the actions defining the relationship between the ochre and the actors). The framework is divided into four quadrates and encircled by the round earth. This circle encompasses the geodiversity of ochre, or the cycle of ochre creation, from formation in primary contexts, to weathering and transportation, to redeposition and formation of secondary deposits, which are perpetually ongoing. It portrays the notion that iron oxide-bearing materials on this planet exist even if humans or other animals do not. It also encapsulates chemotropic bacteria that produce iron oxides, such as the genera *Leptothrix* and *Gallionella* (Hashimoto et al. 2012; Kunoh et al. 2015).

Contained within the earth-ochre-cycle are the ochre actors and their respective practices or activities. The actors' general mode is described as either *active* or *passive*, and their specific activities are described as either *undefined* or *defined*. A summary of each of these roles, their respective time depths, and the types of ochre users contained within them are outlined in Fig. 8.2. We outline each of the types of actors and activities in more detail in the following sections.

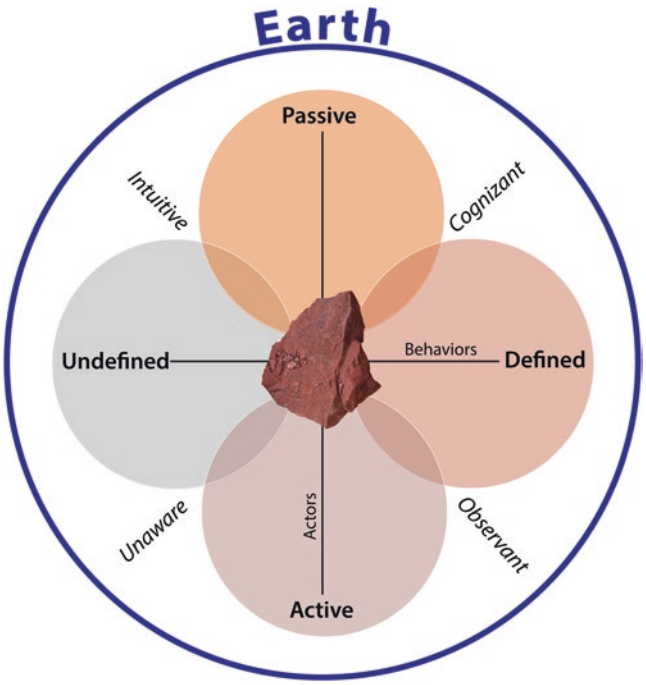

Fig. 8.1 The Framework of Ochre Experiences (FOES)

8.4.1 Active and Undefined: The Intuitive Ochre Actor

The Active and Undefined role describes the *intuitive* ochre actor whose intentions of use are evident but neither the action or the material involved has been consciously or abstractly defined (e.g., in terms of language or concepts). We recognized this as a category when considering the use of ochre by certain animal species, such as the ochre-rich mud bathing elephants in Tsavo National Park (Fig. 8.2), the bearded vulture engaging in ochre baths (Margalida et al. 2019; Tributsch 2016), or the alteration of ochres by plants, lichen, fungi, insects, and invertebrates, to name a few. While we do not fully know the specific drivers or motives, if any, behind their behaviors, their use of ochre is not random but based on actions whether driven by pure intuition (in the case of bacteria or fungi, for example) or intuitive choice (in the case of bearded vultures). Our lack of understanding these activities/actions is most likely a reflection of our own limited knowledge, rather than the complete absence of intentionality or forethought behind some of these actions. Hence, we use the term *intuitive* to account for the awareness of these ochre actors, even though we are limited in our interpretations of these behaviors.

In considering the hominin record, we ascribe the intuitive ochre role to possible behaviors prior to ca. 300 kya (kya = thousands of years ago). From around this time there seems to be a gradual yet notable increase in direct evidence for ochre use as found at archaeological sites in both Africa

	Unaware	*Intuitive*	*Cognizant*	*Observant*
Mode	Passive - Undefined	Active - Undefined	Active - Defined	Passive - Defined
Description	Unknowing of behavior and intention	Behavior is undefined, but the intention is there	Behavior and intention are known	Observe or reflect behaviors and intentions
Time Depth	Deep time	Deep time	Human past to present (<300 kya)	Human past to present (<300 kya)
Actors	Majority of human and animal population	Animal ochre use; Ochre collection by early hominins	Ochre ***users:*** Artists, industry, indigenous groups, etc.	Ochre ***observers***: Scientists, researchers, museum visitors, etc.
				

Fig. 8.2 Summary of roles and descriptions of these within the OEM. Photo credits, from left to right, are as follows: image by A. Socha, photo by M. Kucharczyk, photo by E. Velliky (author), photo by E. Velliky (author)

and Europe (Barham 2002; de Lumley 1966; McBrearty 2001; Roebroeks et al. 2012; Van Peer et al. 2003). We define direct evidence for ochre use as the presence of anthropogenic use-traces or modifications found on the surface of ochre pieces, suggesting intentions beyond that of intuitive or opportunistic use. The reports of ochre materials from contexts older than 300 kya generally describe much smaller assemblages with either no or questionable evidence of direct modification or a lack of assured stratigraphic provenience (Brooks et al. 2018; Chavaillon and Berthelet 2004; McBrearty and Tryon 2006; Watts et al. 2016). However, the absence of direct modification evidence does not necessarily constitute evidence of the absence of abstractly defined, behavioral intent. Ochre was indeed intentionally collected and transported by archaic hominins, which very well could have resulted in several intangible practices, which are indiscernible archaeologically speaking. We envision that the physical evidence for the transition from intuitive to defined ochre use may be mosaic, lacking, or, in any event, difficult to recognize; effectively limiting our ability to map and understand the development from the one to the other.

8.4.2 Active and Defined: The Cognizant Ochre Actor

The Active and Defined role describes the *cognizant* ochre actor whose intentions were/are known and can be partially identified by us today. The *cognizant* actor has adopted both a physical and abstract awareness of ochre and its properties, and it is this awareness that informs the intentions and frequency of use. From a timeline perspective, we envision that one example of *cognizant* ochre use began after 300 kya, where modified archaeological ochre contexts are encountered more frequently with the emergence of the African Middle Stone Age (Henshilwood et al. 2009; Hodgskiss 2013, 2020; Rosso et al. 2016; Watts 2009, 2010).

This example of the cognizant ochre actor could therefore be viewed as a (modern) *human ochre user* with the behavioral complexity and depth that is associated with our species (and with likely closely related hominin ancestors, as well). From our perspective on prehistory, ochre appears to have been primarily processed by early humans for its pigment powder, yet many unmodified nodules are also found from similar contexts (Hodgskiss 2013; McGrath 2020; Nivens 2020; Rosso et al. 2017; Salomon 2009; Velliky et al. 2018; Watts 2009). Residues of ochre are also reported on a range of artifact types including shell, bone and ivory beads (Bouzouggar et al. 2007; Cristiani et al. 2014; d'Errico et al. 2005; Velliky et al. 2021), bone tools (Henshilwood et al. 2001), lithics (Henshilwood et al. 2018; Villa et al. 2015; Wojcieszak and Wadley 2018), ceramics (Capel et al. 2006; Eiselt et al. 2019) and most notably, on cave and rock walls (Aubert et al. 2014; Chauvet et al. 1996; Cuenca-Solana et al. 2016; Iriarte et al. 2009). Ochre was used relatively consistently from the prehistoric past until contemporary times, where ochre is present in a number of different settings, including in various indigenous and descendant communities as a symbolic or medicinal item (Abrahams 2010; Rifkin 2015; Russell 1993; Taçon 2004; Velo 1984), as a "paint" for contemporary art (see contributions below), as an industrial pigment (Kokins and Kostjukovs 2017; Prim et al.

2011), as a component in steel production, and as a colorant in cosmetics, to name a few.

Outside of prehistoric contexts, these *cognizant* ochre actors also include, but are not limited to, artists, people using it in religious or cultural ceremonies, industrial workers, engineers, and chemists, and museum workers in various capacities. Though the use of ochre is often discussed solely in relation to its role in the past, this is misleading as its use has never ceased and is used in a wide range of practices today.

8.4.3 Passive and Defined: The Observant Ochre Actor

The *Passive and Defined* role describes the *observant* ochre actor who can monitor, measure, or indirectly infer the intentions ascribed to defined and undefined ochre-related practices, but they are not direct agents in these actions themselves. As such, the framework attempts to differentiate between a first degree of ochre use (e.g., direct use in communication, painting/coloring, social signaling or other symbolic practices) and second (meta) degree of ochre actions (e.g., observing, measuring, reporting, mapping of first-degree ochre behaviors). In other words, *observant* actors are those who can abstractly reflect on (or at a minimum perceive) either active or passive forms of ochre use, or both. Also characteristic for many *observant* ochre actors is their ability to sort and catalogue the physical properties of ochre materials (texture, composition, size, color, source location, distribution) without necessarily considering their behavioral implications. Examples of these types of observant ochre actors are geologists, biologists, chemists, archaeologists, ethnographers, art historians and various other researchers engaged in understanding the material properties of ochre or the ways in which other actors use or interact with it.

The *observant* role is ascribed to researchers because they normally seek to understand the properties and complexities of ochre and its associated practices without actively altering or using the materials for another purpose or behavior. It is worth noting, however, that the time depth of the *observant* ochre actor is likely contemporary to that of the *cognizant* ochre actor. From an early human or hominin perspective, observant ochre actors would refer to individuals who perceive ochre being used and perhaps understand the message that it conveys, but without directly using the ochre themselves. An example of this is seen in certain indigenous contexts, where ochre was worn as a body paint in specific styles or patterns only on certain occasions (Grosse 1894). This coded, time- and event-specific message was then seen and understood by those who were *observing* the actor wearing ochre, either as a pigment directly applied or as part of a paint mixture compound. However, as with the *intuitive* ochre role, it is problematic to give a temporal estimate of when *observant* ochre practices began, as some of these currently lie outside of the boundaries of what we have direct evidence for or what we know of the direct evidence to be. Indeed, one could argue that the ochre-using bearded vultures (Margalida et al. 2019) are also able to observe those with ochre-stained feathers and those without, perhaps conveying meanings and behavioral implications that we cannot decode.

8.4.4 Passive and Undefined: Unaware Ochre Use

The *passive and undefined* role describes those circumstances where one is not currently aware of the ochre behavior and intention. Included in this category are most present-day humans and animals, who either do not know about or interact with ochre in any way. We propose that this role is the starting point for all ochre experiences, and from a temporal perspective, it is also the most long-lasting situation, considering the vast absence of ochre amongst most of our hominin ancestors.

However, this role, like the others, is not fixed, as many once *unaware* actors can become *cognizant* or *observant* ochre actors. This is notable with museum visitors or workshop participants who had no prior knowledge of ochre and its uses before engaging in programs that encourage physical or knowledge-based interactions with ochre. During this transformation, *unaware* participants become *observant* actors, or even *cognizant* and aware ochre actors. This scenario is also applicable to the past, where it is probable that certain groups with no ochre practices encountered those with, and were thus transformed into *observant* actors, and possibly beyond. Indeed, some level of this transformation likely occurred throughout the migration of hominins out of Africa, given the occurrence of ochre materials at the earliest archaeological sites associated with anatomically modern humans outside of the African continent (Hublin et al. 2020; Hovers et al. 2003; de Lumley et al. 2016).

8.5 The Function of the FOES: An Ongoing Transdisciplinary Discussion

The FOES was developed through a transdisciplinary process involving discussions amongst both *cognizant* and *observant* ochre actors, including contemporary ochre-based artists and writers, a geoarchaeologist, a museum curator and archaeologist, a cognitive archaeologist and an archaeometrist. We consider the process of formulating the framework

to be as important as its end function. Therefore, we created a set of basic questions for ourselves to consider, which we designed to highlight the variety of experiences, perspectives, and knowledge amongst us. These questions are:

1. How do you define ochre?
2. What are your ochre experiences, and how has this informed your current (disciplinary) perspective?
3. How do you normally interact with ochre, and why?
4. Which ochre actors do you actively relate to? Which ones have you worked with, which have you never worked with? Which would you like to collaborate with and why?
5. How do you think your unique knowledge and experience with ochre can contribute to the continued activation and preservation of this unique *earth material heritage,* in the past, now and in the future?

The first question establishes our initial, intuitive, basic understanding of ochre, with the purpose of grounding a transdisciplinary discussion within each of our personal starting viewpoints. The second question explores how these viewpoints may have arisen, and to demonstrate that our perspectives are most likely limited to our individual experiences. The third question is more specific and meant to showcase how different knowledge systems can produce a variety of observations that may be equally valid and meaningful. Taking the first three questions into consideration, the fourth question challenges us to bridge our knowledge systems and experiential gaps to promote unconventional collaboration, curiosity, exploration, and to push our personal and academic boundaries. The final question encourages us to think of specific, hands-on initiatives, plans or outputs that can be used to encourage a transdisciplinary approach to ochre use, not just for the sake of the ochre actors, but for the sake of celebrating and protecting its unique role as earth material heritage that makes our world more biologically, geologically, culturally, and historically diverse.

8.6 Through the Eyes of the Ochre Actors: Thematic Reflections on the FOES

8.6.1 The Observers – Archaeologists, Scientists and Museum Specialists

8.6.1.1 Tammy Hodgskiss – Museum Curator, Archaeologist

I use the term "ochre" as an umbrella term used to describe a range of geological materials that leave colored streaks, mostly reds, oranges, yellows, or purples. They are composed primarily of iron oxides (hematite, Fe2O3) and iron oxyhydroxides (goethite, FeOOH (Cornell and Schwertmann 2003). The category includes shale, hematite, ferricrete, limonite, mudstone, siltstone, earthy sandstones, specularite and many others.

I discovered ochre through the ancient uses of it. This meant that my initial interaction with ochre was through science – a perspective of looking at the evidence, weighing the facts, testing hypotheses, and drawing conclusions. It was about black and white (or, more appropriately, red, and yellow). But human nature isn't that easy to define, and ochre as a material is incredibly versatile. Then to add to the mix the uncertainties about and complexities of the cognitive abilities of early *Homo sapiens*, and the proverbial water can get muddy. Lyn Wadley guided me through my postgraduate studies and always encouraged me to think of all angles of thought – what we inadvertently assume from archaeological evidence based on our current understandings, versus what the tangible evidence can support and how can it be interpreted with minimal bias. As I learnt more about contemporary, ethnographic, and past ochre applications and started to further appreciate the artistic aspects of ochre use – and the users and artists themselves, I grew to feel quite connected with this material.

My main area of expertise with ochre is the physical analyses of archaeological ochres, using use-trace (use-wear) analysis and experimental methods to inform archaeological interpretations. My archaeological investigations have involved various chemical analyses and my interpretations involve cognitive and behavioral theory, since I have focused on the Middle Stone Age in southern Africa – a period of significant development of our species. For the last few years, I have run public ochre workshops for the Origins Centre Museum. These have led me to interact with the landscapes to find ochre sources – an important part of the ochre use process, which I had not thought about much before.

My role within the FOES started as a Middle Stone Age researcher, and the actors I related with were other Middle Stone Age researchers and archaeologists. I started as a passive observer largely, studying early modern *Homo sapiens* material culture. Interaction with other actors was also mostly defined passive – other archaeologists studying ochre and trying to understand the past human experience. Ethnographic studies and understanding contemporary uses of ochre allowed me to interact with others, mostly in Africa, who had an active involvement with ochre and who used ochre as s sunscreen, a supplement to ease a sore stomach, during traditional healing training, for paint or for ritual (e.g., Rifkin et al. 2015; Rudner 1982; Watts 1998). This knowledge can enable archaeologists to better understand functional choices and reasoning behind ochre use processes in the past.

As an archaeologist and scientist, I was comfortable working with the solid evidence and reconstructing an understanding of the past from that, mostly passively. As I moved into experimental analyses and later public outreach programs and ochre workshops, I had a more active involvement in ochre – touching, feeling, and experiencing it, so I moved

towards a cognizant, active involvement. Experimental archaeology is highly informative, and it has allowed for a deeper understanding of how ochre "behaves", the best ways of using it for certain tasks and what the conceptual and practical steps are in a process (Hodgskiss 2010; Rifkin et al. 2015; Wadley 2005).

I was skeptical of humanistic interpretations, like the Female Cosmetic Coalition (Watts et al. 2016) as an extreme, or purely ethnographic analogies, which often didn't seem to be based on the archaeological evidence but are rather just theoretical or subjective. Initially I felt that contemporary art use and understandings of ochre were not necessarily relevant to interpretations of ochre use in the deep past. The museum sector and experimental archaeology allowed me to connect with so many more members of the public, artists, and creatives – all with their own knowledge and experiences about ochre and pigments (many active, defined participants in ochre use, but many also passive observers). These interactions have been important in me gaining a more complete understanding of potential ochre use strategies in archaeological contexts – from use of landscapes and collection (Fig. 8.3d), to processing and how ochre interacts with other cultural materials, such as stone tools, grindstones, rock art paint and paint brushes.

Different perspectives offer insight, and both passive and active interaction with ochre can help inform how it was used in the past. These insights are important in ochre research when dealing with a material that has such a wide range of potential applications. Increased understanding of how different types of ochre can be (or may have been) collected, processed, and manipulated, allows for a potentially deeper understanding of its use through time.

Academically, my work could improve by collaborating with actors who know the cognitive and emotional processes

Fig. 8.3 Different modes of ochre experiences through the authors of this paper. Photos are as follows: (**a**) ochre and pigment workshop by HG; (**b**) ochre in an archaeological profile by MMH; (**c**) experimenting with paint at an Origins Centre workshop by TH; (**d**) collecting ochre samples in South Africa by Karen van Niekerk; (**e**) painted rock art at Cueva de la Serpiente, Baja California Sur, Mexico by LMS; (**f**) interacting with Bronze Age petroglyphs in Norway by MMH; (**g**) Mma Motsei and AG in the Nkwemabala yard, Mochudi, Botswana; (**h**) beach ochre collection by HG; (**i**) red oxide woman – Mochibidu on Kgale Hill, Botswana by AG

involved in ochre use – or how to 'see' those processes. Collaborations with actors who use ochre in their everyday life, especially using traditional methods, would greatly advance my understanding of the material. This should be done not with the intention of drawing connections between 'traditional' uses by modern societies and uses in the deep past by early modern humans (Pargeter et al. 2016), but rather with the intention of developing a greater understanding of the interaction between humans and ochre, and the different ways and reasons ochre may be used.

Personally, and for public outreach, I would like to be able to portray a fuller ochre experience to the public. Ochre offers a great meeting place for science (archaeology, chemistry, theory) and art. Museum content must be understandable and meaningful on different levels and for all age groups (Fig. 8.3c). For example, it is easier to visually portray the uses of ochre as an ingredient in paint for rock art than it is to portray that the red ochre residues found on a 60,000-year-old stone tool may have been added to resins to haft tools (Wojcieszak and Wadley 2018), but both are significant features of our human journey. The process of allowing actors to become active and cognizant participants in the ochre experience, and therefore in the past, can bring about a shared memory and shared feelings of what the landscape can provide for us, and how our ancient ancestors created with it.

8.6.1.2 Larissa Mendoza Straffon – Cognitive Archaeologist

The term ochre to me invokes the deep historical relationship between humans and color, and the color red in particular. There are several naturally occurring minerals that may be used for pigment production such as gypsum and kaolin (white), charcoal and manganese dioxide (black). However, red ochre seems to have been preferably exploited by our species since very early on (Watts 2009), which is intriguing in and of itself and requires an explanation.

I first came across the ancient cultural applications of ochre during my study of the Great Mural rock art of Baja California (Fig. 8.3e) one of the oldest dated art traditions in the Americas (Viñas-Vallverdú et al. 2021). Later, my research interest in the origins of visual art and aesthetics invariably led me to encounter ochre as a protagonist.

While reviewing the possible earliest aesthetic practices displayed by humans, it soon became clear that the use of red-color minerals was deeply rooted in *Homo sapiens* cognition and behavior. Seemingly, the exploitation of ochre was occasionally practiced by African hominins preceding the emergence of our species (Watts 1999) whose oldest fossils are now dated to about 300 kya (Hublin et al. 2017). However, after the appearance of *H. sapiens*, there is a clear increase in the use of large quantities of iron-oxide minerals (Barham 1998; McBrearty and Brooks 2000) and by 140 kya the presence of ochre is the third most frequent material find in many modern human sites in Africa, behind lithics and animal bones (Watts 2009; Wolf et al. 2018).

The key question is what were these early humans doing with red pigment? What uses and contexts can we infer from the archaeological record of ochre? The evidence of pigment use may be considered ambiguous in that we are normally presented only with traces of ochre processing, or just the raw material itself, with little clues as to what it was applied to or for (d'Errico et al. 2012). Some intrinsic visual qualities of red ochre may explain why it was preferred over other color minerals. The saliency of red in human attention has been confirmed in studies with young children (Franklin et al. 2008) and adults from different cultural backgrounds (Elliot et al. 2013). Biased attention towards red may be rooted in evolutionary selective pressures for color vision in primates related to the detection of fruit patches at long distances (Dominy et al. 2003).

The recurrent presence of red ochre in early funerary contexts around the globe furthermore points towards its probable importance in ritual activity (Bowler et al. 2003; Hovers et al. 2003). For instance, red ochre is the most recurrent cultural material in Upper Palaeolithic burials across Europe (Martínez González and Straffon 2017). This suggests that the intrinsic visual qualities of ochre may account for human perceptual-aesthetic biases for the color red due to its potential emotional associations with blood, and concepts like life and death (Watts et al. 2016; Wreschner et al. 1980).

The attentional bias for the color red likely coevolved with human sensory and cognitive systems, in an environment that allowed this color to be perceived as salient (Johnstone 1997). *H. sapiens*, then, made use of pre-established perceptual capacities and biases to culturally create an effective signaling behavior (Krebs and Dawkins 1984). Gibson's concept of affordances refers to the perceivable properties that allow organisms to make use of things in the environment (Gibson 1979). In that sense, ochre affords several human behaviors. Its texture and clay-like properties, for instance, allow for skin protection and ingestion for therapeutic purposes. The saliency of ochre minerals also afforded humans the possibility to culturally exploit and use the color red for communication purposes, i.e., as a visual signal to attract and focus conspecific attention to themselves and/or particular objects. Why other hominins did not make use of such an affordance, or not to the same extent as our species, might be related to the evolutionary environment of *H. sapiens*. Despite the possibility that an attentional bias towards red may be shared with other primates and other members of our lineage, the cultural exploitation of ochre seems more closely associated with us than to any other hominin. Both in Africa and in Europe, the appearance of *H. sapiens* seems accompanied by an increase in the frequency and quantity of red ochre presence in the archaeological record (Wolf et al. 2018). For this reason, the habitual occur-

rence of ochre may in fact be considered as a defining trait of our species (Watts 2009). It should not surprise us, perhaps, that the earliest drawings made by modern humans known to date are made from (Henshilwood et al. 2018) and on ochre (d'Errico and Henshilwood 2011).

Within the Framework of Ochre Experiences (FOES) early modern humans probably began applying ochre as intuitive active agents, just like other non-human animals (elephants, antelope, etc.). Members of hominin populations that would eventually give rise to *H. sapiens* acquired and transmitted ochre use behaviors, perhaps for medicinal or skin protection aims, fine-tuning their perceptive and cognitive systems towards the color red. The earliest members of our species then became cognizant active actors for whom the colorizing properties of ochre minerals afforded them the ability to culturally exploit red as a signal.

What I find special about ochre is that, in human hands, it goes from a natural earth mineral to an active creator in and of the cultural universe. In rock art, ochre allows humans to create and recreate their origin and other myths, to communicate with other realms, record and teach their worldview, and bring generations together across time. When applied to the body, it helps humans to differentiate themselves from other beings, to *become* people (Turner 2012). So ochre is a fundamental, active agent in and of human culture. To learn about these aspects, we need interdisciplinarity and insights from fields such as anthropology, ethnography, linguistics, art theory, and psychology. As an archaeologist, I am used to seeing ochre as a raw material or as the trace of some past human activity but learning from those other perspectives has helped me see it through the eyes of active ochre-using communities (either traditional groups, artists, researchers, or enthusiasts) as a social player and a creating force. However, I myself have rarely engaged in ochre-use outside of a research-based or observer context.

Conservation is one of the biggest challenges I see related to ochre-based practices. The current rapid extinction of small-scale societies, languages, and traditional ways of life brings with it the loss of a large corpus of human knowledge and cultural diversity. If ochre-based practices fall into disuse, we risk losing a large part of cultural memory, not only related to those particular groups but of humankind in general. As for past practices, ochre that was applied to a surface, for example a rock wall, is fragile. As archaeologists, our research activities and interventions often put at risk the very objects that we are trying to study and protect. Making an ochre source, rock art site, or ancient ochre-covered artifact known can make them vulnerable. On the one hand, having people view these objects can make them want to preserve them; on the other, it can generate damage and vandalism. Therefore, creating public awareness about the importance and fragility of living and past ochre practices and engaging with ochre-using communities is key.

8.6.1.3 Magnus Mathisen Haaland – Geoarchaeologist

To me, the term ochre refers to a specific type of archaeological material that has been used by humans across the world and throughout our history. Typical examples of ochre artifacts include brightly colored ground pigments (powder) or modified rocks with various use-wear and color properties. In the Middle Stone Age contexts that I investigate, ochre material has been documented in large quantities, yet the contexts in which they occur, their shapes, modifications, color, and geochemical compositions vary significantly through time.

From an early age I was introduced to prehistoric rock art, specifically the red rock carvings found close to the fjords in Norway. As a child, I could easily relate to the inexplicable urge of making shapes and color to express myself. Being told that this was also true for people living in my hometown during the Scandinavian Bronze Age did not come as a great surprise; after all, who does not want to paint a red imprint of their hand once in a while (Fig. 8.3f)? However, it was only much later in life, as an undergraduate student in archaeology, that I learned that rock carvings in Norway had been traced and painted red by modern-day curators to enhance their visibility; a practice that today is discontinued and is currently being reversed at many locations. While my first experience with prehistoric color-use turned out to be a huge deception, it nevertheless encouraged me to become an archaeologist driven by an intense curiosity about prehistoric minds and lifeways: what did people do in the past and why? Today, I study the elusive existence of some of our earliest human ancestors that lived in cave and rock shelters on the tip of southern Africa some 50–100 kya. These people routinely used ochre in their daily lives, yet we still do not fully know why.

As a trained geoarchaeologist, I employ methods to study the physical processes responsible for the creation, build-up and preservation of archaeological sites and contexts. Through my work, I routinely describe the microscopic content of prehistoric occupation deposits using micromorphology and a range of other analytical techniques (Fig. 8.3b). I usually observe and map fragments of bone, charcoal, shellfish, and lithic debris; all which attest to the range of activities that occurred at the prehistoric campsites. Occasionally, I also come across angular, mm-to-cm sized iron-rich fragments of red rocks. To the naked eye, these rock fragments are smaller than a full-stop punctuation mark. Thus, they are often overlooked during conventional excavation and seldom reported. Yet the occurrence and distribution of microscopic ochre fragments within archaeological sediments are behaviorally significant because they do not form or occur there naturally. Consequently, we know that these ochre fragments – though they are small – must have been deposited by prehistoric people, who, for some reasons that we do not

fully understand, intentionally collected and transported them back to the cave. The size and shape of the microscopic ochre pigments also suggest that the ochre was heavily processed and ground before it was incorporated into the archaeological deposits.

From a geological point of view, I consider the ochre fragments distributed within archaeological deposits to represent one of many sedimentary constituents from which – in combination with other sedimentary components – a range of *natural formation processes* can be inferred. From an archaeological point of view, the same ochre fragments also represent miniature archaeological artefacts from which episodes of *in-situ* past ochre use and behaviors can be inferred. Approaching the microscopic ochre assemblage from both a geogenic and an anthropogenic perspective, while keeping their depositional micro-context intact, allows me to improve the analytical scope of the traditional macroscopic approach.

As a researcher occupied with conducting field-based studies of the remains left by prehistoric groups of people, I represent the *observer* within the FOES. Throughout most of my academic career, I have primarily collaborated with similar-minded, archaeologically oriented scientists, occupied either with the material science (geology, archaeometry) or the cultural and social science (anthropology, ethnography) of ochre. To some degree, I have worked with understanding the physical, tangible, and tactile aspects of ochre use through pre-designed physical experiments, carried out with the intention of referring to the archaeological material. To a lesser degree, I have worked with the psychological, aesthetic, or cognitive aspects of ochre. Not since I was a child have I used pigments actively in a personally fulfilling, recreational or artistic way.

As an empirically based archaeological researcher, I always find it hard to bridge the analytical gap between the concrete and the abstract, between the singular observation (i.e., an ochre grain) and the implicit intention behind its existence (e.g., symbolism, identity, cosmology, visual satisfaction). Most archaeologists therefore – including myself – comfortably and routinely fall back on an analytical middle ground that often involves the formulation of *behavioral processes*. For example, inferring the *process* of paint-making, the *process* of art making, the *process* of grinding or scoring, or the *process* of ochre mining, acquisition, and transportation. While I believe that the systematic and empirical recording of all these processes is vital for our general understanding of past human ochre use, it has become clear to me – through discussions with other types of ochre actors – that it is important to be aware of the limitations that these types of "scientific" narratives provide. The full scope of human ochre experiences stretches far beyond that of mechanical, depositional, or logistical processes that can be inferred from geoarchaeological investigations of occupation deposits.

I envision that the active engagement with ochre actors adhering to knowledge systems different from mine own, for example by emphasizing the phenomenological, psychological, motoric, and sensory effects of pigment use could serve as a valuable, life-enriching, and transdisciplinary mechanism that ultimately may lead to more insightful research and present-day awareness of the relationship between humans, ochre and earth.

8.6.2 The Active: Artists, Teachers, Ochre Workers

8.6.2.1 Heidi Gustafson – Artist, Ochre Worker

Ochre, to me, defines a spectrum of geologic material, dominated by the presence of iron and oxygen (laced with other trace elements forming personality or geochemical fingerprint), tied to a specific place, part of an ecological system and that leaves enduring, colorful traces.

I also try to consider ochres across a behavioral and relational spectrum (not simply by color or chemical structure): what are their sensual impressions, textures, saturation, tone, feeling, hardness, binder affinities, mood, and other characteristics? How do they feel in the hand? What kind of marks do they make? What flora and fauna grow with them in their native environment? Highly effective, or more "powerful or spiritual" ochre, by my own definition feels, simply, alive, and vibrant. In that way, I experience ochres as non-human actors, as ancestors and kin, with their own agency or "life force." I feel ochre is a primal way to better understand and bond with Earth's creative process and diverse expressions, our own image, story or metaphor, and reflect knowledge about human capacities (and perhaps failures!) as an iron-addicted (i.e., steel), radically terraforming, species.

In retrospect, I first "met" ochre's influence several times throughout my life without realizing it until much later. It's hard to know exactly where or how my relationship with ochre began. I was born and grew up next to a swamp, rich in biogenic yellow ochre (ferrihydrite). A few miles away is an Indigenous Duwamish biogenic ochre spring (in now-called North Seattle). My first day as a baby, I spent on the coastal Whidbey Island beach with my grandparents – a beach whose cliffs carry several kinds of ochre clays with red (hematite), yellow (goethite), blue (vivianite), black (magnetite) and many shades of chalky and clayey ochres in between. Unfortunately, as a trained visual and conceptual artist, I never knew or cared about "ochre," despite it being a primary part of all paint and drawing tools. Oddly, the primary way I was introduced to ochre was through active imagination (or intuitive visualization), then through a powerful dream that acted as a sort of map (to find ochre), and then through sustained relationship with ochre-rich places in the world today.

I started off as an intuitive ochre actor throughout my life. Ochre was a part of the ground I lived on, the artwork I made, make-up I loved and places I've been drawn to throughout my life. Now, led by my encounters with ochres themselves I am more often a cognizant ochre participant. Professionally, I still relate to ochres intuitively as an artist, an ochre forager, educator, and archivist. Most importantly, I consider my work akin to an Earth custodian or steward, bringing ochre and people together into a protective, dynamic, sanctuary (or working library) of exchange and connection. Ochre is my way to care about and honor Earth and my cultural heritage as a human.

I work to bring people closer to the creative power of earth places through foraging ochre and working with colorful pigments tied to places that touch them on a personal, often emotional or spiritual, level.

I do this transformation with others in a few ways. I gather and make ochre pigments for people all over the planet (Fig. 8.3a). As a pigment maker, I connect people intimately to ochre in their life and art, to "ochre-engage" them, in pigment form. As an educator, I bring people into geological landscapes, to forage rocks and soil in context (Fig. 8.3h), which provide intimate access to ochre, in a bigger ecological picture and through all of their embodied senses. As an ochre archivist, I collaborate with the whole circle of ochre actors.

Ochre is a particularly powerful material which speaks to Earth's diversity and inclusion: not only are ochre localities geodiverse (it forms nearly everywhere on Earth in unique ways) and spectrally wide-ranging as pigment (forms several hues across the rainbow!) ochre also influences and encourages diverse forms of creative expression and shared memory in humans. More deeply, when I gather ochre in the landscape, I feel connected to an awareness of integrated Earth places, deep time knowledge, and sense of ecological wonder and responsibility. In particular, because ochre is a shared human aesthetic heritage, or common ground if you will, and available for discovery and use even in unexpected or urban places (sewage, rusty junkyards, rubble, graveyards, landfills, ditches, toxic mine wastes and more), I find that ochre plays a unique role in connecting people to Earth material systems, especially parts we tend to be less informed around, such as so-called "waste" cycles and bigger elemental, sedimentary, geochemical, evolutionary rhythms and experiments on Earth.

Ochre contributes greatly to our creative activity (image-making, communication, expression, display, movement) in the past, and into and beyond the future as we can imagine it. Ochres are a powerful metaphoric material that keep us in touch with Earth's geodiversity and our own creative diversity. My viewpoint supports people remaining connected and engaged with ochre, thus, staying engaged with many levels of engagement at once: active experience integrated with a deep time material perspective. My sense is that this continues to support the healthy cycling dialogue and vibrant exchange of ecological knowledge shared across individuals, cultures (human and non), deep time and space.

8.6.2.2 Ann Gollifer – Visual Artist, Writer

Ochre is earth stained over millennia by iron deposits. Its use by humankind has always combined the practical with the spiritual.

I started using ochres in reference to racial stereotypes in my painting practice. This led me to narrow my palette to the earth colors and black and white. The move from the use of commercially produced paints to raw earth pigments was prompted by a visit to The Phuthadikobo Museum in Mochudi, a regional museum located 50 km north of Gaborone (Botswana). There, I saw several pigment cakes on display. Upon enquiry, the museum staff took me to several traditional sites of collection in the landscape of Mochudi village, where I was fortunate to meet a woman still practicing traditional house painting, an art that has almost completely died out in rural Botswana.

I met Mma Motsei Nkwemabala, a muralist/house decorator/painter and healer, in a riverbed where I had been taken by Aobakwe Moroko, an assistant curator from the Phuthadikobo Museum to collect yellow ochre. Mma Motsei was in the process of re-painting a small house in her yard that she intended to use as a space to massage pregnant women. She is a traditional artist and healer, working with women and children. Her husband is a full time *Sangoma*, or Traditional Healer. The couple welcomed me into their yard to observe the process of making and using the ochres as pigment on external earth walls. She told me that she worked with a wide range of colors and that she could provide me with them. She showed me how she processes the lumps of raw ochre, reducing them to a coarse powder by pounding them in a *kika*, and how she mixes it with kraal manure to make a thick liquid-paste, which she then uses as a decorative plaster on walls. She gave me permission to make a written record of her talking about the collection and processing of the ochres and I also filmed her plastering the walls of her out-building (Fig. 8.3g). I have been to visit her several times over the last few months, to collect ochres and continue our conversations. I pay her for each color she provides me with, in processed ochre cakes, ground ochre or sometimes in the raw earth state.

I find that when Mma Motsei and I just chat about things in general, we touch on interesting details of knowledge that I would never ask about from my position of cultural ignorance. For example, when she came to my studio, I showed her some of my work using red ochre that we found in a termite mound in a ward of Mochudi called *Dichibidu*, meaning the 'red place'. I commented on the purity and intensity of the color. She then told me that the red from the termite mound was sacred and brought good luck. It is used to call

the ancestors. I did not ask why, how, when and by whom – that conversation will come later as I learn the best ways to ask these questions. I plan to go on walks with Mma Motsei and her husband who is a traditional healer, to the sites of collection and within this scenario talk about their names and uses of each color.

I have found that processing and painting with the ochres of Botswana has brought me into contact with people who still use them as a significant part of their daily lives. I find that this connection with others in the community still using the ochres gives my own practice a relevance and meaning beyond the personal. While collecting and then working with the ochres, I am continually making discoveries about the individual properties of each color, its vibrance, tone, smell, and consistency. For example, an ox-blood red from Senete is so hard when taken out of the ground that it must be stamped in a wooden *kika*, as the pounding necessary to reduce it to a powder would destroy a porcelain mortar and pestle. Once reduced to a fine powder, it is soft and smooth and has the most wonderful spreading power as a watercolor. The Senete dark red is so full of iron that it almost smells like blood, while Lobatse deep yellow smells of rain on hot earth, petrichor. I plan to learn as much as I can about the ochres found in Botswana from the people who still use them for cosmetics, sunscreen, paint pigments, as a tool for accessing the spiritual, as well as from traditional healers who might be able to help me better understand the uses and naming of the ochres. I am in the process of cataloguing all the different colors of the ochres that I have obtained and will continue to do so as my ochre journey in Botswana continues.

As a visual artist, my attraction to ochre is both a fascination with its materiality and color properties, and a curiosity about its potency as a spiritual medium in human culture from ancient times to date (Fig. 8.3i). I am constantly in search of relevance within the field of contemporary art, but more importantly I would like to engage with the much wider issue of where we came from, who we are and where we are going. I believe that my associations with ochre researchers, both in observant and cognizant roles, will give me much needed support in the academic field. Their knowledge and insights would be invaluable to my understanding of the relationship between the ochres and human cultural evolution.

The research I carry out comes directly from the interests of a visual artist in terms of practical collection and application. I gain knowledge during collection of ochre, outside in the wider community and within my studio space while working with the pigments. This knowledge helps me build a conceptual framework within which I might contribute visually to the ochre story, making it one that is visible to a wider audience, beyond the scientific and academic. The more we begin to understand and appreciate our home planet and the earth that sustains our lives the closer we might come to preserving it and ourselves.

8.7 Discussion

8.7.1 Evaluating the FOES Through the Actors

The experiences of the authors presented in this paper are arguably more diverse than what is usually reported in academic contributions. However, it is important to acknowledge that our compilation of perspectives is still primarily limited to the viewpoint of western-based, largely female actors. Indeed, there are numerous outlooks that have gone unvoiced. It is often useful to reflect on why certain views are represented while others are not. In our case, we recognize that the group of people involved here is partly an opportunistic mix of loosely related academic colleagues, and partly the result of random encounters. However, this does not make our individual viewpoints less valid; yet the lack of cultural, gender, or geographic diversity should certainly be recognized as a factor that may limit transdisciplinary collaboration and outputs. Even so, we hope that our initiative can serve as a starting point for more inclusive and creative dialogue and be inspirational for different actors wanting to engage in similar types of discussions in the future.

The authors' written accounts describe how each of them initially became aware of, and then gradually became more engaged with, ochre. Though the actors can be thematically divided between *observant* researchers and *cognizant* artists, one common underlying thread amongst them is that key human traits such as learning, curiosity, and exploration played a significant role in the development of each actors' perception of ochre. These traits were involved in how they began, expanded, and nurtured their knowledge of, and interactions with, ochre. While some actors have preferred to gain information through formalized knowledge systems (i.e., laboratory-based material sciences or carefully designed cognitive testing), others have developed their ochre awareness by hiking and foraging in ochre-rich landscapes, through visual experimentation and expressions, through writing and thinking, through spiritual practice or by engaging with museum visitors or indigenous communities.

In their personal accounts, each actor has – in their own way – expressed and elaborated on their fascination of ochre, whether it being its versatile history, visual properties, or simply its capacity to be imbued with an abstract meaning. For archaeologists, their fascination tends to stem from the temporal link that ochre forms between humans today and people of the past, largely through the medium of rock art, but also through the presence of ochre at archaeological sites all over the globe. The fact that ochre can still capture our attention today speaks to the appeal it might have had on our ancestors in the past. For contemporary artists using ochre, their fascination lies both with its tactility and visual quality, but also with the emotional connections that arise from inter-

acting with it, particularly at the intersections between perception and action and between imagining and expressing. For many artists and indigenous groups, the act of collecting ochre from a specific place, within a specific landscape, can create an additional layer of meaning, which then becomes part of the material's narrative and origin story. Regardless of the individual reasons or processes behind each actor's ochre experience, there seem to be a universal human desire to engage with this type of material, directly or indirectly, in the past and in the present. Ultimately it is this non-contextualized, ahistorical yet shared attraction that stimulated the creation of the FOES; as map or meeting place that can link and translate the insights gained from all types of ochre experiences, and not just from a few.

8.7.2 In Light of a Humanistic Approach

While we argue throughout this chapter that ochre experiences are not isolated to "the archaeological past" several of the authors are archaeologists by discipline and thus began their ochre stories within the archaeological past, mounted in (or even constrained by) the scientific discipline that gave rise to their interest in the first place. Discussions surrounding the limiting aspects of archaeology in the pursuit of maintaining objectivity are not new and are generally grounded in feminist and indigenous theoretical critiques (Atalay 2006; Conkey 2005). While these topics are pertinent to the study of ochre in the human past, it is not our goal in this paper to deconstruct the current methods, interpretations, and ultimately the narrative on past ochre use from different theoretic viewpoints. Rather, the stories told in this chapter revealed something wanting in the discipline, of how the strive for objectivity in archaeology does not seem to meet the emotional experiences and perspectives of the individuals engaging with these topics on a regular basis (which indeed has been reflected elsewhere in archaeology, for examples see: Supernant et al. 2020; Pellini 2018). Those who work with ochre (and likely those who work closely with other materials) develop an emotional connection to it in one way or another, whether it be to the material itself or the situations arising from working with it (e.g.: relationships forged from collaborations, excitement or stress stemming from research). These *so-called* "emotional demands" could be fulfilled in other ways (e.g., working with visitors in museums) but rarely are they shared through academic mediums. This is precisely the issue that we attempt to address and reconcile in this chapter and with the FOES: to provide a space for disciplinary-bound scientists and other ochre actors to speak and share their stories and experiences that are not so openly received or encouraged in other formats, with the intention of encouraging others to do so. Ultimately, the experiences unique to archaeologists could eventually, and collectively, work towards establishing "…an archaeology that took its humanistic goals seriously while not relinquishing its rigor nor its commitments to its audiences that are far more expansive than what one could imagine" (Conkey 2020, 271). Currently, our goal is to push towards this direction through the lens of the *collective ochre experience*, to express that this material is uniquely situated to tie together different threads of many different experiences and ways of experiencing throughout time and space.

We are, however, aware that these types of grandiose, transdisciplinary visions (crafted largely by western scholars) may be perceived by some as convenient and academically constructed concepts, containing many words but lacking humanized substance. In response to this, we emphasize that ochre is the only material we know of whose use over time, at least in a global and abstract sense, has continued. The multiple uses of and experiences with ochre pigments are one of very few non-biologically necessary human practices directly connected to the development of our species from the beginning of *Homo sapiens* (and even before) until now. To date, archaeologists have not defined distinct ochre technocomplexes; perhaps because the ways in which humans/animals used and use it is hard to define and allot into technical categories. Instead, it can and often has permeated many aspects of the human experience – artistic, religious, symbolic, medicinal, and practical. The human experience on and of earth is literally and abstractly colored by ochre. As such, it represents a globalized material heritage, rather than a local cultural heritage, because people from widely different places, perspectives, backgrounds, and time periods can all – intuitively and naturally – find common ground in ochre. Thus, we believe that to consider ochre in all its many dimensions is a global approach.

With the variety of ochre experiences explored in this paper, this diversity is not exclusive to our prehistoric ancestors, and by extension to the academics that study them. Ochre is also not a material that belongs only to the historically interested, the creatively gifted or the spiritually engaged. No specific cultural, religious, commercial, or disciplinary group has an exclusive right to define how ochre may or may not be used. The true extent of ochre diversity lies in the fact that this single physical material is uniquely meaningful in all of these spheres of existence simultaneously, from the deep past up to today. In our view, there are no *authoritative uses* or *experiences* of ochre, only situational uses and experiences, which are represented equally in sustained lineages of traditional use as well as in the diversity in different living cultures and people today. Acknowledging this can be difficult or uncomfortable because not only does it force us to speak and write less and listen and observe more, but it also challenges our very notion of how earth material knowledge is gained (scientifically, visually, or abstractly) and how to link and validate it.

In this regard, we believe that the FOES can help to overcome some of these translational challenges and thus promote more extensive conversations amongst the *collective ochre experience*. That being said, if other ochre actors had been co-authors of this contribution, their framework and collaborative process and output would most likely have been quite different. We perceive this as a testament to the complexity of human ochre experiences, and not to the invalidity of our qualitative results. Finally, we believe that developing more transdisciplinary approaches to ochre, particularly those that integrate and activate multiple types of knowledge systems, is not only important for improving our understanding of ochre use in the deep past but is also critically necessary if we are to understand, preserve and actively engage with this unique earth-material heritage in the present and in the future.

8.8 Conclusion

Ochre is a mineral pigment that has been used by humans for more than 300,000 years. It appears in archaeological, historical, and contemporary settings throughout the world. Because of its unique behavioral, functional, contextual, and temporal breadth, the use and role of ochre in both past and present-day settings has caught the attention of researchers from a range of different disciplines, including archaeology. There has been considerable debate amongst them; in particular, on which concepts, methods and empirical observations are the most useful in deciphering ochre-related behaviors on an individual, societal, or evolutionary level. In this paper, our starting hypothesis was formulated based on the notion that the current scientific ochre discourse, particularly in archaeology, does not fully account for the range of processes involved in the formation, acquisition, and use of ochre materials. For this reason, we have put forward a transdisciplinary ochre framework that we believe has the capacity to define a much greater range of *ochre experiences* than has been previously reported within the archaeological scientific community. The framework also allows us to better grasp the temporal, physical and abstract relationships between the different types of ochre actors as well as emphasizing the fact that the way humans gain earth material knowledge, and their reasons for doing so, is neither static nor binary.

We co-developed and co-evaluated our framework through the personal ochre accounts of both scientific and non-scientific ochre actors. Their statements highlight the contribution of discipline or perspective, while simultaneously revealing potential blind spots and unreleased collaborative potential. Yet, we do not wish to reduce the significance of our framework simply to a general scientific contribution, or to its functional role in transdisciplinary collaborations specifically. Our ultimate goal is to promote an awareness of the deep-rooted interconnectedness between ochre formation (geological processes), intuitive ochre use (animal behavior), and observant and cognizant ochre use (cultural behavior). We believe this can best be done by emphasizing that fact that the *earth material heritage of ochre* – from deep time until today – is characterized by complex, non-linear and multidimensional relational field between the physical landscape, the animals that live in it, and humans.

Ochre is a powerful metaphoric material that connects earth's biological, geological, historical, and cultural diversity. Today, all parts of our earth-animal-human system are in danger of being lost due to the systematic removal of (and humans' general lack of exposure to) natural and cultural landscapes, intact geological environments, and the accelerated extinction of animal species and their habitats. Increased globalization and urbanization are contributing to the irreversible loss of distinct cultural practices, creative expressions and functional adaptations that are all built on different types of knowledge systems. To counteract this development, we should make a greater effort to emphasize the value of diversity in human material experiences. In terms of people with knowledge of ochre, this means that both *observant* and *cognizant* ochre actors ought to recognize their responsibility in joining their skills, perspectives and approaches to foster curiosity, creativity, awareness, sense of ownership and protectiveness of the earth material heritage of ochre.

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Heidi Gustafson is an artist, researcher, and ochre specialist who was born and lives in the rural Pacific Northwest. Her highly collaborative projects include the ongoing creation of an ochre sanctuary with over 600 earth pigments from around Earth. Called the 'woman archiving the world's ochers' by the New York Times, and the 'ochre whisperer' in American Craft, her work has been featured in several books and publications including *The Dark Mountain Project, Colossal, The Soil Keepers, True Colors: World Masters of Natural Dyes and Pigment*, and many others. She's the author of *Book of Earth: A Guide to Ochre, Pigment, and Raw Color*. Her approach to ochre is founded in arts-based process and bioregional advocacy and she is particularly interested in bridging the gap between ancient ochre knowledge and contemporary ochre use and misuse, in an effort to actively protect sacred or threatened places and support interspecies communication, creative expression, and Indigenous futures. She received her BFA in Interdisciplinary Sculpture from the Maryland Institute College of Art, minored in Forensic Science at the University of Baltimore, and holds an MA in Philosophy, Cosmology, and Consciousness from the California Institute of Integral Studies. Her work can be found on earlyfutures.com or on Instagram @heidilynnheidilynn.

Ann Gollifer is a visual artist whose practice includes painting, printmaking, writing, and photography. She has lived and worked in Botswana since 1985 and is a permanent resident of the country. In 1983, Ann graduated from Edinburgh University with a Master's degree in History of Art. She worked as a Senior Technical Officer at the National Museum and Art Gallery, Gaborone, under the Directorship of its founder, Alec Campbell. She has also worked at the Phuthadikobo Museum in Mochudi with Sandy Grant, the Museum's founder and director. From 1991 to 2001, she was part of the committee and involved with the administration and facilitation of the Thapong Triangle International Artist's workshops that took place in Botswana, as well as the many smaller off-shoot art workshops that were organized annually by the Thapong committee. An Artist member of the Thapong Visual Art Centre, Gaborone, Ann was part of the executive committee, responsible for the building of the centre. She is the co-founder, with Maipelo Gabang, of the Art Residency Centre, Gaborone, Botswana. Ann is Vice Chairperson of the centre, running it with the support of a dedicated executive and board. The Art Residency Centre is an artist-led initiative that offers space to creatives in the community and with them develop new platforms for the dissemination of their work. As well as being a physical entity, the Art Residency Centre is also a flourishing virtual space where artists from all fields can meet to network and exchange ideas, both nationally and internationally.

Magnus M. Haaland is the Head of Department for Collections at the Museum of Archaeology, University of Stavanger, Norway. He is also a

post-doc at the University of Bergen, Norway and an affiliated researcher at the University of Tübingen, Germany. He specializes in geoarchaeology and archaeological micromorphology. His general research focuses on evaluating site formation processes at Middle Stone Age cave sites dated to between 50,000 and 100,000 years. More specifically, Haaland is interested in how discrete depositional events can inform us about prehistoric human campsite practices and domestic behaviours. His interest in stratified archaeological deposits comes from his extensive fieldwork experience in southern Africa. During the last 10 years, he has participated in excavations at sites such as Blombos Cave, Klipdrift Complex, Sibudu, Diepkloof Rockshelter, Bushman Rockshelter, and Pomongwe Cave. During his fieldwork, Haaland has also been developing and implementing digital systems for more systematic, efficient, and comprehensive data collection, including the use of high-resolution 3D photogrammetry and GIS. In the laboratory, his efforts have been geared towards linking geochemical analyses of archaeological material (e.g. from XRF, FTIR, XRD, RAMAN) to their original micro-contextual field setting.

Why Do Old Dates Fascinate Prehistorians?

9

Georges Sauvet

Abstract

Archaeologists have always been interested in placing things into chronological sequences. Prior to the discovery of numerical dating techniques, the sequence of prehistoric events was only known relatively within large approximations and with high degrees of uncertainty. From the 1950s onwards, radiocarbon dating appeared as the most important method to obtain the chronometric age of prehistoric materials. Later, accelerator mass spectrometry (AMS) became the prevalent technique and began to be used to date rock art paintings. The precision of this method improved, and the age of much rock art was pushed back. New techniques based on luminescence (e.g., TL, OSL) and the disequilibrium in the U-series (e.g., U/Th) have been developed in the last years. Engaged in an international race toward the oldest dates, prehistorians from all over the world have seemed to move away from their primary objective, which is the understanding of past societies. In rock art studies, research is now shaped by the search for the 'earliest art' and the oldest manifestation of 'symbolic behaviour.' Through the examination of the different dating techniques developed in the second half of the twentieth century, several examples of this time-driven prehistory will be given. Behind an illusory mathematical rigor, the leaden weights of preconception and ulterior motive reappear in many cases, reminding us that prehistory is not only a 'human science,' but a science made by humans.

Keywords

Radiocarbon dating · U-series dating · Thermoluminescence · Calibrated dates · Preconceptions · Social networks

9.1 Introduction

Once upon a time, early Anatomically Modern Humans drew images on the walls of their rock-shelters and caves. These images told myths that were transmitted by their ancestors. Thus, the present and the past are mirroring infinitely, and the notion of time is a mirage. Nowadays, in our modern world, time is at the center of all human actions and is invading our lives. A clear effect of this trend may be seen in the National Geographic project entitled "*In search of Europe's oldest art.*" This indicates that research surrounding the oldest dates has in itself become a goal for prehistoric archaeologists, implying that the ultimate goal of archaeologists is to go back in time further than their colleagues. In recent years, archaeologists have engaged in a race to discover the oldest art in the world. While this is not something new, the competition is now global. Rock art older than 40,000 years has been discovered all around the world and the universality of the phenomenon is now recognized (Moro Abadía and González Morales 2013).

An example of this tendency is a recent paper published by Hoffmann et al. in *Science*. In this article, the authors suggest an antiquity of ca. 65,000 years old for the cave paintings of three Spanish caves (Hoffmann et al. 2018a). Since Neanderthals were the sole occupants of Europe at that time (Anatomically Modern Humans -AMHs- did not arrive before 42–40 ka) this chronology implies Neanderthal authorship. The announcement, though exclusively based on the measurement of the U/Th ratio in calcite crusts overlying paintings using a sophisticated mass spectroscopy method, was presented as scientific evidence, even if several

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Site	Sample description	Dating method	Laboratory number	Age ^{14}C (BP)	Age (cal. BP)	Reference
Cosquer (France)	Hand n°19 Hand MR7 Hand MR7 Hand n°12	Radiocarbon	GifA-96073 GifA-92491 GifA-92409 GifA-95358	27,740 ± 410 27,110 ± 400 27,110 ± 430 24,840 ± 340	31,770 ± 477 31,162 ± 320 31,178 ± 367 28,933 ± 386	Clottes et al., 2005
Pech-Merle (France)	Horse surrounded by 6 hands	Radiocarbon	GifA-95357	24,640 ± 390	28723 ± 433	Lorblanchet et al., 1995
Chauvet (France)	Hand touching the back of a mammoth	Radiocarbon	GifA-101468	26,340 ± 330	30,511 ± 343	Feruglio et al., 2011
Gargas (France)	Bone fragment near hands	Radiocarbon	Gif-A92369	26,860 ± 460	30,943 ± 400	Clottes et al., 1992
La Garma (Spain)	Near a negative hand	U-Series			33,000 ± 2,000	Gárate Maidagan, 2010
Fuente del Trucho (Spain)	Calcite overlaying red hand stencils	U-Series			25,330 ± 220 25,350 ± 150 25,850 ± 130 26,210 ± 160 26,370 ± 130 26,520 ± 120 26,850 ± 120 27,500 ± 130	Hoffmann et al., 2016

Fig. 9.1 Dated hand stencils (directly or indirectly) by radiocarbon and by U/Th (Table)

Fig. 9.2 Hand stencils found in a dated Gravettian archaeological context in France and Spain (Table)

Site	Laboratory	Age (BP)	Age cal BP	Reference
Grande Grotte of Arcy	GifA-93008 OxA-5003 GifA-93013	24,660 ± 330 26,250 ± 500 30,160 ± 640	28,726 ± 370 30,353 ± 483 34,288 ± 606	Valladas et al., 2013
Les Fieux	Gif-6304	23,900 ± 330	28,049 ± 297	Champagne and Jaubert, 1986
Vilhonneur	Beta-216141	27,110 ± 210	31,110 ± 132	Airvaux et al., 2006
Le Moulin de Laguenay	Ly-3361	26,770 ± 380	30,876 ± 300	Pigeaud and Primault, 2007
Fuente del Salín	GX-27756-AMS	22,580 ± 100	26,589 ± 177	González Morales and Moure Romanillo, 2008

archaeologists, paleontologists, and specialists in U/Th dating have expressed a number of scientific objections to these dates (Sauvet et al. 2017; Pearce and Bonneau 2018; Slimak et al. 2018; Aubert et al. 2018a; White et al. 2019).

The main problem with Hoffmann et al.'s paper is that the authors do not take into consideration a number of archaeological arguments. For instance, they do not refer to the knowledge that anthropologists and archaeologists have accumulated about Neanderthals for an entire century. Similarly, they do not mention that most of the hand stencils known in France and Spain have been dated by radiocarbon and U/Th, directly or indirectly, to a period between 35 and 25 ka (please see Figs. 9.1 and 9.2). This fact is particularly relevant since the authors discuss a date of 66.7 ka reported for a hand stencil from Maltravieso cave (Cáceres). However, the uniqueness of this date (that is 30,000 years older than the oldest previously known dates) is not even mentioned in the paper. At the very least, the singularity of the date in question should have been critically discussed and argued.

In the same way, Hoffmann et al. avoid recalling the potential sources of error linked with the U/Th method. U/Th dating is based on the hypothesis that calcite behaves as a closed system. However, calcite is open to exchange with the environment and some uranium can be eliminated due to its solubility in water (this phenomenon is called 'lixiviation'), leading to a large overestimation of the resulting age. This is probably why U/Th appears as the best candidate to find the "oldest art" and fulfill the objective of the National Geographic project.

As this example illustrates, the emphasis on the origins of 'art' is not without problems.[1] Moreover, as I examine in the next section, the race to discover the oldest art in the world is now a global one.

[1]Along this paper, I put 'art' between quotes following the recommendations of Conkey (1987)

9.2 The Race to Discover the Oldest Art in the World: A Global Competition

In the current frame of globalization, the competition to discover the oldest rock art is now worldwide. For instance, the above-mentioned dates from the Spanish caves have found a strong competitor in a fragment of hematite bearing a cross-hatched pattern from Blombos cave (South Africa) and another fragment of silcrete bearing a few red lines (please see Fig. 9.3c). This piece has been claimed to be "the oldest drawing in the world" because it was found in a layer dated to about 73 ka ago by OSL and thermoluminescence (Henshilwood et al. 2018). But the first place in this particular race is probably for a shell bearing some linear marks

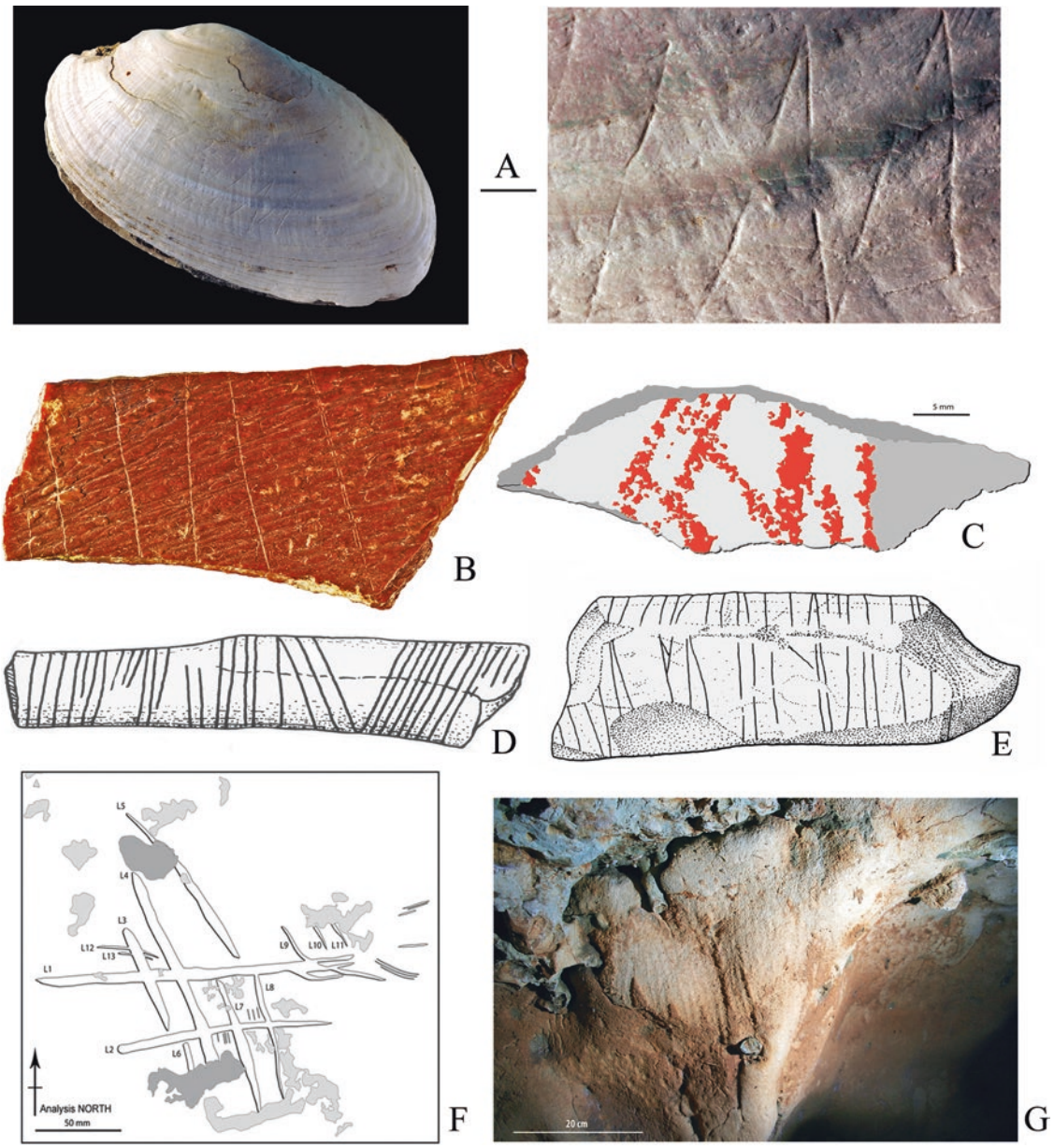

Fig. 9.3 Symbolic artefacts attributed to archaic hominins (**a**–**b**), Neanderthal (**d**–**g**), and early AMH (**c**) prior to 40 ka. **a**: Trinil (Java, 430 ka, OSL) (photograph by J. Joordens and W. Lustenhouwer with permission, Naturalis Biodiversity Center (Joordens et al. 2015); **b**: Lingjing (China, 105–125 ka, OSL) (photograph by F. d'Errico and L. Doyon with permission in Li et al. 2019); **c**: Blombos, fragment of silcrete (Southern Africa, ~ 73 ka, OSL) (tracing by F. d'Errico with permission in Henshilwood et al. 2018); **d**: La Ferrassie (Dordogne, 40–54 ka, OSL) (redrawn from D. Peyrony 1934); **e**: Temnata (Bulgaria, ~ 50 ka, TL) (redrawn from M. Crémadès in Crémadès et al. 1995); **f**: Gorham's cave (Gibraltar, >39 ka cal BP (^{14}C) (tracing by F. d'Errico with permission in Rodríguez-Vidal et al. 2014); **g**: La Roche-Cotard (Indre-et-Loire, 75 ka, OSL) (photograph by J.-C. Marquet with permission (Marquet et al. 2014)

found at Trinil (Java) attributed to *Homo erectus*, dated by OSL to 430 ka ago (please see Fig. 9.3a), and triumphantly claimed to be "older than the oldest geometric engravings described so far" (Joordens et al. 2015). Two candidates fight for second place: A colored shell from Los Aviones cave (Spain), found in a Neanderthal context, dated by U/Th to 114 ka ago (Hoffmann et al. 2018c), and a bone bearing parallel lines found at Lingjing (China) in an archaeological layer dated by OSL to 125–105 ka ago and attributed to the Denisovans (please see Fig. 9.3b) (Li et al. 2019). According to these scholars, these elementary graphisms, mainly comprised of straight lines are enough to proclaim that "the cultural adaptations of archaic hominins involved symbolically mediated behavior" (Li et al. 2019: 896) and that "Neanderthal shared symbolic thinking with early modern man" (Hoffmann et al. 2018c).

Other dates coming from Indonesia, also obtained by U/Th techniques, are younger and oblige to use more subtle arguments. They are claimed to be the "earliest hand stencils" (Sulawesi Island, ~ 40 ka) (Aubert et al. 2014), the "earliest figurative art" (Borneo, ~ 40 ka) (Aubert et al. 2018b), the "earliest hunting scene" (Sulawesi Island, ~ 44 ka) (Aubert et al. 2019), and lastly "the earliest known representational work of art in the world" (Brumm et al. 2021).

The race to discover the oldest prehistoric art is often framed in terms of a competition between Europe and the rest of the world. The journalistic terms found in a number of websites can illustrate this point: "The art was painted at least 40,000 years ago, debunking the view that cave art solely existed in Europe," (https://www.dw.com/en/oldest-known-figurative-art-found-in-borneo-cave/a-46202523), "the discovery of 40,000 years-old paintings depicting animals and the outline of hands on Indonesia's Sulawesi Island suggests Europe was not the birthplace of art as long believed" (https://www.businessinsider.com/afp-asian-cave-paintings-challenge-europe-as-cradle-of-art-2014-10?IR=T), and "the mural dates back at least 44,000 years, which makes it about twice as old as most similar cave-art scenes in Europe" (https://www.nationalgeographic.com/science/article/ancient-cave-art-in-indonesia-may-be-worlds-oldest-hunting-scene). These sensational headlines promoted the false idea among the general public that archaeologists are obsessed with finding the oldest rock art. Needless to say, none of these non-scientific sources mentions that most of the dates are obtained by the U/Th method, which is subject to large errors, particularly in the case of thin layers of calcite which can lead to age overestimation (please see the discussion below).

One of the corollaries of this oversimplification is that discussion is often reduced to the chronology of the rock images. An example can illustrate this point. In 2014, archaeologists found a schematic engraving (possibly a reindeer) in the cave of Cathole (South Wales) in an archaeological context spanning from the Gravettian to the Bronze Age (Nash et al. 2012). The representation was attributed to the Upper Paleolithic and claimed to be "the oldest rock art in the British Isles" on the basis of a U/Th date of 14,505 ± 560 years ago even though, stylistically, the image significantly differs from Upper Paleolithic engravings.

9.3 Numerical Dating Techniques and Rock Art: A Brief Survey

Archaeology was born in the nineteenth century, related to the impact of two major scientific books: *On the origin of species* by Charles Darwin (1859) and the three volumes of *Antiquités celtiques et antédiluviennes* by Boucher de Perthes (1847–1864). Since then, archaeologists' main concern has been to restitute human history in its temporal dimension. At the beginning, geology and stratigraphy served as a model to build an initial chrono-cultural framework.

With the emergence of numerical dating methods in the 1960s, archaeology - first considered as part of anthropology - gradually turned into archaeometry. In the field of rock art research, scientists have developed many dating techniques which are more or less adequate to date rock images, including radiocarbon, Uranium-series, Thermoluminescence (TL), and Optically Stimulated Luminescence (OSL), so that the main question is now: "How old is this representation?". In this section, I briefly review the scope of each of these techniques, their field of application, and more importantly, some problems associated with them.

9.3.1 Radiocarbon Dating

In the 1950s, a new technique appeared which allowed researchers to determine the age of ancient objects in wood by calculating the content of residual radiocarbon (Libby 1955). The method was soon applied to determine the age of strata or layers in stratigraphy. Radiocarbon dating was a revolution. Much later, in the 1980s, the development of AMS (Accelerator Mass Spectrometry) allowed researchers to count the ratio of isotopes ^{12}C and ^{14}C directly and it required smaller samples of bones or charcoal. The reduction of the minimum sample size made possible to apply this technique to the dating of rock art starting in the 1980s. This revolution led some investigators to state that we had entered a "post-stylistic era" (Lorblanchet and Bahn 1993) and to proclaim the end of the stylistic dating of Paleolithic rock art (Bednarik 1995).

The major source of error in radiocarbon dating is related to the contamination of the samples. The presence of very old carbon (e.g., residue of carbonates) tends to make the dates appear older, whereas traces of recent organic materials (such as microorganisms and humic acids) make the dates

Fig. 9.4 Influence of the pretreatment of bones on the result of radiocarbon dating (Table)

Site	Method	Age (BP)	Age (cal BP)	Reference
Geissenklösterle Early Aurignacian (c. III) (reindeer tibia)	• Ion exchange	30,100 ± 550	34,218 ± 498	Higham et al., 2012
	• Ultrafiltration	35,050 ± 600	39,674 ± 658	
Sungir 3 (human burial)	• Gelatinization	24,830 ± 110	28,861 ± 146	Marom et al., 2012
	• Hydroxyproline	30,000 ± 550	34,123 ± 507	

appear younger. The latter effect is much more sensitive and serious than the former one. Laboratories have worked to solve this problem in recent years and, as a result of these efforts, the precision of this technique has significantly improved. Moreover, the pre-processing of samples can much better eliminate organic impurities. The most sophisticated method consists of extracting the collagen from bones by ultrafiltration (Bronk Ramsay et al. 2004) and then obtain an alpha-amino acid such as hydroxyproline (Marom et al. 2012). This led to ages which may be 4000 to 5000 years older than those obtained by the conventional method using a Geiger counter (please see Fig. 9.4). Thanks to these improvements, the chronological limit of this technique has been pushed back up to 50,000 years. The precision is now good, but the accuracy of the resulting age remains to check, because other sources of error need to be taken into consideration (Bednarik 1996). For instance, the radiocarbon age refers to the death of the organic material, not the age of the painting (that may be much younger). This effect, put forward by the detractors of the age of Chauvet cave, is called "old wood effect" (Kim et al. 2019).

The discovery that the concentration of radiocarbon in the atmosphere was not constant throughout time (contrary to Libby's initial assumption) has led scientists to propose calibration curves. Broadly speaking, beyond 30,000 years, the calibrated dates (cal BP) are typically 4000 to 5000 years older than the radiocarbon age (BP). As a consequence, all the dates obtained prior to these improvements are now obsolete, and our chronological benchmark should be revised (Valladas et al. 2013). The fact that new dates are systematically older than the previous ones unfortunately fuels the race to look for the earliest dates.

9.3.2 Indirect Radiocarbon Dating of Overlying Crusts

When direct radiocarbon dating of charcoal paintings is attempted, specialist need to make sure that they eliminate all organic compounds originating from other sources such as calcium oxalate or other pollutants. For instance, a special acid-base-acid pre-treatment has been recommended to eliminate calcium oxalate (Bonneau et al. 2011). But inversely, calcium oxalate can be specially selected for dating red paintings or even engravings. Calcium oxalate or whewellite is a biofilm resulting from the presence of lichens, fungi, and bacteria in open-air sites. The dating of calcium oxalates has been particularly useful for the dating of Spanish Levantine art (Viñas et al. 2016). A careful sampling of the crust of calcium oxalate over and below the paintings allows researchers to obtain *terminus ante quem* and *post quem,* respectively. It was thus possible to obtain a date of 7190 ± 120 BP (8024 ± 150 cal BP) at Les Ermites rockshelter (Tarragona) for the layer overlying the paintings (Viñas et al. 2016). This date is at least 400 years prior to the arrival of Neolithic breeders and farmers commonly dated at ~7600 cal BP (García Puchol et al. 2015) and it constitutes the oldest chronometric date for Levantine art.

It is also possible to determine the time of crystallization of a calcite deposit by dating the calcium carbonate itself. An error inherent to this method occurs due to the inclusion of calcium carbonate from the enclosing rock in the newly formed calcite. The age should then be corrected to account for the 'dead carbon fraction' (dcf). This method has been used to determine the age of engravings in India (Taçon et al. 2013). Radiocarbon dating of calcite may also be used to check the reliability of U/Th measurements (see below).

Another technique consists of the radiocarbon AMS dating of the organic matter (diatoms, bacteria, fungi, etc.) trapped in the patina of amorphous silica formed on schist rock by the movement of water. This technique was tentatively used in the case of the Foz Côa site (Portugal) immediately after its discovery. Although specialists agree that a large part of the engravings date back to the Paleolithic period, the results of the chronometric dating fell between 6870 BP and 2170 BP, which caused considerable controversy (Watchman 1995).

9.3.3 Uranium Series Disequilibrium

Uranium-series disequilibrium (U/Th) is becoming an important dating method, because it allows scientists to date red paintings and/or engravings. The method is based on the natural radioactive disintegration of ^{234}U into ^{230}Th. When calcite forms (by precipitation of calcium carbonate), it contains a small quantity of U (which is soluble in water), but no Th (which is insoluble). With time, the $^{230}Th/^{234}U$ ratio increases and allows the date of the crystallization of calcite to be determined. Two conditions are required for proper application of this technique: First, it is required that there is no thorium in the beginning (i.e., the absence of particles of

detrital thorium). Second, calcite needs to behave as a 'closed system' (i.e., no exchange of materials with the external environment). These conditions are often fulfilled when the samples are collected in the axis of growth of stalagmites of large diameter where the dripping water does not penetrate. This is why U/Th is often used for the calibration of radiocarbon dates. That said, it is important to note that the above-mentioned conditions are much more difficult to prove in the case of thin crusts of calcite accumulated over paintings. Within the literature, numerous examples are seen wherein calcite behaves as an open system, leading to serious errors in the age estimation of the calcite, because the $^{230}Th/^{234}U$ ratio is artificially overestimated by uranium leaching (Sanchidrián et al. 2018; Pons-Branchu et al. 2020). It should be pointed out that pollution by older or younger materials is also a case of open system in radiocarbon dating but the word is not often used.

If the system remains closed, the $^{230}Th/^{234}U$ ratio tends toward the value '1' asymptotically after an exceedingly long time (secular equilibrium). However, simply obtaining a value lower than 1 does not prove that the system was closed, because even a small loss of uranium is enough to overestimate the $^{230}Th/^{234}U$ ratio and can lead to important mistakes. For instance, 33,000-year-old calcite that has lost 20% of its uranium will have an apparent age of 43,000 years old, and such a loss is undetectable.

In some cases, the loss of Uranium can be so relevant that the $^{230}Th/^{234}U$ ratio becomes larger than 1, leading to virtually infinite ages (please see Fig. 9.5). We do not know the geomorphological conditions favoring such a situation, but cases of infinite ages were found in one third of the 89 stalagmites analyzed in various Italian caves (Borsato et al. 2003). In a case cited by Scholz and Hoffmann (2008), a flowstone in an Austrian cave displayed a brief temporary behavior during which the calcite growth slowed down drastically. As a consequence, the concentration of uranium became 10 times lower, which led temporarily to an infinite age (called 'out of range'). The authors admit that uranium loss is the best explanation. In line with this observation, Pons-Branchu et al. (2020) have recently noted that the oldest ages found in the Spanish caves studied by Hoffmann et al. (2018a) correspond to particularly low uranium concentration, which may indicate uranium loss.

Another problem is that, in an open system, thorium may be incorporated from the beginning in the form of detrital particles. This supply of thorium contains both isotopes ^{232}Th and ^{230}Th, so the age should be corrected for the exogenous ^{230}Th. In most cases, the correction is only approximative because the proportion of both isotopes is unknown (initial $^{230}Th/^{232}Th$ in bulk earth at secular equilibrium varying, according to various authors, between 0.8 and 1.7). When the sample is very 'dirty,' the needed corrections are significant, and it is wise not to take such samples into consideration. As Pettit and Pike mentioned in 2007, "at high levels, it is legitimate to reject a U-series sample as unsuitable" (Pettitt and Pike 2007, 40). Unfortunately, these authors did not follow

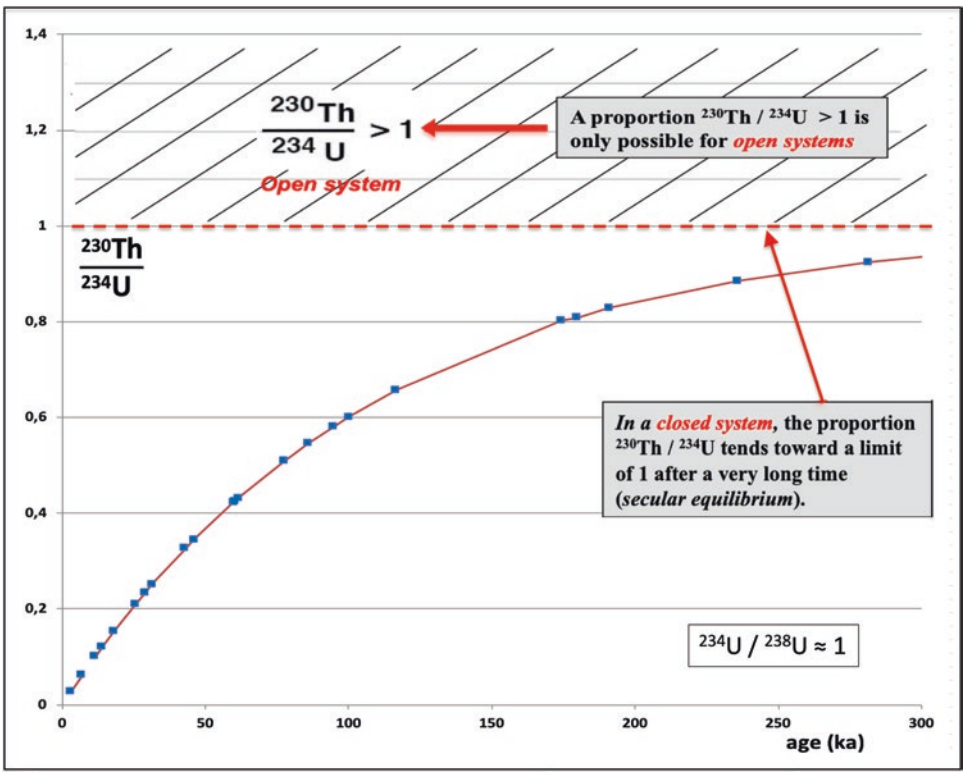

Fig. 9.5 In a closed system, the $^{230}Th / ^{234}U$ ratio tends toward a limit of 1 after a very long time (secular equilibrium). If the values of the $^{230}Th / ^{234}U$ ratio are greater than 1, this demonstrates that the system was open. However, the system may be open while the $^{230}Th / ^{234}U$ ratio remains lower than 1. In that case, the calculated ages are overestimated

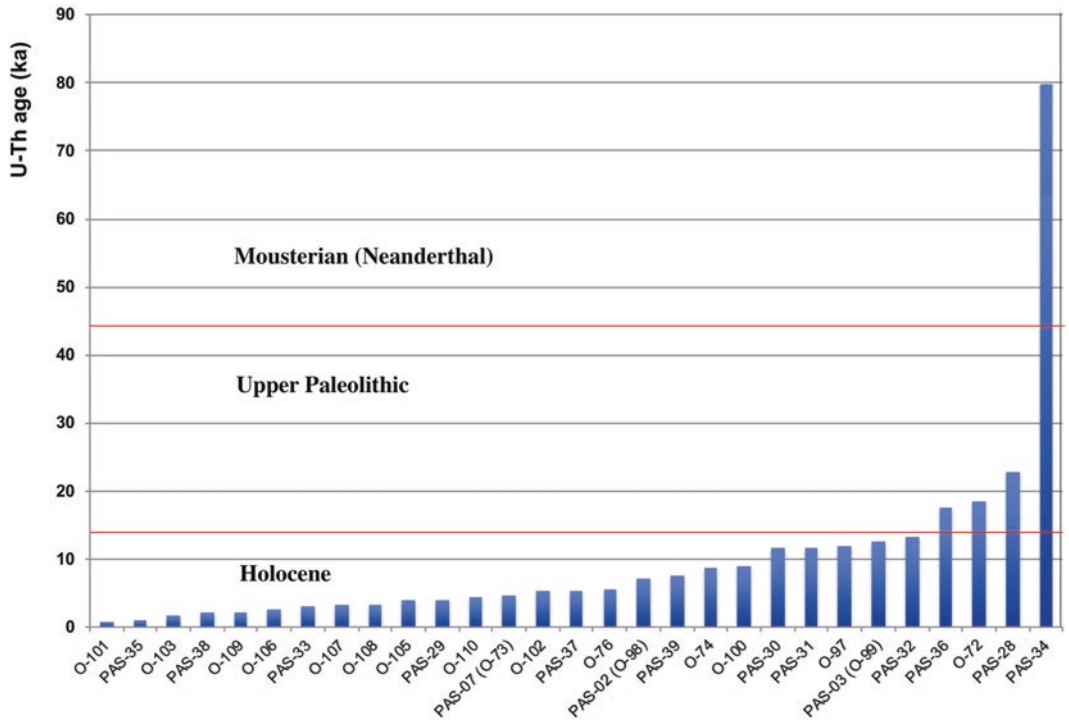

Fig. 9.6 Ages of calcite samples dated by U/Th in La Pasiega cave (Pike et al. 2012; Hoffmann et al. 2018a). The age of sample PAS-34 (79.66 ± 14.9 ka, minimum age 64.76 ka), is probably an outlier, overestimated due to an open system (see location of the sample on Fig. 9.8)

their own advice at La Pasiega cave, where the oldest date—the only one falling within a Neanderthal time-range (please see Fig. 9.6) –shows an abnormal level of detrital particles (see Hoffmann et al. 2018a).

Several examples of overestimated ages have been reported in the case of calcite covering prehistoric paintings (Plagnes et al. 2003; Valladas et al. 2017; Pons-Branchu et al. 2020). The best way to check the validity of U/Th dates is by crossdating, a practice consisting of dating carbonates from the same concretion by both U/Th and ^{14}C. The precision of radiocarbon dating is low because the dead carbon fraction (dcf) is generally unknown. Nevertheless, the error arising due to the dcf is much smaller than the one that is due to the leaching of uranium. Crossdating was systematically achieved in Nerja cave, Málaga (Valladas et al. 2017). In some cases, the agreement between both methods is considered as acceptable. For instance, radiocarbon dates varying between 25,374 and 22,716 cal BP, according to the value taken for the dead carbon fraction (dcf) varying between 0% and 20%, can be compared to 26,462 ± 371 cal BP for U/Th. However, for other samples, a large discrepancy has been observed. For instance, in one case radiocarbon values are between 33,769 and 31,030 cal BP for dcf in the range of 0–20%, whereas the U/Th age is 60,276 ± 1300 cal BP. In this case, the overestimation of the U/Th age is much larger than the radiocarbon age, even considering the imprecision due to the unknown dcf. Thus, crossdating seems to be an adequate way to check if the U/Th method is overestimated because of an open system.

As the phenomenon of lixiviation is difficult to demonstrate, the ages determined by U/Th dating of thin layers of calcite overlying prehistoric paintings should always be suspected to be older than their true ages, until confirmed by other means. This is probably the case of the three Paleolithic Spanish caves discussed in the introduction of this chapter (Hoffmann et al. 2018a). These are claimed to be "minimum ages," but the wording is misleading because the true age can be much younger if the system is open. The incredible age reaching 300,000 years that was found by U/Th in Nerja cave[2] certainly falls within this predicament (Sanchidrián et al. 2018).

[2]The dating by U/Th gives a range of dates between 100,000 and 300,000 years for calcite crusts on top of images that could not be older than 35,000 years ("*Les datations par U/Th donnent des fourchettes de dates comprises entre 100,000 et 300,000 ans pour des concrétions de calcite recouvrant des images qui ne peuvent pas avoir plus de 35,000 ans"*) (Sanchidrián et al. 2018, 35). Recently, a large discrepancy was found in Nerja for a concretion overlying black marks dated by U/Th to 118,880 ± 193 years ago, whereas ^{14}C dated the black pigment to 19,160 ± 530 cal BP (Pons-Branchu et al. 2020).

9.3.4 Thermoluminescence

Thermoluminescence (TL) has been used to date archaeological artefacts for almost as long as radiocarbon. TL is a property of crystals that accumulate energy in traps when they are exposed to ionizing radiations; they can restitute this energy as light when they are heated. The quantity of emitted light is proportional to the time of exposition to radiations, and hence this is a way to estimate the time elapsed since the last heating of the materials (flint), its last solar exposition (grains of quartz), or its time of crystallization (calcite). The difficulty is to evaluate the amount of radiation received over time. This method can be used in the case of aeolian sediments and, more rarely, fluvial sediments, because it is difficult to be certain that the TL chronometer was completely reset before deposition. This factor makes controversial the very ancient dates of between 58,000 and 75,300 years obtained by TL in a decorated rock-shelter in Australia (Fullagar et al. 1996).

The dating of calcite by TL has been experimentally done in a number of Paleolithic caves. The comparison of the dates of concretions sampled below and above paintings allows researchers to bracket the age of the painting between a minimum and maximum date. Experiments held in Cantabrian caves provided interesting results, although the precision of the method is reduced. In Pondra cave (Cantabria), archaeologists could assign an age of between 32,946 ± 3440 (maximum) and 26,972 ± 2747 (minimum) years (González Sainz 2001). In La Garma cave (Cantabria), a TL date of 34,175 ± 3850 years (*ante quem*) was obtained for an ibex depiction, whereas U/Th for the same concretion gave results between 26,100 and 28,800 years (González Sainz 2003). The relative concordance between both methods, taking into consideration the large standard deviations, acts as a kind of confirmation and allows these paintings to be assigned to the Gravettian period.

9.3.5 Optically Stimulated Luminescence

Optically stimulated luminescence (OSL) is based on the same phenomenon as TL, except that, in this case, the stimulation is obtained by a visible light. OSL can be applied to quartz and feldspar. An important result was obtained by OSL on grains of quartz covering figurative engravings at Qurta (Egypt). The mean value of ~15,000 cal BP obtained for the rock art was fully compatible with the excavations carried out in the vicinity, demonstrating the reliability of the technology. This Pleistocene age is the oldest found in North Africa, justifying *a posteriori* the mediatic title of "Lascaux along the Nile" (Huyge et al. 2007, 2011).

OSL can be used to date materials up to 350 ka. At Pech de l'Azé (Dordogne), OSL demonstrated that the site was occupied for more than 130,000 years, as dates ranging from 179 ka (Pech de l'Azé-IV) to 48.9 ka (Pech de l'Azé-I) were obtained by this method (Jacobs et al. 2016).

9.3.6 Amino-Acids Racemization

Amino-acids racemization (AAR) has also been used for dating archaeological organic materials. Amino acids, the constituents of proteins, are essentially in an L-configuration in living beings. Racemization slowly transforms the L-form into a D-form after the death of the organism until an equilibrium between both configurations is reached. If the rate of racemization is known, the time elapsed since the death of the organism can be calculated. The problem is that this rate is highly dependent on environmental conditions (e.g., temperature, humidity, pH). Although sometimes used in paleontology, racemization is rarely used in archaeology. One study using this method focused on the antiquity of humans in North America (Bada et al. 1974), but the very ancient date of 50 ka obtained from aspartic acid racemization appears doubtful. Attempts have been made to correlate racemization of aspartic acid in high molecular weight proteins with radiocarbon at Pataud rockshelter in Dordogne. The age calculated from racemization is hardly compatible (30.4 ka) with the radiocarbon date for the same Aurignacian layer (ca 35 ka cal BP) (El Mansouri et al. 1996).

9.3.7 Cation Ratio and Varnish Microlamination

A method called 'Cation-ratio' (CR) has been proposed, based on the assumption that the mobility of various cations, such as K^{+}, Ca^{2+}, and Ti^{4+}, in rock varnish on the surface of rock-shelters differs. A calibration carried out in similar conditions allows a minimum age for the varnish to be determined. Another technique to determine the minimum age is the study of the varnish microlamination (VML) that occurs due to variations in the manganese content of varnish deposited in wet and dry conditions. These two methods may be applied to petroglyphs in arid environments (e.g., Mojave Desert, Sahara Desert). Although very difficult to apply, both methods give concordant results as shown by blind experiments led by two teams (Whitley 2013). Minimum ages prior to 13,400 ± 2000 years (CR) have been reported for a petroglyph representing an extinct species of llama in the Mojave Desert, demonstrating the existence of rock art in 'Pre-Clovis' times in North America.

9.4 Discussion

The main problem with the application of these methods to the dating of rock art is that the specialists tend to neglect the archaeological context of the images. Increasingly, archaeometry takes precedence over archaeological reasoning. In this setting, it is not rare, for instance, that a stratigraphic layer that has supplied unclassifiable industry is frequently qualified *a posteriori* according to its radiocarbon or U-series dates. An example of this is the Abric Agut shelter (Barcelona) which presented a lithic industry initially attributed to the Middle Paleolithic. Subsequently, the industry was attributed to the Late Paleolithic-Early-Holocene on the basis of new chronometric dates (Vaquero et al. 2002).

U/Th dating is the best example of the increasing influence of archaeometry on conventional archaeological reasoning. It is now possible to announce sensational dates, particularly old ones, in a scientific review, disregarding archaeological arguments for accepting or refuting the dates, and even without considering the methodological limitations that could lead to invalid results. For instance, the only argument put forward to prove that calcite behaves as a closed system—a hypothesis that is required for the results to be reliable—is the observation that the ages become older when digging deeper in the calcite crust. It is only argued that "in an open system, preservation of the chronological order of subsamples is *highly unlikely"* (Hoffmann et al. 2018b, 1). However, "highly unlikely" is a rather vague expression. It is easy to show that a correct stratigraphy may be preserved in an open system if the process of lixiviation occurs regularly over time. If one observes that the age of various subsamples becomes younger as the calcite layer grows, this proves that water brings with it carbonates in a continuous way and the same water flow is able to partly dissolve the previously deposited uranium. In such a case, the age of each subsample will be overestimated but will remain in the expected order. We have created a model using a constant rate of lixiviation to show how the apparent ages of samples taken at different depths are modified in this assumption (please see Fig. 9.7).

A useful notion is that of 'outliers' (Bronk Ramsay 2009). Based on a mathematical definition in the Bayesian treatment of a set of radiocarbon dates, this allows values which significantly deviate from the average of the others to be eliminated. An outlier may be simply described as an aberrant value in a series. For instance, in the 29 dates from Pasiega cave determined by U/Th (Pike et al. 2012; Hoffmann et al. 2018a), one of these dates, and only one, is more than 50,000 years older than the others (please see Fig. 9.6). The rough value is 79,660 ± 14,900 years for the left side of a partitioned quadrangular sign, which corresponds to a "mini-

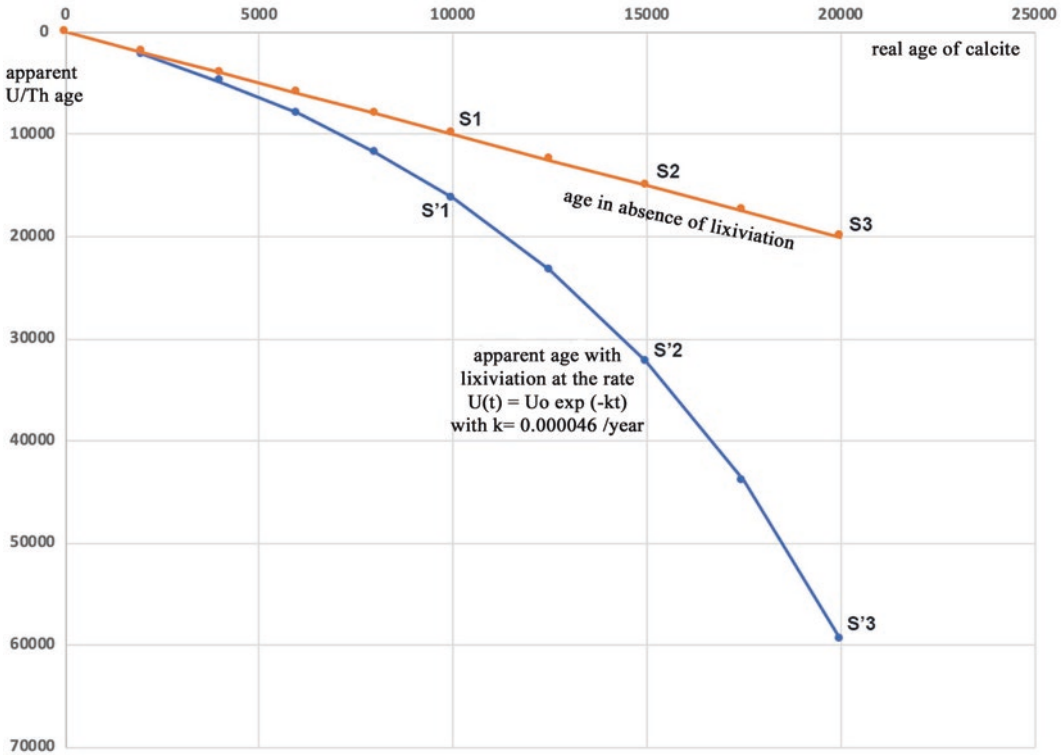

Fig. 9.7 Ages of various samples of calcite taken at different depths in the absence of lixiviation (closed system) and with the hypothesis of a constant rate of lixiviation over time (open system). A rate of lixiviation of 4.6 10^{-5} per year was chosen to provide feasible results: a calcite sample crystallized 20 ka ago would have an apparent age of ~60 ka

mum age" of 64,760 years. The very large standard deviation is due to the proportion of detrital thorium that is exceptionally high in this sample. In the same panel, much younger dates are found for calcite crusts of similar size, texture, and color (please see Fig. 9.8). For instance, the right side of the same quadrangular sign provided a date of 3070 years, but these factors have not been taken into consideration. The simplistic reasoning used to accept the age of 64,760 years is based on two principles: (1) The rate of calcite growth may vary to a large extent according to local conditions, and (2) the oldest date is the most likely. These principles would be acceptable if the system was a closed one, but a more reasonable explanation is that the age of 65,000 years is an outlier resulting from uranium leaching, related to the frequent phenomenon of lixiviation in the context of humid caves. The fact that the outer layer of the same sample has a minimum age of 50,470 years provides another argument for lixiviation, because a total absence of calcite growth has never been observed in caves during the last 50 ka (Vogel and Kronfeld 1997; Genty et al. 2005; Genty 2008; Moreno et al. 2010; Baldini et al. 2019).

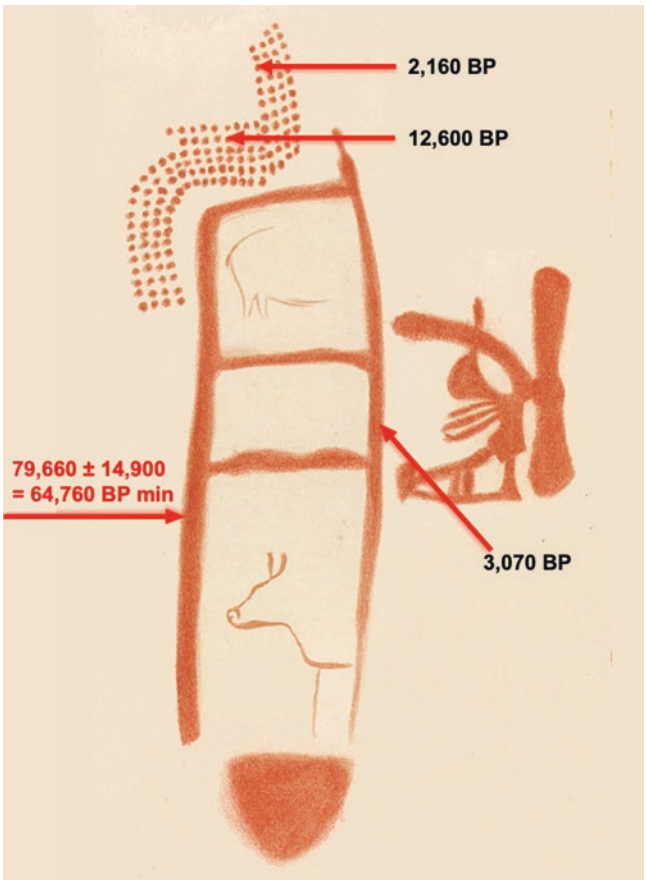

Fig. 9.8 La Pasiega C (Cantabria). Ages of samples obtained by U/Th (Hoffmann et al. 2018a). Note that inside the quadrangular sign, parts of animals are enclosed. Modified after a tracing by Breuil et al. (1913)

9.4.1 Preconceptions in Archaeology

When a new theory conflicts with the current state of knowledge, its scientific credibility needs to be evaluated. A possible approach to this is Popper's principle of 'falsifiability,' according to which a new theory can be considered scientific only if it is possible to prove that it is not false (Popper 1959). In most cases, it is difficult to determine whether a theory is objectively valid. In archaeology, we have to confront any hypothesis to the bulk of existing facts. Up to which values can we be confident in a date? Why do we accept the U/Th dates of 14.5 ± 0.13 ka for rock art in Central India (Banerjee and Charkraverty 2015) and we discard the dates of 65,000 years for the Spanish caves, even if the methodological risk of overestimation is the same in both cases? What should we make of the dates close to 300,000 years found in Nerja cave (Sanchidrián et al. 2018)?

When physical measurements conflict with an entire set of well-established archaeological knowledge, it seems imperative to examine in detail the causes of the discrepancy. Indeed, we must be careful not to fall into inherited preconceptions. For instance, we have been taught that 'art' started with the arrival of AMH into Europe at the beginning of the Upper Paleolithic. How do we know that? A survey of the literature is required. The examples collected by Lorblanchet (1999) and Majkič (2017) show that, prior to the Aurignacian period, only rudimentary sets of lines and notches were produced (please see Fig. 9.3d and e). These likely constitute a preliminary step of cognition required for the development of drawing. The case of the cross-hatched engravings found in Gorham's Cave (Gibraltar), tentatively assigned to late Neanderthals (39,000 cal BP), may also be catalogued within this preliminary phase (Rodríguez-Vidal et al. 2014) (please see Fig. 9.3f). In La Roche-Cotard-II cave (Indre-et-Loire), digital tracings on the walls were found at several places (please see Fig. 9.3g), and a strange stone with a rock bridge, into which a piece of bone was inserted, has been interpreted as a "human mask" (Marquet et al. 2016). The presence of a Mousterian industry, along with OSL dates of 75,600 years, confirm that the site was occupied by Neanderthals. In Bruniquel cave (Tarn-et-Garonne), a large circular structure made of broken stalagmites was found and dated to 176.5 ± 2.1 ka by U/Th, but no explanation, either functional or ritual, has been proposed (Verheyden et al. 2017).

Hence, the production of 'symbolic artefacts' that could be eventually attributed to Neanderthals is scarce and, in any case, very far from what we call 'art.' It probably took a long time between these first attempts and the first figurative depictions in caves. In Spain, it is even uncertain that 'art' was produced during the Aurignacian period (Gárate Maidagan et al. 2015).

Many examples of misleading preconceptions can be found in archaeology. These prejudices are particularly

strong in the field of rock art because 'art' provokes strong feelings among archaeologists and the public. The most famous example is the paintings of Altamira cave (Cantabria), discovered in 1880. Their prehistoric origin was long denied, until the accumulation of other discoveries persuaded skeptics to change their minds (Cartailhac 1902). The story of the recognition of Altamira shows that the delayed authentication of this cave was mainly related to a number of political and religious preconceptions (Freeman 1994). A much more recent case has occurred with Chauvet cave. Despite more than 259 radiocarbon dates obtained, among which twelve concern direct dating of paintings, with an average value of 36,000 cal BP (Quiles et al. 2016), some investigators still deny the age of these paintings (Pettitt et al. 2009; Bahn et al. 2019). Behind pseudo-scientific arguments, the preconception at work is likely the same as in the case of Altamira in the nineteenth century: Chauvet art is too sophisticated to be so old. What is at stake is a widely accepted preconception that the art should evolve from simple to complex. Yet the phylogenesis of art has nothing to do with biological phylogenesis. If we are conscious of this, the timeline of Altamira and Chauvet are more easily understood. Art is a cultural phenomenon, and each culture follows its own path. Another controversy occurred with the discovery of the open-air sites of Foz Côa (Portugal).

A new dating technique using the patina of amorphous silica was experimentally carried out (see above). The results were largely post-Paleolithic (Watchman 1995), against the opinion of the entire community of prehistoric art specialists. Some people, more confident in technology than in archaeology, accepted these dates, likely misled by the incorrect belief that Paleolithic art occurred only in caves and that open-air rock art *could not* be Paleolithic. To put an end to the controversy, Ronald Dorn (1997) demonstrated that silica glaze forms an open system with continuous exchange of organic matter, so that "contamination from older and younger material is likely." Due to the likely contamination, the ages provided by this dating technique are meaningless, and they remain compatible with the Paleolithic period. It is noteworthy that a series of fallacious arguments (such as those regarding the depiction of domesticated horses, the superimpositions, the microerosion, or even the geology of the valley) were used to attempt to justify the early dates provided. Once introduced, a preconception can be persistent in its pursuit of supporting arguments.

The same obsessive search for arguments can be observed in the Spanish Levantine art. Here, proponents of a Neolithic age are putting forward very weak arguments, such as the supposed cow udder "proving domestication," or some arrow points supposedly made of metal. It is not bad faith; the preconception is so strong that their supporters are surely convinced that they are right. Preconceptions and biases are the worst enemy of scientific reasoning.

The fact that numerical dating is becoming so prevalent in archaeology is only one aspect of a more general trend. Broadly speaking, technology is 'invading' the whole field of rock art studies. It is now impossible to publish a decorated site in a mainstream journal without using 3D-photogrammetry, orthoplanes, or multispectral or hyperspectral imaging techniques (Ruiz López 2020). There is no doubt that these techniques are useful to researchers in terms of rapidity and accuracy, but they also divert from the true goal of rock art research. The only tool that escapes this critique is DStretch (decorrelation stretch), a digital treatment of images invented by J. Harman (2006), which allows details that are quasi-invisible to the naked eye to be enhanced due to the fading of paintings by natural aging. In fact, DStretch is the most powerful tool for deciphering prehistoric images; this is a revolution comparable to that of the optical microscope in the seventeenth century.

9.4.2 Cognition, Symbol, and Art

Here it might be useful to return to a semantic viewpoint. The 'oldest drawing' found at Blombos, dated to 73,000 years, is considered a "prime indicator of modern cognition and behavior" and as "evidence reflecting cultural modernity and symbol use" (Henshilwood et al. 2018). The tracings of La Roche-Cotard-II cave are approximately the same age and are considered to represent "probable symbolic activities" (Marquet et al. 2016). We agree with these cautious statements. A pattern of crossed lines traced on a stone or a set of parallel lines on a wall *may* have had a 'symbolic intent,' but the hypothesis is difficult to prove (Malafouris 2007, 2008). These types of artefacts only show the ability of humans to "create objects embedded with meaning" (Kissel and Fuentes 2017, 397). These isolated pieces are far from symbols in the sense of Peirce's semiotics (Peirce 1991), and further still from the modern notion of art. It is worth noting that the first argument for symbolic thought pertaining to a cultural graphic tradition is 60,000 years old and comes from the decorated ostrich eggshells from Diepkloof (South Africa), where 270 engraved pieces were found and attributed to anatomically modern humans (Texier et al. 2010).

If we accept the definition proposed by most anthropologists of art, art is a sensitive form aimed at evoking emotion (Grosos 2017). A work of art starts with a vision in the creator's mind that is then mediatized in the form of an image to be communicated to a receiver (Belting 2004). In this way, art acts as a mediator in a network of social relations and makes sense only within a given cultural context (Gell 1998). Therefore, art requires an elaborate societal structure which was likely not achieved until the Upper Paleolithic, when Aurignacian people arrived in Europe after a long migration

from the Middle-East. There was a large gap between the first traces of drawing activity in South Africa and the first true artistic creations in the Swabian Jura (40,000 years ago) and Indonesia (if we accept the U/Th date of 44,000 years). Since art is social language, it had to undergo a slow progression toward 'behavioral modernity' (Vialou and Vilhena-Vialou 2005). Paradoxically, artwork has a symbolic function, but the inverse is not true: a 'symbolic manifestation' is not necessarily a work of art.

Artefacts dating back to the Lower Paleolithic have been presented as objects of "possibly iconic or symbolic meaning" (Bednarik 2008). This is the case of the figurine in volcanic stone found at Berekhat-Ram (Israel), in a layer putatively dated to 280,000–250,000 years, which supposedly reflects female anatomy. Even if this natural form is demonstrated to have been purposely modified by hominins, it is difficult to conclude that it is "possibly the earliest example of representational art" (d'Errico et al. 2000). It would be, at most, "the first witness of the recognition of forms" (Leroi-Gourhan 1965, 213). The search for unusual forms, or 'curios' as Leroi-Gourhan calls them, is a constant in the human mind. d'Errico et al. (2000) make a distinction between 'gradualists,' those who admit that the cognitive capacity for symbolism was already present in ancient forms of hominins, and 'discontinuists,' those who believe that a qualitative jump occurred at the dawn of the Upper Paleolithic. However, the truth probably lies somewhere in between: the ability to recognize forms in natural objects (and give them some symbolic meaning) was likely acquired progressively as the syntax of language became more complex (Botha 2008), but the ability to create images only originated when the making of those images became a social endeavor. This was only possible once the social organization and relationships between individuals reached a certain level of complexity.

9.5 Conclusion

Prehistoric archaeology has progressively shifted to archaeometry, relinquishing the sequencing of the events in the early history of humans to physicists. "Absolute" dating techniques are now archaeologists' favorite tool. However, an examination of the different techniques indicates that most of them are not sufficiently accurate and reliable, due to several sources of error that are often underestimated. Some methods (such as TL and OSL) suffer from intrinsic problems that make them difficult to apply to rock art research. Other techniques, like radiocarbon dating of organics imbedded in crusts (oxalate, amorphous silica) overlapping paintings or engravings give only *terminus ante quem* dates that are subject to overestimation in many cases, due to open systems. U-series has proven to be a reliable method in other domains, but its application to rock art dating is still controversial because it is impossible to be certain that calcite behaves as a closed system. Crossdating with other methods (such as TL or ^{14}C) is still rare. To date, the most reliable method is radiocarbon, thanks to the progress made in recent years concerning purification sampling techniques. The Bayesian statistical treatment of large data sets now allows the prehistorian to be relatively confident in so-called "absolute" values. However, it remains that the scope is limited to 45,000–50,000 years, with an accuracy rate that remains too low.

Absolute dating methods are not a miraculous tool able to provide us with a global chronology of rock art. In this setting, the current competition to discover the oldest art in the world is flawed by the sources of error that I have examined in this paper. We should therefore be very cautious before accepting a radical transformation of our understanding of Paleolithic societies. Moreover, we need to develop more convincing arguments than those provided by U/Th to establish the chronology of rock images.

In Europe, the archaeological data seems to indicate that the portable art in the Swabian Jura and the parietal art from Chauvet emerged during the Aurignacian period, but there is not undisputable evidence indicating that 'art' (in the modern sense of the term) was produced earlier (White et al. 2019). In this context, it is important to keep in mind that the production of 'art' does not only depend on cognitive development, but is mainly related to a number of social factors. While this is the subject of passionate controversies, it seems that 'art' appeared only when a group of people has reached a certain level of social complexity. In particular, the development of a visual language providing a long-lasting memory essential for the survival of the group was a necessary requisite. Neanderthals were excellent hunters, skilled tool makers, had remarkable cognitive abilities, and were well adapted to their environment, but we have still no archaeological evidence that Neanderthal societies reached the level of complexity required to produce cave paintings. For a number of reasons that are difficult to establish, they did not develop what we call 'art.'

In this context, the 'revelation' in *Science* that cave paintings were made by Neanderthals undermines academic science. Social networks celebrated the denial of the scientific view according to which Anatomically Modern Humans were the first to create art. The loss of confidence in scientific archaeology is one of important collateral damages of such a mediatic announcement.

If the ambition of prehistoric archaeology is to build a reliable history of past societies (i.e., a genuine socio-cultural paleoanthropology), then we should reflect on these issues and avoid being exclusively temporally driven and determined by absolute dating methods. Many other avenues for archaeological thought remain to follow.

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Part III

Interdisciplinary Global Rock Art

What Were Rock Art Sites Like in the Past? Reconstructing the Shapes of Sites as Cultural Settings

10

Jean-Jacques Delannoy, Bruno David, and Kim Genuite

Abstract

Rock art research often focuses on the art, rather than on the site or its landscape. Yet what makes the art meaningful in culture is not just the paintings, stencils or engravings, but the individual and connected places where they are found and of which they are a part. Over time, those places can change, and sometimes dramatically so. To understand the art, attention thus needs to be given on these spatial contexts: the details of what was where in the past matter. In this chapter we argue that in archaeology—a discipline aimed at understanding the cultural past—the form of the landscape of rock art sites at the time the art was produced and engaged needs to be understood. We do so by investigating four dimensions of a site's past landscapes: its past landforms; its palaeo-entrance; its palaeo-landmarks and pathways; and its past rock surfaces. Each brings new insights on the physical configuration of a rock art place, as context of its cultural significance and engagements.

Keywords

Archaeomorphology · Caves · Landscape archaeology · Palaeoentrances · Past environments · Pathways

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10.1 Introduction

By definition, deep-time art in the twenty-first century begins with a conundrum made of history's hermeneutics: the actions of people a very long time ago are seen and understood from present-day perspectives. In archaeology, the aim is to record what is there today at a given site and landscape, so that we can work out for the past what is not. But how a site is known today may not be the same as how it was known in the past, given that often time has changed both the physical properties and cultural contexts of a site. How, then, can the art, and the site, be more closely envisioned for what it was like at the time of its creation or use, if its images, rock surfaces and landscape settings, and their cultural positionings (the reasons why they were created or used in the first place), have seen the passage of time variably measured in the tens to tens of thousands of years? The problem is that often we do not even know what a site looked like when its art was made and when the site was occupied—here we use 'occupation' not just to mean 'settlement' or 'lived in', but to refer to any form of engagement, as in Ingold's (2000) and Thomas's (2008) 'dwelling' and 'inhabitation'.

An important advance in global rock art research in recent years has been the 'ontological turn' (e.g. Moro Abadía and Porr 2021), the recognition that the world views (ontologies) of the people who made and used a particular rock art site define how the art was, and is, meaningful. But, again, to understand how the art was meaningful in the past requires its positioning in its past cultural landscape. Not all dimensions of this landscape can be reconstructed, for 'landscapes' are not just physical, relating to the world as it is known and experienced as much as to its physical shape and properties and the resources then available (Riemer et al. 2017). Yet the physical layout of a site and its environment can inform on that past cultural landscape nonetheless. How, for example, has a physical space changed to enhance or inhibit movement from one place to another? How has the shape and size of a wall surface transformed over time, so that at one time it

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was a canvas for painting, at another not? Knowing which transformations took place, how and when, may be important contexts to understand what was meaningful in the past, and what may not have been. Sometimes, especially in regions with First Nations Traditional Owners, the meaningfulness of the art or rock art site is explained through knowledge held in community histories and traditions. In the cave of Yalo, on the island of Malekula in Vanuatu, for example, Small Nambas community members know that a section of the spirit-cave is today devoid of rock art not because it wasn't there, but because earthquakes collapsed sections of the wall, especially in 1965 (Wilson et al. 2000). The cave is a pathway and living landscape for the spirits of the dead, and the art a receptacle for the individuals who may have died but now reside within. In other areas again a powerful spirit-being, its presence visible at a low rock, guards the entry to the site and guides the newly arrived spirits to their residence in the cave. Other features of the cave walls are also knowing and prescient, such as a rock ledge in the cave, onto which community members throw pebbles to learn the gender of their next child. How people understand the features of the rock through culture gives shape to the local landscape inside the massive cave. The ontological dimensions of landscapes, particularly around landform highlights, are key to understanding sites invested in the past and the concentration of sites in geographical space.

Here we tackle the challenge of reconstructing the physical settings of past rock art sites through archaeomorphology (see below): seeing the art in its landscape setting *at the time of its creation and use*. While we do not focus on the ontological dimensions of any individual site or its landscape, our reconstructions are made in the understanding that they take us one step closer to the physical world of those who experienced that world. Too often in archaeology the art is recorded in all its minutiae, while the physical condition and landscape context of its creation and use are either ignored or given lip-service not so much because the researcher is not aware of the problem, but because reconstructing, and understanding, the place of the art in times past is beyond the immediate aims or abilities of the research program in question. The danger is then one of over-focusing on the image itself, at the expense of understanding, for example: (1) the broader landscape of the site and why its particular setting was chosen for occupation (e.g. Delannoy and Geneste 2020; Genuite et al. 2021a); (2) why certain zones of a site were chosen for activities that revolved around images and through which stories could be told; (3) what the accessibility to sites and decorated zones was like at the time the art was made; (4) which pathways artists and users of a site followed to get to the decorated zones; (5) how a site was architecturally altered by people at the time the art was made or used, and that would thus shed further information on the spatiality, materiality and reasons for the art (e.g. David et al. 2017; Delannoy et al. 2017); and (6) the taphonomic transformations that an art site witnessed subsequent to the art's creation and the site's visitation, and that would thus enable a better comprehension of the time of occupation and use. Together, an integrated archaeological and geomorphological ('archaeomorphology', see Delannoy et al. 2013, 2017) vision towards such questions allows for the revelation of critical spatial information that archaeology or geomorphology cannot address alone. Archaeomorphology enables the configuration of sites and landscapes to be reconstructed for the past, as context for visualising the environments in which people lived.

This chapter outlines how archaeomorphological approaches to rock art sites can shed important new light on broader landscapes and the internal settings of a site. Such a dual spatial approach brings in both the art site's external environment and its internal site structure, at articulating spatial scales.

10.2 Reconstituting Site Landscapes at the Time of Occupation

Across the world, many major rock art sites and site complexes are found in settings with pronounced landscape features or relief (e.g. in Australia, the Arnhem Land plateau; in South Africa and Lesotho, the Maloti-Drakensberg Park; in the U.S.A., Chaco Canyon; in Colombia, Serranía de la Lindosa; in Baja California, Mexico, the Sierra de San Francisco). It is not unusual in such landscape settings for researchers to ask about possible connections between art sites and local features of the environment, e.g. as topographic landmarks that affected the choice of location for the art (e.g. David 2002; Gunn 1997; Monney 2012; Wilson and David 2002; for social anthropological approaches to "senses of place", Feld and Basso 1996).

A major difficulty of such a palaeo-landscape perspective is that knowledge of a site and its surroundings is usually based on present-day landscapes. Was a site's environment different in deep time when people engaged with the art? If so, what was the site like, what were its spatial characteristics, and what were its architectural features? Such questions are all the more important when dealing with old sites in fast-changing landscapes, for example where erosion is rapid (e.g. Foz Côa, Portugal: Aubry et al. 2012), where deposition builds up quickly (e.g. Roc-aux-Sorciers, France: Bozet and Miskovsky 2010; Genuite 2019), where speleothems accumulate on rock surfaces (e.g. Chauvet Cave: Delannoy et al. 2018; archaeological floors covered with flowstone at Bruniquel: Jaubert et al. 2016), where increasing or prolonged aridity renders previously permanent villages uninhabitable (e.g. Chaco Canyon, U.S.A.: Lekson 2006), where sea level change has altered the coastline (e.g. Murujuga,

Australia: McDonald 2015), or where tectonic activity leaves fractured geologies or raised terraces above their palaeo-levels (e.g. some parts of Island Melanesia: Wilson et al. 2000). In some cases, such as among the hard quartzites of the Arnhem Land plateau and the Kimberley in northern Australia, landforms have changed little over tens of thousands of years (Delannoy et al. 2017; Genuite et al. 2021b; see also Pillans and Keith Fifield 2013), even since the beginnings of human presence around 50,000 to 65,000 years ago (Clarkson et al. 2017). But this is not the case for high to mid-latitude European and Asian sites for example—among many others across the world—that are more amenable to weathering and erosion (e.g. rock engravings, NW Spain: Pozo-Antonio et al. 2018; Daraki-Chattan rock art sites, India: Liritzis et al. 2019). In these latter cases, it is essential that robust geomorphological investigations are undertaken to reveal the physical layout of sites in their environments at the time of their use. This would also allow for the changing configuration of the landscape to be both characterised and dated. Yet while geomorphological studies can usually determine the origins and evolution of landscape features over time, a greater difficulty often lies in determining changes relating to the time of people's presence at a site, because this usually entails finer-grained chronologies and a focus on discrete components of the landscape.

It is at the nexus of these temporal and landscape scales that the archaeomorphological study of Chauvet Cave, in the southeast Massif Central region of France, was undertaken. Chauvet Cave has been the subject of interdisciplinary research for over 20 years, since 1998. A major focus of the research has been to document the decorated panels, whose earliest rock art dates to c. 36,000 cal BP and is currently among the oldest known in Europe and across the world, as a step towards understanding why the art was made (Clottes 2001; Quiles et al. 2016; for earlier art in Africa, Europe and Southeast Asia, see e.g. Henshilwood et al. 2009; Aubert et al. 2018 respectively). But other aspects of the archaeology of Chauvet Cave have also featured prominently in the research, and are thought of as critical clues for the cave's Upper Palaeolithic use and significance, including in relation to the art: archaeological and palaeontological remains, sometimes buried, sometimes on the floor, sometimes on the walls, along with the changing configuration of the cave itself, before, during and after human occupation, all need to be investigated so as to determine what people engaged with, and how they negotiated and created their living environments (Delannoy and Geneste 2020).

So far, most of this research has been concerned with the interior of the cave and its palaeo-entrance. More recently, archaeomorphological investigations have tackled the question of when the exterior environment attained its current form, and what it was like at the time of the cave's occupation. The valley below the cave features the entrance of narrow gorges marked by a vast, and spectacular, natural arch (the Pont d'Arc) under which the Ardèche River flows (Fig. 10.1). If this network of gorges and landmark arch existed between 36,000 and 31,000 cal BP, when many of the paintings and stone arrangements in the cave were made, they must have to some degree, and in some ways, acted as reference points for the cave, and thus contributed to the cave's signification for the communities in whose territories it lay. As waypoints and cultural markers the gorges and the arch fronting the cave would also have affected the choice of Chauvet Cave among the hundreds of other, often large cavities that open elsewhere in the deep valley of the Ardèche, although nowhere else, as far as we know, is any cave as extensively decorated or internally marked with artificial installations as Chauvet Cave. Addressing these notions requires researching key features of the contemporary landscape that relate to how the cave could be accessed, its spatial relations to other landmarks, and how the cave was used compared to other nearby sites. In this respect, four salient features of Chauvet Cave's immediate surroundings are evident: the Pont d'Arc archway, the abandoned river meander at the base of the cliff (Fig. 10.1a–b), a natural ledge along the cliff that leads directly to the cave entrance (Fig. 10.1c), and the cave entrance itself.

The question remains as to the morphological evolution of each feature, and how to date their origins and transformations. Although a prominent feature of the landscape, the Pont d'Arc archway cannot easily be dated, as its datable components eroded away as it evolved. Emphasis has therefore been placed on the terraces deposited by the Ardèche River, how and when they developed in articulation with the Combe d'Arc meander. The abandonment of the meander marks when the Ardèche River began to flow through the arch. Dating the last alluvial sediments to be deposited in the now-abandoned meander thus makes it possible to date the beginning of the landscape that we see today (Genuite et al. 2021a).

Three terraces of varied elevations relate to the Ardèche River's alluvial history and to associated palaeoclimatic cycles. The highest (+30 m above the current riverbed) represents an ancient river level that would have risen above the top of the bridge of the Pont d'Arc archway. The intermediary level (+15 m) relates to a time when the Combe d'Arc meander was still an active channel of the Ardèche River; a layer of river pebbles has been identified through outcrops and subsurface Electrical Resistivity Tomography (ERT) in the now-abandoned meander. The lowest level (+8 m) is not observed inside the Combe d'Arc meander, indicating that the most recent perennial water flows along the Combe d'Arc meander are associated with the intermediary level (+15 m). That level dates to 124,000 ± 16,000 years ago (at 95% confidence), as determined by Electron Spin Resonance (ESR) ages on buried alluvial sediments: the cessation of flow along

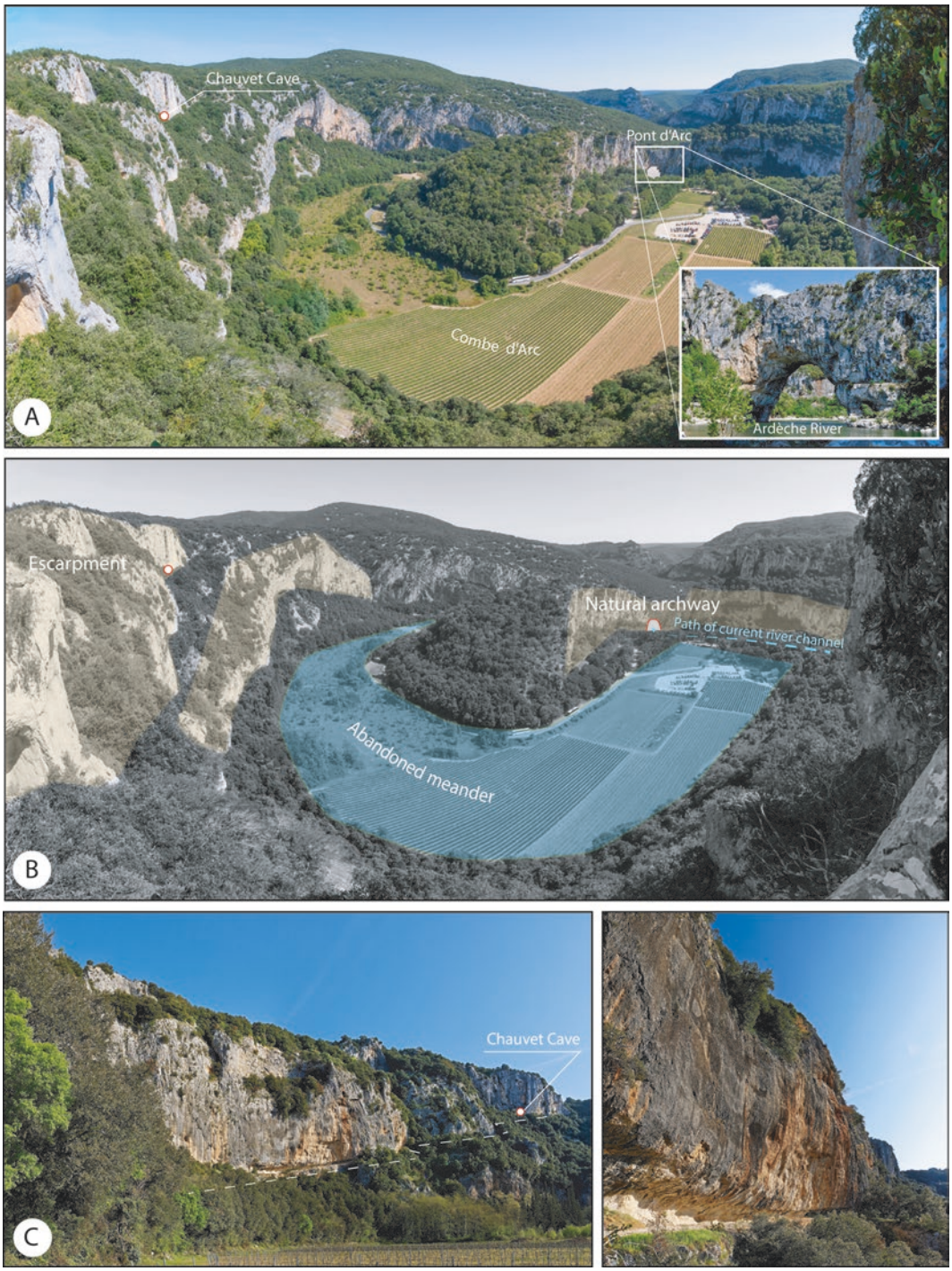

Fig. 10.1 Chauvet Cave in its environmental setting. (**a**, **b**): The cave's cliff-line overlooking an abandoned meander of the Ardèche River, and the Pont d'Arc archway through which the river flows today. Photo and artwork by Jean-Jacques Delannoy. (**c**): The long ledge in the rock that serves as a pathway at the base of the cliff and that leads to the Chauvet Cave entrance. Photos by Stéphane Jaillet

this part of the Ardèche River channel is associated with the opening of, and flow of the river through, the Pont d'Arc archway. This chronological time-line establishes that the arch has been a visually dominant feature of the Chauvet Cave landscape since c. 124,000 years ago, well before the first human entries into the cave (Fig. 10.2).

Archaeomorphology applies geomorphological methods, three-dimensional (3D) imagery and geochronological methods to archaeological questions, allowing researchers to determine that at the time of Chauvet Cave's occupations, the broad topographic features of the surrounding landscape were similar to today's, albeit with a different vegetation

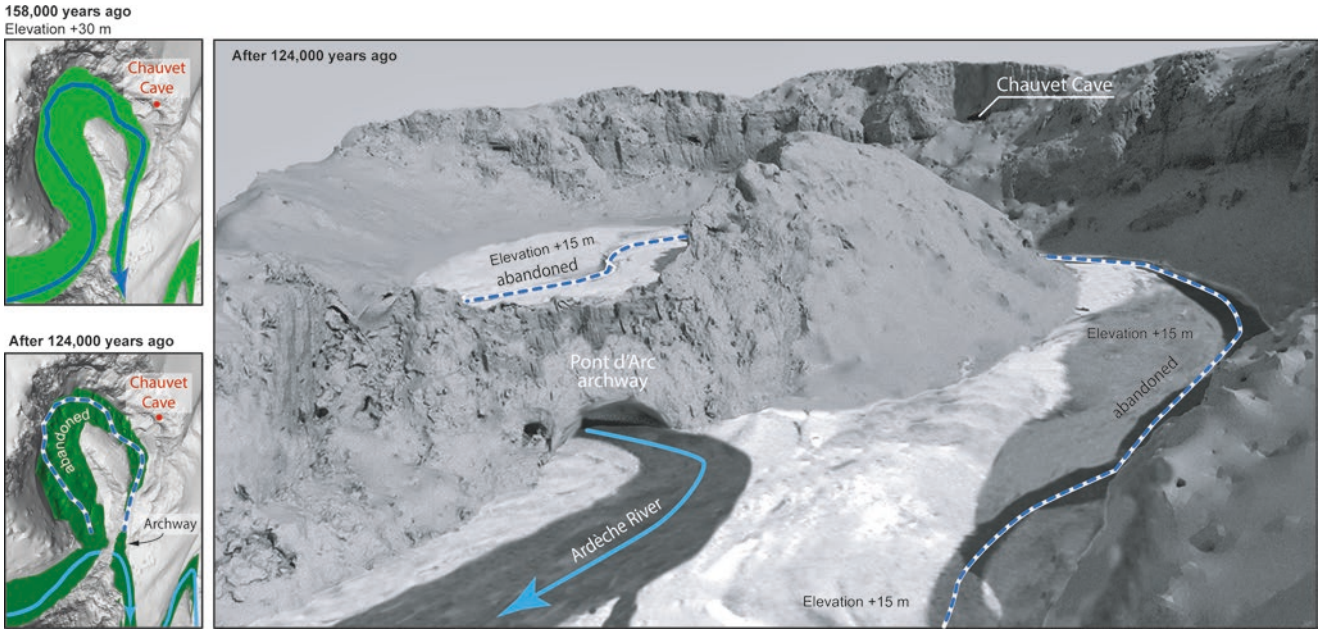

Fig. 10.2 Evolution of the Ardèche River's gorges to the south of Chauvet Cave and relative to the opening of the Pont d'Arc archway. Upper left Upper alluvial level at +30 m. Lower left: Intermediate alluvial level at +15 m, representing the end of the severance of the Combe d'Arc meander and commencement of the opening of the Pont d'Arc archway. Right: Reconstruction of the landscape 124,000 years ago. At the time of Chauvet Cave's first frequentations, around 36,000 cal BP, the landscape was similar, although by then the Ardèche River had stopped flowing along the Combe d'Arc meander, exclusively passing through the Pont d'Arc archway instead. Artwork by Kim Genuite

cover. This makes it possible to ask why Chauvet Cave was chosen to make its dense and extensive rock art and installations rather than the many other nearby cavities. Does the presence of nearby prominent landmarks feature as waypoints of extraordinary meaning towards a special cave in these choices?

10.3 Determining the Location, Shape and Size of Ancient Cave and Rock Shelter Entrances

Just as understanding the history of now-prominent landmarks is critical to understanding a site's occupational context, so too is understanding the location and configuration of its palaeoentrance(s) at the time of occupation fundamental to understanding its visibility and accessibility. We cannot usually assume that a site's entrance was the same in deep time as it is now, as has been shown for many sites around the world (e.g. Altamira, El Castillo, La Garma in Cantabrian Spain: Arias and Ontañón 2012; Sainz et al. 2000; Chauvet Cave, Cosquer Cave, Aldène Cave, Lascaux, Bruniquel in France: Ambert et al. 2005; Clottes 2001; Clottes et al. 2005; Jaubert et al. 2016; Rouzeau 1978; Cloggs Cave, Nawarla Gabarnmang in Australia: David et al. 2017, 2021; Delannoy et al. 2020). For some of these sites, their current entrances through sinkholes, narrow squeezes, unobstructed passages and so forth can significantly skew our perceptions of access and the contexts and spatial configurations of the archaeological features, thereby affecting also how a site is thought to have been used and socially engaged. It is therefore important to accurately determine the location and geometry of the entrances used by people in the past, as well as the condition and age of their closures or transformations. Recent research at Cloggs Cave (Australia), for example, has made it possible to reconstruct the location and configuration of the palaeo-entrance through which now-extinct Pleistocene megafauna entered the cave between 54,160 and 44,500 years ago. That entrance was significantly larger, more open and accessible, and less convoluted than the one used by people thousands of years later, the closure of the palaeo-entrance through accumulated floor sediments helping explain the hidden nature of the ritual activities that took place within the cave in those later times (David et al. 2021; Delannoy et al. 2020).

Similarly, Chauvet Cave's palaeo-entrance was not the same during the time of frequentation as it is today. Three lines of enquiry relating to the cave's palaeo-entrance are of particular interest: the visibility of the entry from distant vistas; the penetration of sunlight into the cave's first chambers; and the age and cause(s) of its closure.

Chauvet Cave's palaeo-entrance is no longer visible from the Combe d'Arc panorama (Fig. 10.1). Its obscurity was caused by the collapse of the cliff-face above the entry. Geomorphological studies coupled with ^{36}Cl cosmogenic dating of the escarpment, collapse and corresponding cliff

scar have revealed three phases of rockfall, dated to 29,500, 25,000 and 21,500 years ago (Sadier et al. 2012). It is the third collapse, 21,500 years ago, that completely sealed the entrance of the cave from medium-sized (e.g. canids) to large fauna and human access, and that caused it to become invisible from the surrounding landscape.

Today, the Pleistocene entrance remains blocked by a scree cone (Fig. 10.3). The presence of this scree makes it difficult to imagine the Upper Palaeolithic entry-way: was it prominent, chaotically strewn with rock debris, large and open? Geomorphological clues on either side of the scree cone, coupled with 3D visualisation modelling of both the parts and of the whole—including traces of the ceiling's outline, sections of visible wall, floor spaces etc.—have enabled an accurate reconstruction of the entrance (Fig. 10.3). Chauvet Cave's Upper Palaeolithic entrance was a clear and defining element of the landscape when its artworks and installations were made and used, until 29,500 years ago (Delannoy et al. 2010). This timing corresponds to the cave's second (Gravettian) and last phase of human frequentation (until its rediscovery by speleologists in 1994), signalling the cave entrance's narrowing and subsequent closure and disappearance from the surrounding landscape.

The reconstruction of the Upper Palaeolithic entrance also raises further questions, particularly as to the penetration of direct and subdued sunlight into the cave. Could a sunlit cave entrance have affected the distribution of paintings in the proximal chambers and passages of the cave, or the pathways followed by people and animals? Cave Bear tracks first appear on the floor near the centre of the Salle des Bauges—the first large chamber after the entry—and, soon after, as scratch marks on the walls. It is these same walls that directed Cave Bears along passages that led to the deepest chambers.

In order to best perceive how daylight entered the cave, the solar path angles, the sun's radiance at the winter and summer solstices, the strength of solar radiation, and the effects of albedo (reflection of incident light) from the limestone walls and floors (limestone and clay clasts) around 36,000 cal BP were all taken into account. Figure 10.4 shows the result. The pattern enables us to better understand the distribution of the rock art in the cave's proximal chambers: all the art panels closest to the entrance are located in permanently dark areas not reached by direct or subdued sunlight. The implication is that even when the Upper Palaeolithic entrance was open and visible from a long way away, the art was not made to be seen in public view, remaining hidden from all but those who entered its darker and deeper recesses.

Knowledge of Chauvet Cave's configuration at the time of its use by people is critical to understanding what the art was all about. The gathering of such knowledge has required dedicated geomorphological study supported by absolute chronometric ages and 3D modelling capable of integrating multiple spatial dimensions (e.g. the shape of the cavities, the entry of light), all informed by archaeological questions.

10.4 Reconstructing Past Passage-Ways in Underground Sites

So far, we have focused on the need to understand a site's external environment and its entry-way and visibility from those surroundings at the time of its frequentation. The same logic can also be applied to another topic and scale of research: that of human passages and journeys within a site. While this question of pathways is rarely asked of most archaeological sites, it has been of considerable concern for larger cave sites with spatially variable archaeological signatures, and thus presumably variable functions (e.g. Cussac, France: Jouteau et al. 2019; Pillar Cave, Australia: Mardaga-Campbell 1986). This question is regularly asked especially in underground sites where travel is more restricted as a result of the absence of natural light and the presence of areas that are difficult to navigate (e.g. the narrowing of passages, presence of sinkholes and wells, seasonal inundations etc.) (Ambert et al. 2005; Rouzeau 1978). Such questions can relate to a range of factors, such as the distances covered underground; the by-passing, or crossing, of steep slopes or deep cavities such as sinkholes; the negotiation of obstacles such as slippery ground or subterranean bodies of water of a range of sizes; and the choice of taken paths. Was there a pattern to human movement in the past, or was it more random depending on the visitor? The answers to these questions are not trivial in understanding the archaeology and, with this, how and why people did what they did at a site in the past: a site can be visited opportunistically on a single occasion, or it can be organised to accommodate regular access to a particular zone. In all these concerns, there are many ways of walking, all social and cultural, and it is these social and cultural approaches that archaeology is interested in (see Ingold and Vergunst 2008). Again, research on such issues at Chauvet Cave is illustrative (Delannoy and Geneste 2020; Delannoy et al. 2012; Monney 2012).

Chauvet Cave is characterised by a succession of large, 30 to 50 m-wide underground spaces connected by narrow passages with, for the most part, relatively flat floors (Fig. 10.4). The more open, large and rather unrestrictive chambers allow for a relative freedom of movement within the cave. But this is a present-day perspective derived from modern electrical lighting and caving equipment. In Upper Palaeolithic times, crossing one of the large chambers with small artificial lamps or torches would not have produced as much light as when travelling along the narrow corridors (where light could reflect off the walls). Nor would it have

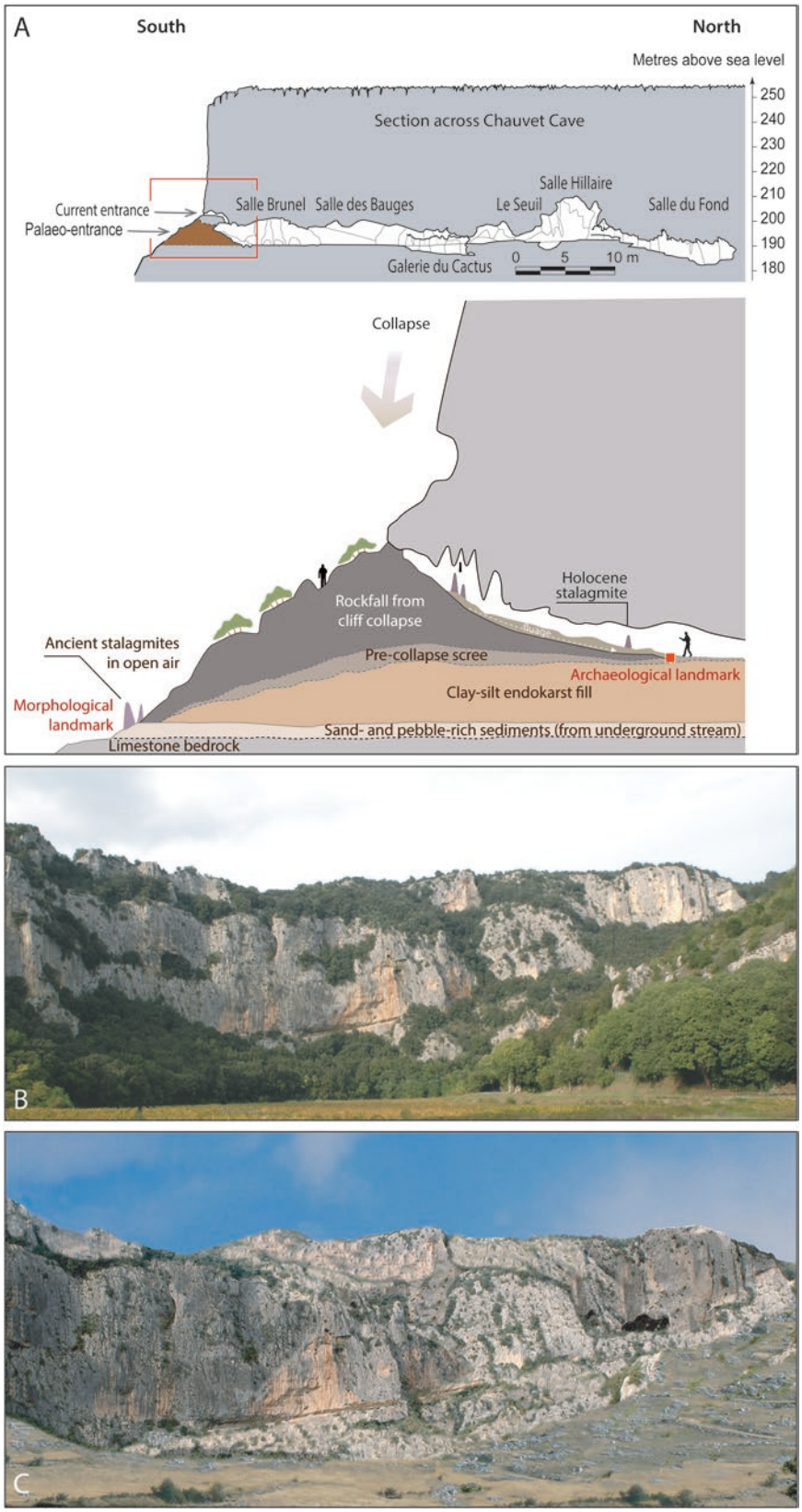

Fig. 10.3 The Chauvet Cave entrance passage and reconstruction of its Upper Palaeolithic entry at the time the art was made. (**a**): Today, showing the scree cone from the cliff collapse that closed the entry-way. (**b**): The current landscape of the Combe d'Arc escarpment (the 'Cirque d'Estre') that led to the now-hidden cave entrance. (**c**): Reconstruction of the Chauvet Cave landscape 36,000 cal BP, showing the prominent cave entrance (dark area near the base of the cliff) towards the right of the image. Photo and artwork by Jean-Jacques Delannoy

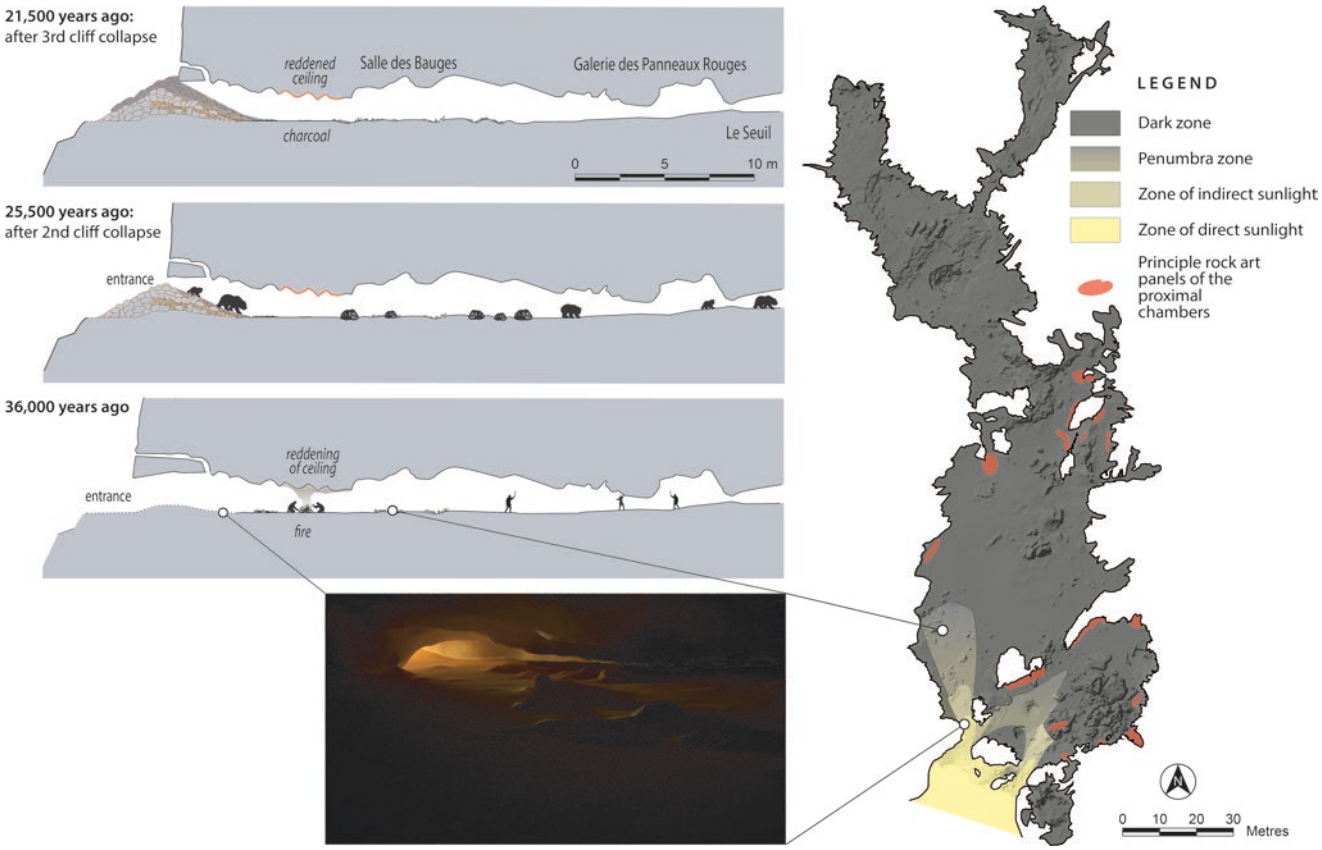

Fig. 10.4 Evolution of Chauvet Cave's entrance and proximal cavities, and penetration of daylight at the start of the Salle des Bauges 36,000 cal BP, before the collapse of the overlying cliff. Plan and cross-sections by Jean-Jacques Delannoy; 3D light model by Kim Genuite

been possible to fully illuminate underground spaces such as is possible today. At Chauvet Cave, research has thus paid particular attention to archaeological traces of the paths that people followed when in the cave. These are not abundant, but enough has been preserved to obtain a clear picture of how people travelled through the site: some human footprints in the Galerie des Croisillons, one of the terminal galleries; charcoal torch marks on the walls of low passages; upright Cave Bear bones marking the route along the Salle des Bauges. Other than these archaeological traces, further clues have been erased by subsequent water run-off, the passage of Cave Bears, or, more commonly, covered over by speleothems such as flowstone and stalagmites. The high-resolution mapping of the entire cave (at a scale of 1:50) has made it possible to reconstruct the floor as it was at the time of the cave's Upper Palaeolithic use (Delannoy and Geneste 2020) (Fig. 10.5). Sediments on the floor were then more clayey and slippery than they are today. This is noticeable along some steep passages, where multiple Cave Bear slip-marks are evident (Fig. 10.6). This reconstruction of floor conditions at the time of human frequentation reveals that corridors and passage-ways that are now covered by speleothems were then very wet or otherwise impractical for human passage, causing detours not evident from today's cave conditions. The study of such obstacles, coupled with ceiling heights, makes it possible to find ancient pathways whose use is confirmed by the presence of charcoal torch marks on walls and low ceilings.

The high-resolution archaeomorphological mapping of the cave has made it possible to identify a number of otherwise ambiguous anthropic structures on the floor, including some erected to navigate the pitch-black chambers and corridors. One example is a 50 cm-long × 35 cm-wide × 15 cm-thick rock slab artificially placed against the bank of a 60 cm-deep depression in the cave floor (Fig. 10.6). The slab was manually extracted from a suspended stalagmitic floor and transported over 30 m to its current location. Petrographic analysis and digital refitting of the slab onto its originating scar in the stalagmitic floor through the 3D model confirms the origin of this Upper Palaeolithic step as an artificial construction. It is of interest to note that the axis of the pathway that leads to the step is slightly depressed through compaction as a result of the repeated passage of both people and Cave Bears. This part of the cave also contains other human

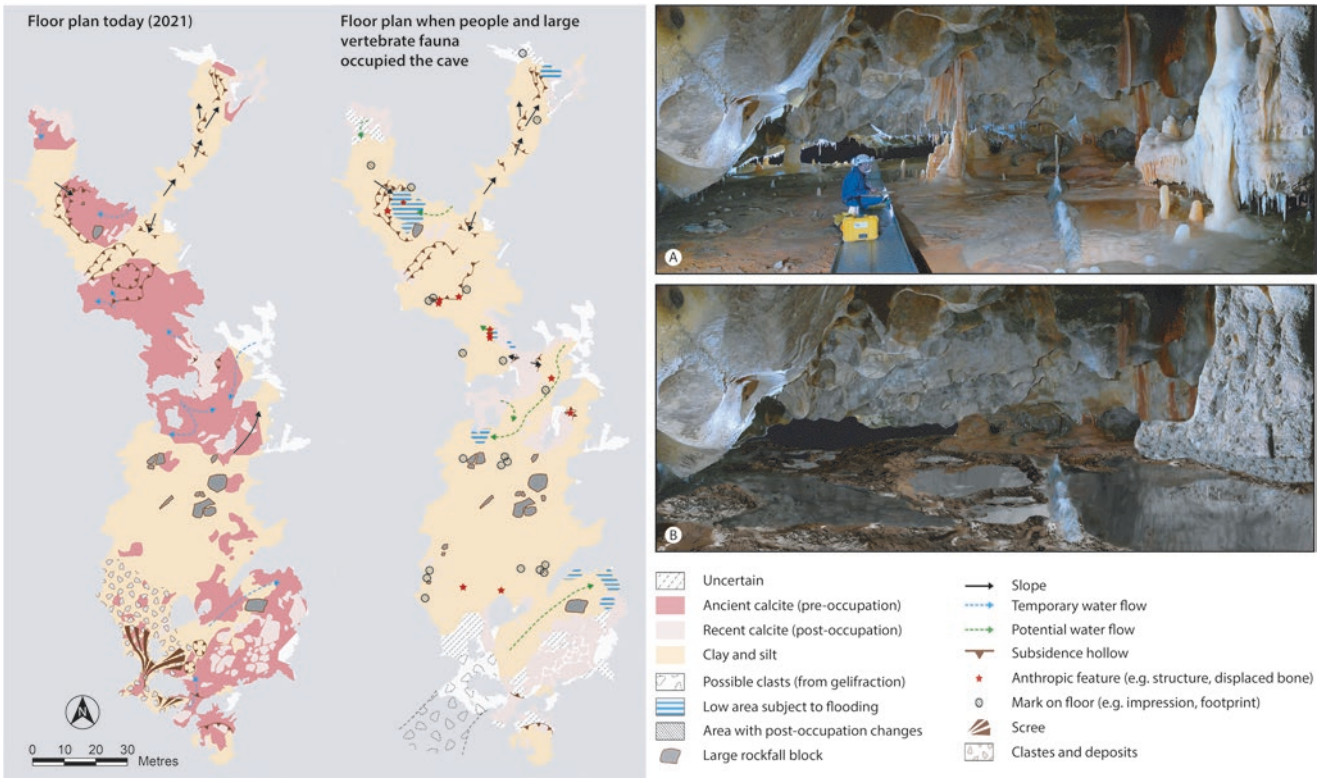

Fig. 10.5 Floor conditions at Chauvet Cave today and 36,000 cal BP. Cartography by Jean-Jacques Delannoy. (**a**): The Galerie du Cierge today. (**b**): The Galerie du Cierge 36,000 years ago. Photo by Stéphane Jaillet, reconstruction by Yago Delannoy

constructions: sets of slabs from the same suspended stalagmitic floor as the step noted above; an alignment of blocks whose joints were sealed by clay fill, beyond which water ponded as it flowed from one of the few sources of water in the cave (Fig. 10.5a). It is nevertheless difficult to infer with certainty the intentions of the people who built the damming wall, because a result of its construction, intentional or not, is the diversion of part of the waterflow to the NNW side of the chamber, rendering less humid the SSE side where people could then more easily walk.

The combined archaeological and geomorphological study of the floor of the cave around specific research questions—here concerning ancient pathways taken by the site's occupants and the nature and layout of artificial installations—makes it possible to consider the art in the cave in relation to routes of travel and how people arranged space in ways that enabled them to negotiate constraints such as large spaces unable to be adequately lit, obstacles such as water ponds and slope failures, and cross-roads between chambers, and thereby to structure social activities within the cave. Such an approach to the study of the spatiality of rock art sites has also been employed elsewhere, and merits broader application globally (David et al. 2017; Delannoy et al. 2017; Jaillet et al. 2018; Monney and Jaillet 2019).

10.5 Reconstructing Rock Walls and Determining the Age of Their Paintings

Having begun with a wider vision, from the external environment increasingly focusing on the interior of Chauvet Cave, we now apply archaeomorphology more specifically to decorated walls. For this we shift to another site: JASRN-124 site 3 on the Arnhem Land plateau, Northern Territory, Australia (Barker et al. 2017). Unlike Chauvet Cave, JASRN-124 site 3 is an open-faced, mushroom-shaped rock shelter with its own analytical challenges: here there are numerous paintings on the vertical walls, the most prominent of which, and the reason as to why the site was studied, is a large painted bird thought by its recorders to be a representation of the Pleistocene giant bird, *Genyornis newtoni*, thought to have gone extinct more than c. 40,000 years ago (Gunn et al. 2011). The rock panel that houses the large bird painting was formed when the overhang collapsed, creating a large, vertical scar on the rock face. Determining precisely when the overhang collapsed, or how old the paintings are, through more standard approaches such as cosmogenic dating of the now-collapsed palaeo-overhang that once covered the now-painted wall, or excavating below the fallen boulders so as to

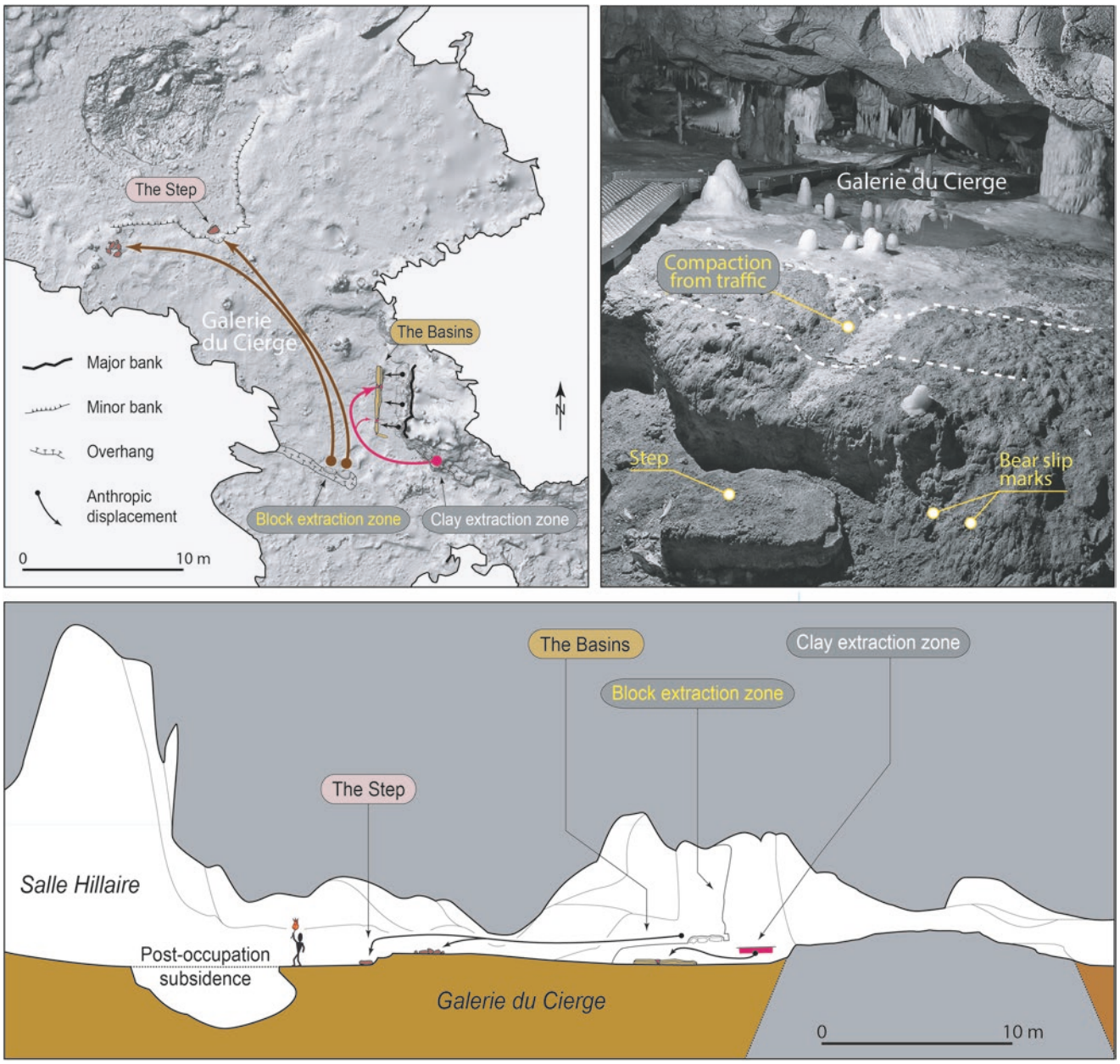

Fig. 10.6 Anthropic installations in the Galerie du Cierge. Photo by Jean-Michel Geneste, plan and cross-section by Stéphane Jaillet, concept and graphic by Jean-Jacques Delannoy

retrieve buried fragments of use-worn ochre and other archaeological traces of occupation, was problematic as neither the boulders nor the rock face could be damaged due to their cultural significance, and excavation below the painted wall could not be undertaken due to the presence of large blocks carpeting the entire floor below the remnant overhang. The major question at this site was to determine when the overhang had collapsed, to work out whether the painting, which could only have been painted after the present rock face had formed, was compatible in age with the presence of *Genyornis* on the continent (for palaeontological details of *Genyornis*, see e.g. Murray and Vickers-Rich 2004). The three analytical obstacles were an inability to: (1) directly date the mineral pigments; (2) date their extremely thin underlying and overlying crusts (Hoffmann et al. 2018; Pike et al. 2012; Plagnes et al. 2003; Slimak et al. 2018); and (3) excavate below the boulders to find and stratigraphically date paint drops or other contextual archaeological deposits (David et al. 2017, 2019). However, another approach enabled the age of the overhang collapse, and with this the age of the present and now-painted surface, to be accurately determined.

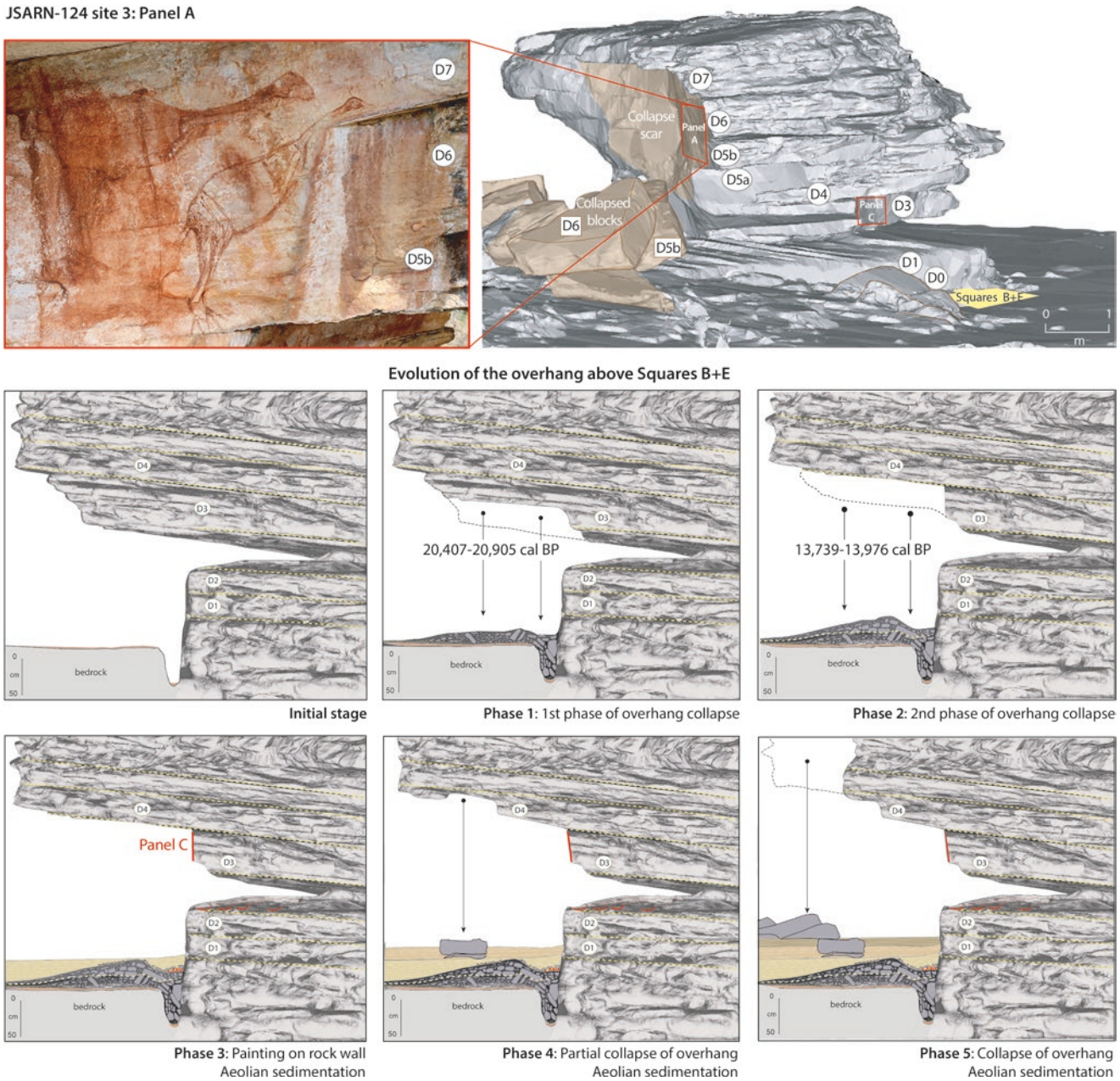

Fig. 10.7 JSARN-124 site 3 (Arnhem Land, Australia) and location of rock art Panels A and C. The six cells in the lower part of the figure show the geomorphological evolution of the southern edge of the rock shelter, as based from 3D mapping of the rock stack and the buried rockfall revealed by the archaeological excavations in Squares B + E. (After Barker et al. 2017)

The ability of archaeomorphology to resolve the archaeological questions posed of JASRN-124 site 3 revolves around its ability to provide information not so much on the archaeological deposits, as on the physical evolution of the site (e.g. Barker et al. 2017; David et al. 2017, 2019). Two archaeological excavations undertaken at JASRN-124 site 3 are particularly pertinent to this question: Squares B + E and Square D (Fig. 10.7). Both excavations were set below overhangs of the same geological strata whose collapse resulted in the formation of the rock scar that was subsequently painted with the large bird thought to be of *Genyornis* (Panel A) (Fig. 10.7). Petrographic and lithological characterisation (thickness, granulometry etc.) of the eight major quartzite strata (D0 at the base to D7 at the top) of the rock outcrop enabled each to be differentiated, and to thus determine from which part of the outcrop each fallen block came. Coupled with the buried soft sediment layers revealed by the archaeological excavations, individual rockfall events could be identified and dated by stratigraphic association. The accelerator mass spectrometry (AMS) radiocarbon dating of individual

pieces of charcoal buried under and over the partially or completely buried collapsed blocks made it possible to fix in time a sequence of overhang collapses, and thus to determine when the extant walls were created. The paintings on those walls must necessarily be of the same age or younger than the rock collapses that created their rock surfaces. Two major rockfall events were thus dated. The first took place around 20,407–20,905 cal BP, the second around 13,739–13,976 cal BP. The second of these overhang collapses is the critical one, for it is then that the extant rock surfaces were created and subsequently painted (cf. Panels C and D of the western face of the site), including the rock wall with Panel A that contains the large bird painting (Fig. 10.7). This age determination allows us to conclude that rock art Panels C and D are younger than 13,739–13,976 cal BP and, therefore, not as old as what had been expressed by some researchers upon the discovery of what appeared to be a painting of the extinct bird *Genyornis*. Indeed, the large bird painting on Panel A is positioned adjacent to another bird and macropod paintings and to a particular kind of red hand stencil known as '3MF' (3 middle fingers held together, the thumb and little finger splayed). 3MF hand stencils are typically associated with Dynamic Figures across much of the Arnhem Land plateau, a particular style of anthropomorph long thought to date to the terminal Pleistocene or very early Holocene. The post-13,739–13,976 cal BP age for the entire panel is consistent with this. Also consistent is a comparable age for zoomorphs on Panel C painted in similar style to the two bird paintings on Panel A. The determination through archaeomorphology of a maximum age of 13,739–13,976 cal BP for all these paintings and hand stencil, both on Panel A and Panel C, is coherent and consistent with the previously theorised approximate age for this painting style, estimated to have been extent in Arnhem Land c. 10,000 to 12,000 years ago (Taçon and Brockwell 1995) (for further details and images of the JASRN-124 site 3 paintings and 3MF hand stencil, see Barker et al. 2017: 491–92).

The results of the excavation against the west wall of the site cannot be directly applied to the northern side where the large bird painting of Panel A occurs, because the presence of the large blocks at the foot of the northern wall do not allow the buried horizons to be spatially traced to the critical northern areas. To get around this problem, the morphology of the extant exposed walls and boulders, and that of the blocks revealed by the archaeological excavations, were incorporated in a 3D model of the site. On the digital model, special attention was paid to the collapsed strata that resulted in the creation of the extant wall subsequently painted with the large bird on the northern side of the site (Panel A), and how they interlocked with the corresponding collapsed strata on the western side of the site where both geomorphological and chronological details were available. This work of connecting the morphogenesis of one part of the site (the west and northwest) with another (the north) enabled the broader palaeo-morphology of the rock outcrop to be determined, and the age determination of Panel A to be constrained (Figs. 10.8 and 10.9). The paintings in Panel A cannot be older than 13,739–13,976 cal BP, and cannot therefore be of the long-extinct *Genyornis newtoni*.

Finally, we ask why on the northern side of the site, the collapsed overhang stands high above the present ground surface, whereas it is hardly visible above ground on the western side where it is largely buried under sand. This disparity has two causes: (1) major differences in the amount of rockfall, including the mass of individual boulders; and (2) unequal degrees of aeolian sedimentation on the two sides of the rock outcrop. On the western side, rock strata D3–D4 and D5a have fallen: part is buried (as revealed by the excavations in Squares B + E and D), and the rest is flush with the present ground surface. On the northern side, the entire overhang, consisting of rock strata D4–D5–D6–D7, totalling close to 3 m thick, collapsed. Aeolian sedimentation subsequently covered large parts of the floor of the site. Given the direction of prevailing winds, the sand settled against the leeward face: the western side of the rock outcrop.

The example of JASRN-124 site 3 is particularly instructive for the ability of archaeomorphology to resolve specific archaeological questions concerning the history of a site's morphology, in this case concerning the age and, with this, the taxonomic attribution of a large bird painting originally thought by some researchers to be the extinct megafauna *Genyornis newtoni*. The articulation of archaeological with geomorphological methods and evidence to answer a united question enabled both a reconstruction of the site to be made for the terminal Pleistocene, and a better understanding of the progressive development of the rock outcrops' painted surfaces.

10.6 Conclusion

The archaeology of rock art is in a strange position: the art itself is usually what captures the researcher's imagination, so much so that research on the motifs' age (e.g. Finch et al. 2021), manufacturing techniques and *chaînes opératoires* (e.g. Vergara and Troncoso 2015), paint formulas (e.g. Chalmin and Huntley 2018), style or design conventions (e.g. Taçon et al. 2020), spatial patterns within and between panels (e.g. Gunn 2018), symbolism (e.g. Solomon 2018) and other such concerns with the art often overwhelm the research, at the expense of critical details of the site and its broader landscape setting—aspects of central relevance for understanding how people *engaged* with the art. Those details relating to the art's emplacement offer considerable information for better understanding the art's social and environmental contexts (and therefore they help better under-

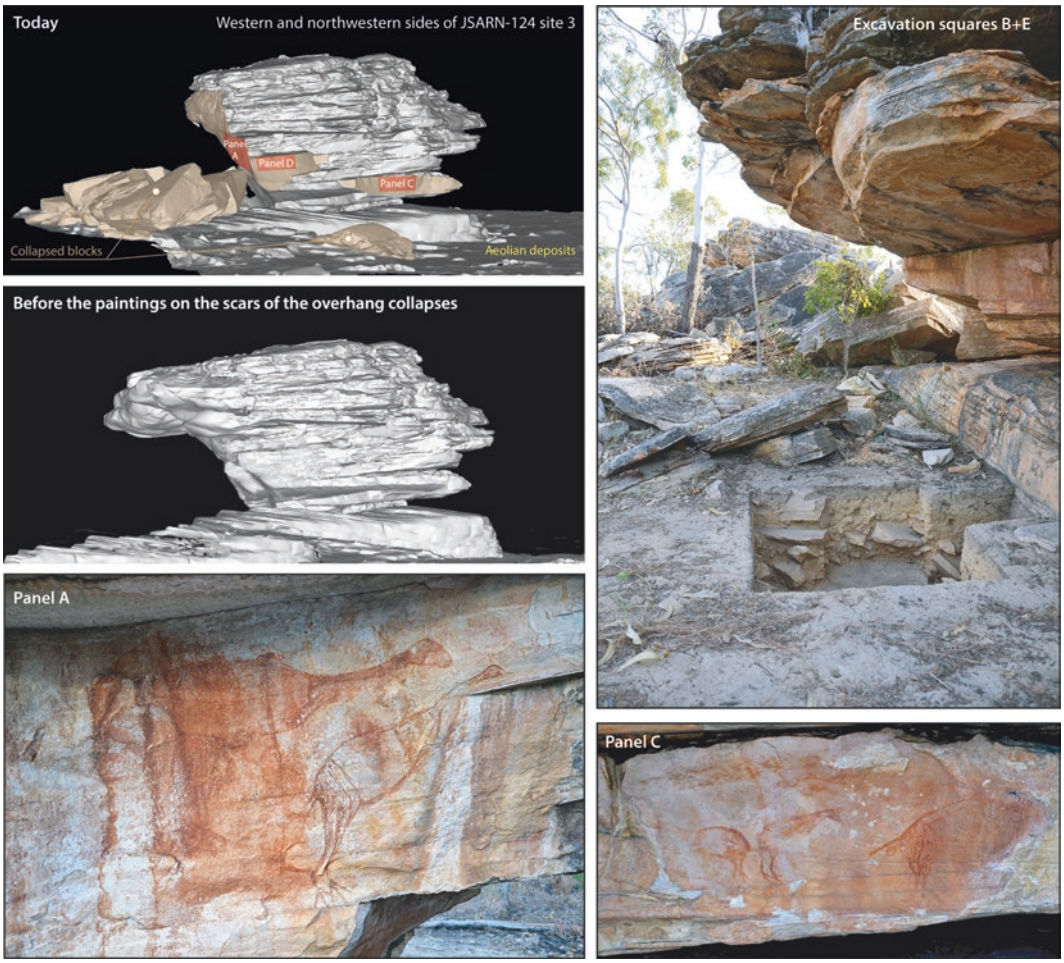

Fig. 10.8 JASRN-124 site 3. Top left: the northern and western sides of the site as it is today. Middle Left: Reconstruction of the collapsed overhangs on the northern and western sides as they were prior to the paintings. Top right: Excavation Squares B + E (foreground), with Square D in the northwestern corner and closer to the large bird painting, hidden from view by surface boulders. Bottom right: rock art Panel C above Squares B + E. Photos and graphics by Jean-Jacques Delannoy

stand the art itself). It is the place—the site and its surrounding landscape—that positions the art in a social and ontological geography. That is, place positions human activities and how people organise themselves socially and culturally in meaningful territories. An archaeology of place as it relates to rock art thus requires more than an 'archaeology of art' narrowly defined. Archaeomorphology is well placed to address this aspect of the past.

The examples presented in this chapter illustrate how rock art can be explicitly considered in relation to its contemporary landscape *through evidence* at multiple, articulating spatial scales. Once on the wall, the art establishes a new setting for future perceptions and social activities, including how a rock surface, site and broader setting will subsequently be engaged. It is thus important to determine not only the nature of artworks at specific points in time, but also of the rock surfaces, passage-ways, site entrances, and landmarks, for each falls into the visual and existential purview of 'the rock art site' and thus affected how and why people engaged with the site and its art. Let us not forget in this context that people do not, and did not, simply passively place art on pre-existing surfaces. Rather, sites and surfaces formed active components of the lived, social and ontologically and experientially meaningful world. In engaging with already-meaningful places, people both actively modified both rock surfaces (e.g. by preparing rock walls by scraping before painting (Delannoy and Geneste 2020)), site configurations (e.g. by removing rock pillars and ceiling rock layers (Delannoy et al. 2017)) and their environments (e.g. by positioning standing stones as place-markers visible over considerable distances (e.g. Gunn et al. 2012)). Archaeomorphology, along with other landscape disciplines such as palaeoecology, are well placed to contribute meaningfully to these aims, by understanding not just how things were, but how

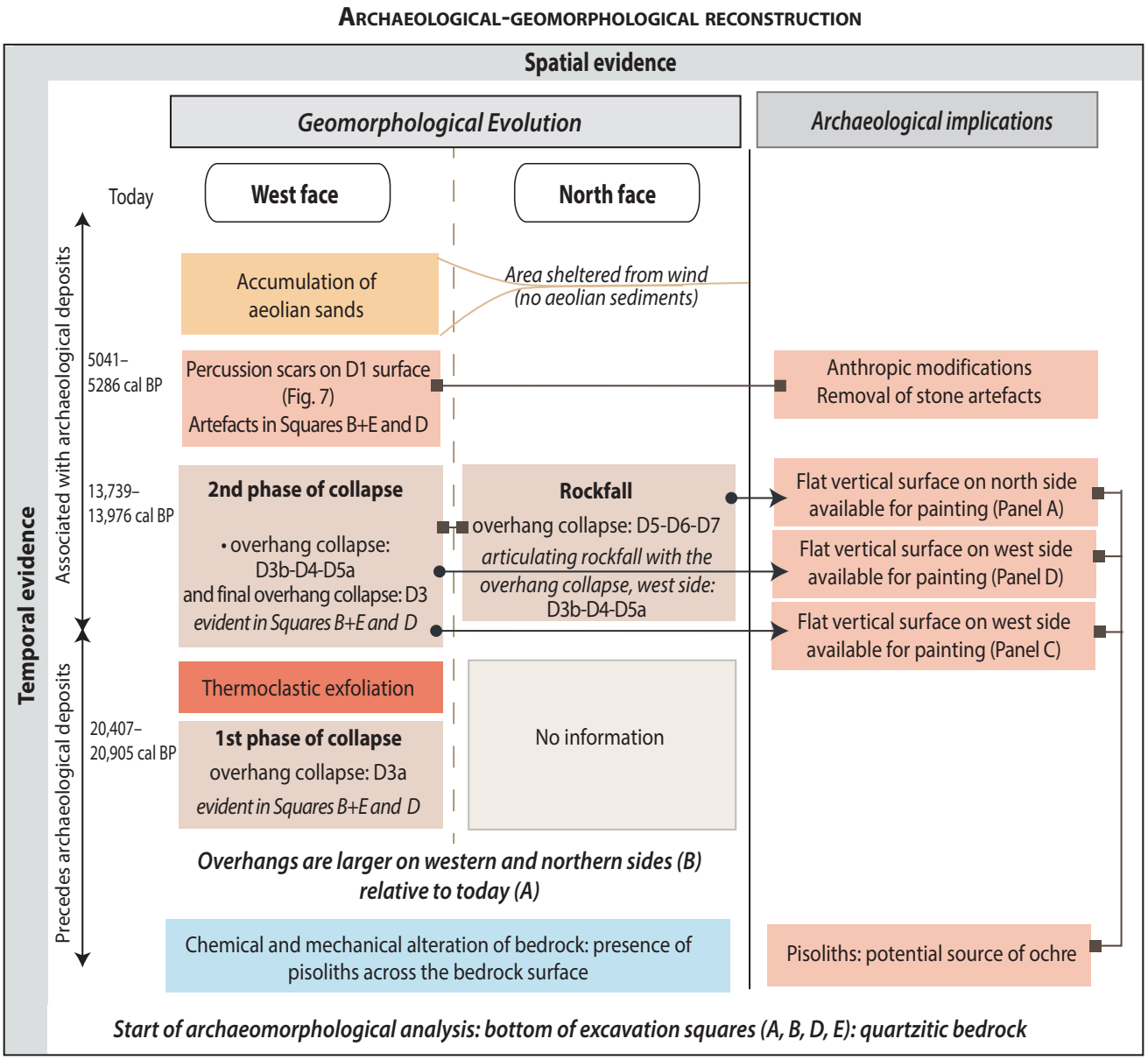

Fig. 10.9 Synoptic chart of archaeomorphological investigations at JASRN-124 site 3

they *became* and continued to transform through time, so as to improve understandings of the archaeological (social) and environmental contexts of the art as positioned in places we wish to better understand.

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11 The Earliest Dated Pictures in the Dispersal of Psychologically Modern Humans: A Middle Paleolithic Painted Rock Shelter (C. 45KA) at Wadi Defeit, Egypt

Whitney Davis

Abstract

The paper reports the discovery in 2018 of a Middle Paleolithic painted rock shelter (dubbed "The Hunter's Shelter") in the remote upper reaches of the Wadi Defeit in far southeastern Egypt (just north of the climatologically significant latitude 22° N) by a team from the University of California at Berkeley. The paintings depict two elephants being attacked by encircling human beings wielding spears, in dangerous procedures documented by ethnohistorical accounts of indigenous elephant hunts in central Africa. One of the elephants is partly superimposed on a running or leaping lion (not in scale with the figures of humans and elephants), which might have been made in an earlier episode of painting. The paintings can be dated in three ways: acacia gum inserted into gouges in one elephant's belly yielded calibrated radiocarbon dates of c. 45 ka; the lion was partly covered by an oxolate crust dated by Uranium-Thorium decay to 60–45 ka; and windswept sand that partly covered the paintings yielded OSL dates of 45–40 ka. At present, the shelter is the earliest known dated painting site in the global prehistoric record. In addition to reporting the motivations and parameters of the project and its preliminary results, the paper discusses the "naturalistic" and "realistic" elements of the configurations and evaluates the regional MP cultural affiliations of the site and the people who likely made the paintings. It explores the idea, given the shelter's location, that the makers were a Middle Paleolithic population of anatomically and "psychologically" modern humans who moved out of central East Africa through the mountains and wadi systems of the western Red Sea coast in a wave of dispersal dated to c. 75–45 ka; ultimately some of them left the continent altogether by way of land and/or sea travel to the Levant and/or Arabia at the tip(s) of the Red Sea, eventually populating much of the world with modern humans. The second half of the paper considers methodological and theoretical issues raised by the empirical findings of the project, speculating that picture making played a role in effecting the global dispersal of psychologically modern humans, presumably by helping them to remember and communicate lifeways and to understand and adapt to new environments and ecologies as they moved into them, though these possibilities remain to be investigated in detail on a global scale.

Keywords

Depiction · Egypt · Middle Paleolithic · Modern humans · Naturalism · Pictoriality

***

Wadi Defeit (alt. Wadi Dūfāyt; lat. 22°13′18″ N, long. 34°9′50″ E) is a tributary of the massive Wadi Allaqi in the eastern desert (Nubian Desert) of the Arab Republic of Egypt, a system of ancient river- and streambeds that arises in the Red Sea Mountains 50 km north and south of latitude 22° N and debouches in the Nile valley 200 km to the east and about 180 km south of the city of Aswan (Figs. 11.1 and 11.2). One of the most remote regions of Egypt, Wadi Defeit lies immediately north of the still-contested 1902 British administrative line between Egypt and the Republic of Sudan. (The political boundary lies directly along latitude 22° N). Over its approximately 70 km length, it falls approximately 260 m from its origins (at heights of approx. 600 m above MSL) in the western Red Sea Mountains to the Wadi Allaqi (at 360 m).

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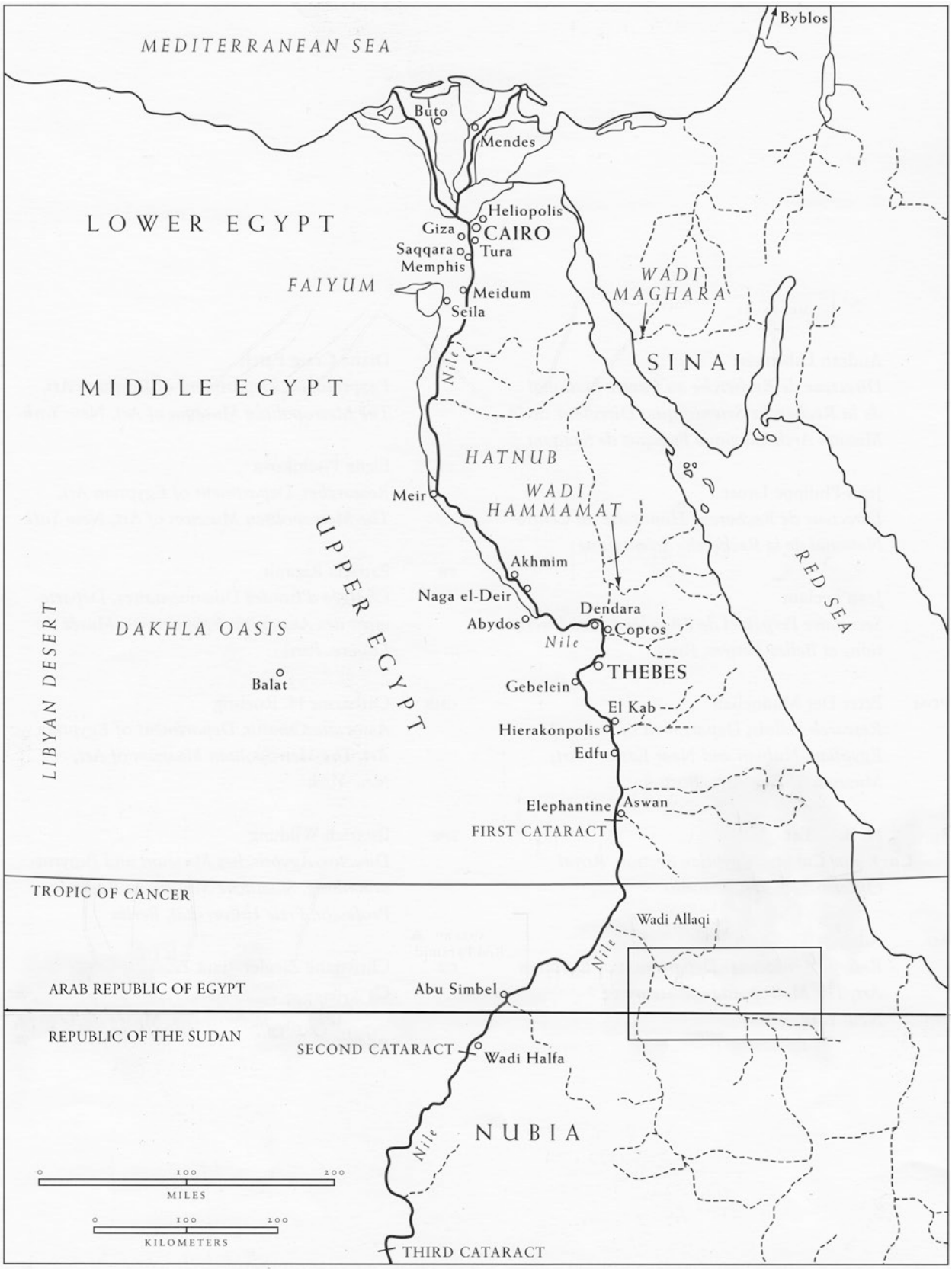

Fig. 11.1 Map of Egypt and Sudan, indicating the area (in the rectangle) mapped in Fig. 11.2

Fig. 11.2 The Wadi Defeit area of the eastern stretches of Wadi Allaqi system. The location of the Hunter's Shelter at the upper end of a streambed feeding into the wadi is marked with a circle. Both the administrative line and the political border between Egypt and the Sudan are indicated. Topography and elevations derived from the current United States high-altitude survey

At present, the area is sparsely traversed by Beja Bishariin people, a long-established nomadic pastoralist "Bedouin" ("desert dweller") group who have recently reoriented their economy toward seasonal employment around Aswan at the head of Lake Nasser in southern Egypt and northern Sudan, which also affords medical and educational opportunities. Indeed, the eastern desert territories of the Bishariin have been substantially depopulated in the last three generations (Krzywinski and Pierce 2001).

In ancient times, the Wadi Allaqi system had been penetrated among others by military forces serving the Egyptian pharaoh Amenhotep III in the New Kingdom (c. 1375 BCE) seeking control over gold sources and gold mining in the "land of Wawat" (as the Egyptians named the vast desert region around the Wadi Allaqi and Wadi Gabgaba systems)—a resource exploited continuously from Early Dynastic times at the beginning of the third millennium BCE (if not before) through the Roman and Islamic periods and continuing into the present day (Klemm and Klemm 2013). However, the Wadi Defeit area of the far eastern reaches of the Wadi Allaqi system evidently never yielded possibilities of productive gold extraction—the nearest cluster of ancient mines lies on the coastal side of the Red Sea Mountains 100 km to the east—and consequently the succession of powerful states in northeast Africa and the eastern Mediterranean paid little or no attention to it.

In the twenty-first century, increased scientific interest in the archaeology of the eastern deserts of Egypt and the Sudan has included research along the 1000 km-long north-south "Korosko Road," which crosses the Nubian Desert from the Aswan area to Khartoum (Davies 2014), and research focusing on Roman activities along the eastern flanks of the Red Sea Mountains around the port city of Berenike as well as along the east-west desert roads connecting it to the Nile valley (Sidebotham and Gates-Foster 2019). But in the wide area around Wadi Defeit, archaeological investigation has been minimal, including the prehistoric archaeology that has been active in northeastern Africa since the 1930s and which greatly expanded during the salvage campaigns instituted in the 1960s in response to the construction of the new Aswan High Dam and consequent formation of Lake Nasser, which flooded Wadi Allaqi more than 50 km inland from the former riverbed.

From 2015 to 2018, a team from the University of California at Berkeley carried out exploratory investigations in the Wadi Defeit. Initially we were motivated partly by an interest in building on a previous anthropological study of contemporary Bishariin botanical knowledge of eastern desert flora specifically in the Wadi Allaqi system (Kandal et al. 2016; see generally Barnard 2019; Barnard and Duistermaat 2012; Sadr 1991). We planned to explore the complementary issue of Bishariin local knowledge of potentially significant archaeological indices in the present-day desert environment—that is, significant to them (see Barnard 2019; Wendrich 2008, and especially Friedman and Hobbs 2002; Hobbs 2003 for highly suggestive studies). We were especially interested in Bishariin experts' knowledge of and opinions about human activities in "rock shelters." Along the desert roads connecting the Red Sea port of Berenike to the Nile cities of Edfu and Koptos, such shelters have been visited more or less continuously from pharaonic times to the present day by a variety of peoples, both travelers and locals, and frequently they exhibit numerous rock drawings and inscriptions (e.g., see Sidebotham and Gates-Foster 2019, 269–71, for a long-term shelter site with petroglyphs of many vintages, originally described by the pioneering ethnologist Hans Alexander Winkler (Winkler 1938, 10); for the rock pictures of this region of the eastern desert of Egypt, see also Červíček 1974; Judd 2009; Marton and Danyi 2010; Morrow et al. 2002; Žába 1974, 223–42). The practical participation and intellectual contribution of Bishariin and other Bedouin guides and experts has been acknowledged (though perhaps insufficiently) by many Western industrial investors, geological and other scientists, and academic scholars as well as by Egyptian government and cultural heritage officials working in the Nubian Desert, and it was probably essential to the travel of wary non-locals on the ancient desert roads (Sidebotham and Gates-Foster 2019, 70). But to date little attempt had been made to collate Bishariin experts' terms and concepts for what they might perceive as features of the human "prehistory" of their habitat, which extends to an awareness of long-ago Roman (and sometimes even pharaonic) activities.

We set out to survey the upper reaches of the Wadi Allaqi on the western flanks of the Red Sea Mountains in part because early twentieth-century British military maps of the then-Anglo-Egyptian Sudan marked several potentially interesting sites (as "ruin[s]," to be distinguished from known "mine[s]") that did not appear on more recent maps. This area of the Nubian Desert along latitude 22° N due east from Wadi Halfa at the Second Cataract of the Nile had been surveyed by British engineers employed on the railroad rapidly flung by Lord Kitchener's forces across the desert from Wadi Halfa in the north to Khartoum in the south during the empire's drive to quell the Mahdist uprising in the Sudan in the 1880s and nineties and to avenge the death of General Charles Gordon at the Battle of Khartoum in 1884. (Some evidence suggests that the British also contemplated a complementary road or rail line that would cross the eastern desert by way of the Wadi Allaqi over the hills and descend to the small Red Sea port town of Halayeb—one reason why they mapped thoroughly as far east as the Wadi Defeit). In addition, it seemed logical to suppose that the kind of rock shelters in which we were specifically interested would be found on the western side of a range of the mountains on the *eastern* side of which they were already known from Leo Frobenius' expedition in the mid-1920s, which remains only partly published (Červíček 1974; Resch 1967).

In the first season of the project, a painted rock shelter was discovered at the far end of the Wadi Defeit. Due to the unusual importance of this site, the project was reorganized to focus on it in the time available and in two succeeding seasons.

The shelter sits on a ledge at the head of the Wadi Defeit where it emerges from the escarpment at approximately 610 m above MSL, commanding a wide view. Above it, the escarpment rises another 150 m, punctuated by the dramatic height of Gebel Mishbih at 1445 m, the most prominent visible feature in the landscape at 20 km distance. Like many desirable rock-shelter locations and natural "caves" in the eastern desert (e.g., see Winkler 1938, Sites 12F, 13, 15, 18, 24B, etc.), it is well shaded for most of the day. Under an overhang and partly blocked by a rock fall, the opening of the shelter faces almost due west; at its highest, its "ceiling" is approx. 7 m, and a sloped "wall" of smooth sandstone at the rear, approx. 5 m deep, is approx. 7 m at its broadest, sheltering a "floor" of approx. 35 sq. m (unexcavated) (Fig. 11.3).

Excavation of the floor deposits to a depth of 150 cm to bedrock revealed a prehistoric encampment area probably in part devoted to the preparation and conservation or repair of hunting equipment (tools and debitage) as well as the manipulation of parts of animals (all manuports) presumably killed and dismembered therewith. The lithics are datable on typological and other grounds to the late Middle Paleolithic, with closest affiliations to the Middle Paleolithic Site E82–5 in Wadi Kubbaniya, dated to 89 ka (Midant-Reynes 2000, 35–36); to an early industry of the "Buhen Complex" dated to older than 36 ka at Site 6G30 of the University of Colorado prehistoric excavations on the west side of the Second Cataract (Irwin et al. 1968, 109); and to the "Khormusan" industry in the same region, dated to 41–33 ka, a predominantly Levallois lithic assemblage with a distinct preference for burins "suggesting bone, wood, and reed were being worked perhaps to provide hafts for

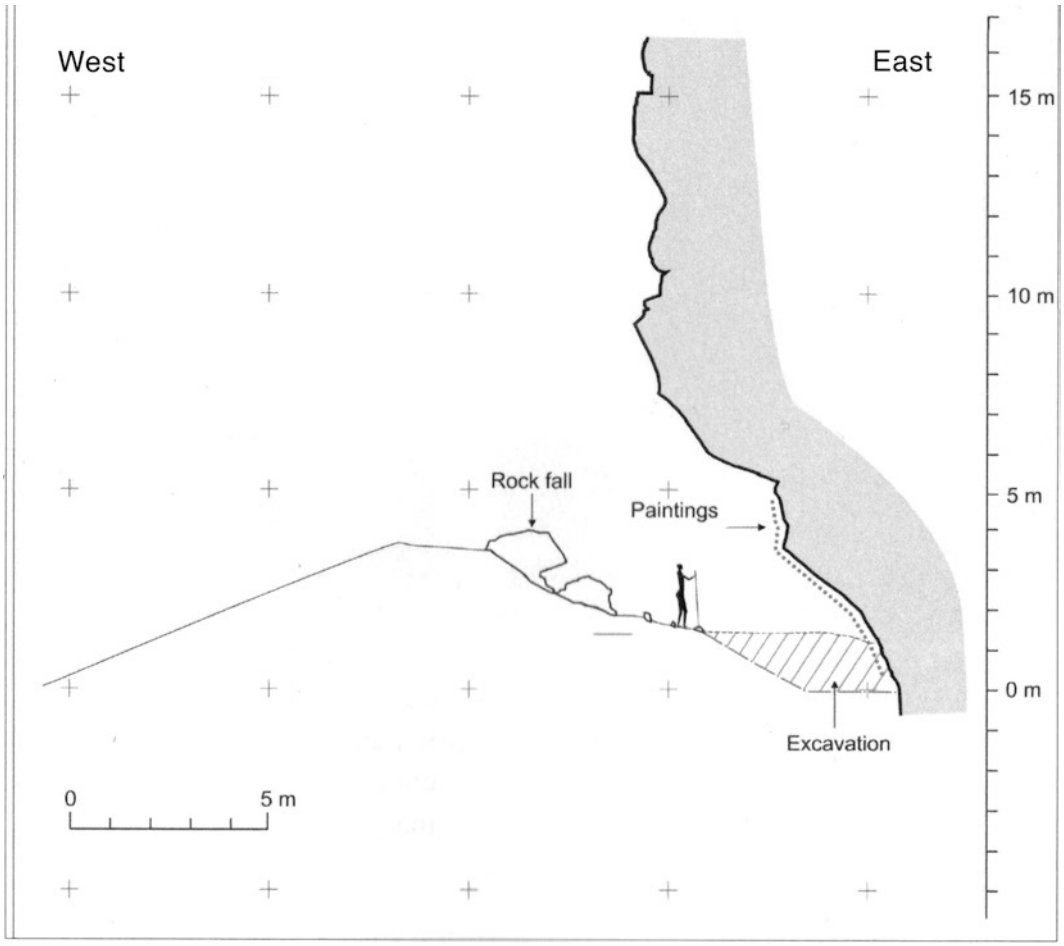

Fig. 11.3 West-east section of the Hunter's Shelter, indicating the location of the paintings in relation to the floor deposits

the many tiny tools" (Midant-Reynes 2000, 34). In addition to the tools and debitage, faunal remains included bones of antelope, gazelle, elephants, and white and black rhinoceros—the latter suggesting grassy and/or brush-covered savannah.

The wall of the shelter bears paintings in red, black, and yellow pigments depicting human hunters attacking two elephants (*Loxodonta africana*) with spears, other human figures, a single running or leaping lion, and a series of red handprints and black and red "hand stencils" and blots. ("Prints" were made by pigmenting the hand and pressing it to the rock, and "stencils" by painting around the hand pressed to the rock, though "hands" can also be painted as well—neither printed nor stenciled). The shelter acquired the sobriquet "The Hunter's Shelter," not only because of the iconography of the paintings but also because Winkler's 1930s study of rock art in the eastern desert of southern Upper Egypt (Winkler 1938) had proposed to identify the "Earliest Hunters" of the region as the makers of some of the rock engravings he documented—a term that has continued to guide concepts of research in the Nubian Desert. In the event, however, it became clear that Winkler's ethnological attribution and proposed date range for his Earliest Hunters (probably fifth and fourth millennia BCE) could not be applied to the Hunter's Shelter.

While the hunters and elephants clearly constitute a coherent narrative composition probably painted all at once by one or a small number of pictorialists, the associations of the other human and animal figures and the other marks with this group (and with one another) are less obvious graphically and iconographically. Still, there might be reasons to consider all the configurations to be thematically interrelated, though this does not imply they were all made contemporaneously or by the same individual pictorialists. The lion's forward paws are superimposed by the left foreleg of the righthand elephant, which must have been painted later—though perhaps in the same day's episode of painting. (Without additional evidence, such as a patina difference at the point of overlay, the evi-

dence of mere superimposition is insufficient for dating beyond the most literal fact of the relative chronology of the under- and overlaid marks; Davis n.d.-a, n.d.-b, but cf. Judd 2008).

The depictions of the elephant hunt are strikingly "naturalistic" in rendering the death-throes of the two rearing beasts as well as "realistic" in specifying the particular action of each individual hunter in the moment of the kill. The daring and dangerous strategies of the assaults on the giant animals are convincingly relayed, and indeed they can be documented among the known techniques of spear-wielding elephant hunters (using stone points) in the periods of Western ethno-historical and ethnographic representation of them (Agam and Barkal 2018).[1]

Still, "naturalism" is not a term that art historians and picture theorists would now prefer, though it is still commonly used by specialists in prehistoric rock arts. It is devoid of analytical purchase in describing the crucial configurative aspect and visual behavior of a picture's necessary construction of "virtual" or "pictorial" space as relatively "continuous" or relatively "discontinuous" with the beholder's real standpoint in the visual space of the actual siting and display of the depiction (Davis 2017a). In theoretical terms, if any configuration is to be a *picture* at all it must always have a definable quotient of "naturalism" conceived as an organization of iconism in or of the configuration toward a beholder's standpoint. "Realistic" representation of the morphological attributes of the represented object(s) is a different consideration. A relatively discontinuous and therefore less naturalistic configuration can be extremely informative about the real features of depicted things, as in the canonical pictorial style of ancient Egypt (Davis 1989), while a relatively more naturalistic continuous pictorialization can readily obscure the very same details (Davis 2017a). At the Hunter's Shelter a relatively naturalistic continuous pictorialization is also adept at relaying realistic features and details of the scene, seamlessly merging quite different capacities of pictoriality.

In the terms of picture-theoretical formal analysis, the volumetrically imagined construction of the beasts' torsional configuration plastically captures the African elephant's characteristic sway-backed gait and posture when moving rapidly, around which the pictorialist(s) arrayed a spatial plotting of the hunters' coordinated assault. This plotting includes a graphically coherent differentiation of the orientations of the depicted hunters' postures and actions by giving them variously rotated aspects on a continuum from fully frontal to fully dorsal. (The "rotation" of a depicted object, and therefore its apparent location in virtual pictorial space relative to standpoint, is a crucial determinant in the construction of its particular species of naturalism (Davis 2017a)). These configurations of circumambulation around the dying prey relay not only the hunters' specific positions relative to the elephant but also their own different "points of view" on it—both orientations established with implicit reference to the "depiction point" or internal pictorial viewpoint constructed by the pictorialist, regardless of the actual viewing standpoint of the beholder (Hopkins 2004).

These configurative and pictorial effects of "virtual pictorial space" (Summers 2003; Davis 2017a) cannot be readily paralleled in the (later) rock art of the eastern and western deserts of Egypt and Sudan, in which rock *painting* is restricted to Gebel Uweinat and the Gilf Kebir in the far southwestern desert of Egypt—such sites as the "Cave of the Swimmers" and "Cave of Beasts" (Almásy 2012; Förster and Scheid 2018) in Wadi Sura in the Gilf Kebir, the "Cave of the Hands" (Darnell 2002, 161), a few sites along the Nile from Seyala to Korosko below the Wadi Allaqi (e.g., Resch 1967, pls. 59–60; Suková 2011), and at only one site in the eastern desert (Winkler 1938, Site 4). (The predynastic [Nagada III] *engraving* of a hunter painted entirely red at Wadi Subeira near Aswan seems to be a unique occurrence (Kelany 2018, fig. 6); it is possible that the paint is a modern addition). And it certainly cannot be paralleled in—perhaps it should be contrasted with—the configuratively "aspective" pictorial style of the canonical drawing and painting of pharaonic Egyptian pictorialists, which is founded on a rigorous "section-contour" construction of the depicted object (Davis 1989, 2017a, sometimes mistakenly called "profile" construction)—a drastic abstraction that eliminates *both* internal depiction points (that is, the spatialized directedness of depicted objects toward an imaginary viewer of the picture plane, to which the actual beholder might accommo-

[1]The visible particulars of elephants continued to attract the attention of northeast African pictorialists. It has been argued, for example, that in the late fourth millennium BCE Egyptian predynastic pictorialists—in drawings on pottery and in carvings in ivory and on slate palettes—differentiated three distinctive elephant morphologies (Bremont 2018). Still, the giant creatures weren't always easy to understand visually, given their wont to congregate under trees in the shade such that even the "big game" hunters and photographers of the nineteenth century were puzzled by their looks and behavior. In our area of the Nubian Desert, some rock-art pictorialists at Gebel Abrak in the Egyptian predynastic period were confused about the elephants' several protrusions—how to identify and differentiate their trunks, tusks, head bumps, and ears (Resch 1967, 55)—though other pictorialists were careful to lay out the trunk, tusks, and ears in different orientations on the plane, suggesting that they were concerned for zoönomic specificity (Winkler 1938, pls. 27.2, 28.1, 31.2). Later, as represented at the Temple of Musawwarat in the first millennium BCE the great Meroitic god Apedemak is shown leashing both an elephant and a lion, avatars of his divine kingliness and emblems of his absolute mastery. And still later, the Roman overlords exported elephants from the Red Sea ports, though by then the animals were extinct in the vast areas of the northeastern continent of Africa in which the pictorialists of the Hunter's Shelter had formerly hunted them; they had to be fetched by land from the south.

date) *and* external viewpoints (that is, the real spatial orientation of actual beholders toward the "plane of the format," the surface of the artifact on which virtual pictorial space is configured). In fact, and in global terms, in the Hunter's Shelter the pictorialist's vivid realization of motion and action, plastic treatment of shape and volume, and sure and economical rendition of outline configuration and particulars of anatomy (such as the distinctive "fingers" at the end of each elephant's trunk and the curvature of their full-grown tusks) would seem to be most similar to certain cave paintings produced in Europe by early Upper Paleolithic pictorialists, notably in the famous Aurignacian cave of Chauvet (c. 33 ka).

Fortunately, the unusual paintings in the Hunter's Shelter can be directly dated in no less than three ways. (Direct dating of the "desert varnish" frequently found on engraved petroglyphs (Huyge et al. 2001) is, of course, inapplicable in this case).

First, the contour of the belly area of the stabbed elephant on the righthand side of the panel was deeply gouged several times by a sharp stone point, which was dropped on the floor immediately below the wall, retaining traces of pigment. The point is closely to similar to others found in the excavated deposit, datable in that context. (The paintings themselves, of course, were made with different implements). The gouges were then partly filled in with an organic paste, likely acacia gum (the dried exudate sap of *Acacia senegal*, widely distributed in the African sahel, and known today in the Wadi Allaqi Biosphere Reserve, where it is still exploited (Springuel and Mekki 1994)) admixed with ochre, which gave calibrated radiocarbon dates of 45 ka.

Second, an oxolate crust that formed in prehistory over part of the body of the lion can be dated by Uranium-Thorium decay to 60–45 ka.

Third, the group of hunters and elephant on the lefthand side of the panel was partly covered by the Aeolian sand swept into the shelter, deposits which yielded several OSL dates clustering around 40–45 ka (for the method, see Huyge et al. 2011).

On the basis of this concatenation of dates, the group of hunters and elephants and the associated lion can be securely dated to around 45 ka (or before for the lion). The other human figures and the stencils and blots likely also belong to the period of late Middle Paleolithic use of the shelter, which displays no evidence of other periods of use, but they cannot be directly dated at the moment. Setting aside some dubious and contested cases in other global contexts, this date for the paintings in the Hunter's Shelter is the earliest known date (by about 10–15 ka at least) for prehistoric depiction worldwide and therefore for hominin behavior of this distinctive kind.

As a perceptual and cognitive visual culture, pictorialism should be sharply distinguished theoretically from other forms of what are sometimes described as intentional "aesthetic" activities and possibly "symbolic" mark-making among archaic humans, such as the "aesthetic" use of small sea shells to produce the personal ornaments found at Qafzeh, Israel, c. 92 ka (Mayer et al. 2009) and the possibly regular and "patterned" incision of possibly "symbolic" artifacts observed at Blombos Cave, South Africa, dating to c. 77 ka (Henshilwood et al. 2009). Though these expressions have been widely taken to index behavioral modernity in *Homo sapiens*, the sites in question do not include picture making in any of the various possible media of drawing and painting, such as we can document at the Hunter's Shelter, and of "sculpting," as in the example of the "lion-person" figurine from Ulm, Germany, dated to c. 35 ka (Wynn et al. 2009). Previously, the earliest known picture making in Africa—the enigmatic drawing of an "animal-person" from Apollo XI Cave, Namibia—could be dated to c. 20 ka (see Huyge 2018 for the "earliest" north African anthropomorphs).

Given its location and date, the pictorialists at the Hunter's Shelter presumably belonged to the wave(s) of anatomically, behaviorally, and psychologically modern humans migrating out of densely forested central east Africa. Documented anatomically at Omo Kibish just north of Lake Turkana, Kenya, c. 195 ka (Haile-Selassie et al. 2004; McDougal et al. 2005), between about 95 ka and 45 ka their worldwide dispersal was well underway—a migration sometimes called "Out of Africa IV," including the process of occasional intermixing with (and the eventual extinction of) competing archaic humans who had migrated out of Africa in earlier waves. Archaeogenetic data suggests that mitochondrial DNA haplogroups L0 and L1 appeared in Africa around 100 ka; with L2 and L3 they are restricted to Africa. But descendants of L3, including the large mtDNA groups M and N, appear outside of Africa on the order of 60–50 ka. The Y chromosome haplogroup (that is, the male lineage) A dates to more than 100 ka and is restricted to Africa while the later groups B, E, and CR date to after 70 ka and are found outside Africa (Pugach and Stoneking 2015; Wei et al. 2015).

Occuring during the Oxygen Isotope Stages 5 (warm), 4 (cool), and warm (3) that would have opened up the active drainage of many rivers between East Africa and the Mediterranean/northwest Africa (see generally Bubenzer et al. 2007), the route of this dispersal of the most recent anatomically modern humans in the last 100 ka has been much debated (e.g., Beyin 2006; Derricourt 2005; Vermeersch 2001). But at present one might accept *both* a "Southern

Route" of human migration across the Bab al Mandab strait at the mouth of the Red Sea between present-day Djibouti and Aden *and* a better-documented "Northern Route" of migration utilizing the Nile valley corridor and/or a route along the western Red Sea coast, crossing into the Levant at the southeastern Mediterranean coast of the Sinai Peninsula (Van Peet 1998). Though it doesn't preclude raftable cross-water voyages of approx. 10 km in the Southern Route, the location and date of the Hunter's Shelter tends to confirm that the all-land Northern Route was used and specifically that the area of the Nubian Desert between the second cataract of the Nile and the Red Sea Mountains was traversed by Middle Paleolithic communities of modern humans, possibly because the wadi systems enabled them to conduct surveillance, tracking, and driving of game in predictable ways and afforded convenient stopping points. Indeed, Wadi Defeit lies along Lat. 22° N, which marks the intersection of two globally defined climatic zones in northeast Africa, namely the northern zone characterized by Mediterranean winter rains to the northeast and the southern zone affected by tropical summer rains to the southeast—"an 'invisible line' that would have been crossed two times every year in opposite directions by several animal species, including man, to exploit the resources available to the north and south of it in different periods of the year" (Manzo 2017, 15). This intersection zone perhaps proffered exceptional opportunities.

The documentable northeast African cultural affiliations of the Hunter's Shelter are few and far between. Datable to c. 115 ka, the Middle Paleolithic ashy hearth stack left by modern humans and discovered at Sodmein Cave at the northwestern tip of the Gulf of Suez included elephant remains (Mercier et al. 1999). Somewhat further south, but still along the Red Sea coast, the site of Taramsa Hill 1, datable to c. 55 ka, yielded the burial of an anatomically modern human child "similar in appearance to the [later] Mechtoid populations of the north African Epipaleolithic" (Vermeersch et al. 1998; Van Peet et al. 2010), possibly manifesting a cultural expression of the same peoples who painted the Hunter's Shelter c. 45 ka. At the chert-quarrying site of Nazlet Khater 4 in Middle Egypt c. 34–31 ka (Leplongeon and Pleurdeau 2011; Vermeersch et al. 1990), a man was buried along with a bifacial axe (of a type "hitherto unattested in 'Upper Paleolithic' industries which occur from 20 ka onwards" (Midant-Reynes 2000, 43)). Though said to have certain "archaic" features including a thick mandible (Thoma 1984), this "experienced quarrier" was an anatomically modern human with a cranial capacity of at least 1400 sq. cm.

Though the temporal gap is immense, it is possible that the Hunter's Shelter was painted by the same people who evolved in northeastern Africa over the next twenty thousand years into the semi-sedentary inhabitants of Wadi Kubbaniya (c. 20 ka; Wendorf et al. 1989) and eventually into the agriculturalist and nomadic-pastoralist populations of Egypt and Nubia. Still, the possibility remains that the Hunter's Shelter was a "one-off" manifestation. Unconnected to the much later populations of the region, who possibly powered still later migrations out of Africa c. 10 ka (in an "Out of Africa V"; Rose et al. 2013), it indexes the lifeworld of an early population of psychologically modern humans moving up into and making use of the rivers, wadis, and coastline of northeast Africa and (for some of them) eventually making their way out of the continent altogether—just as other contingents of such modern humans migrated southwards and maybe westwards across the vast continent in the same era (Osborne et al. 2008). (Of course, in the region described here perhaps some of these people stayed behind and some continued on).

Regardless, picture making behavior and true pictorialism of the kind documented at the Hunter's Shelter c. 45 ka is currently not documented again globally until the seeming cultural efflorescences—sometimes called a "revolution"—of the modern humans who had arrived in southern Africa, Indonesia, Australia, and southwestern Europe by c. 33–28 ka (overviews in Fritz et al. 2017), and in those environments *pictorially* relayed and recorded their perspectives. (This efflorescence is usually considered to be an "Upper Paleolithic" phenomenon, but the Hunter's Shelter places pictorialism in the late Middle Paleolithic as well). Therefore one legitimately might wonder whether picture making was part of the technological, cognitive, and aesthetic equipment of the globally definitive dispersal of modern humans "out of Africa." Did it confer a decisive advantage in adapting people (in their global dispersal) to their ever-different global environments by enabling the pictorialists among them to represent each new region and its novel ecology (to them) by way of a referential system predicated on the instantaneous recognizability of the signs?

Unfortunately, however, the Hunter's Shelter does not exist, though in some ways it *could* exist, and perhaps even *should* exist. I have conjured it imaginatively here—using some pertinent "real" data and knowledge of "real" contexts, and simulating a certain kind of existing discourse—in order to make methodological and analytic points, especially about the possible role of depiction in the global dispersal of modern humans.

I hasten to say that I don't do this as a hoax, such as the fraudulent "missing link" "Piltdown Man" (overview in Price 2016) and any number of forgeries created for the modern trades in art and antiquities. (I have sprinkled in a few give-aways for specialists; I'm not trying to fool anyone). Nor do I do it (entirely) as a spoof or parody intended to be wholly critical and destructive, such as now-well-known parodies of academic "postmodernism" by Alan Sokal and

others (overview in Mounk 2018), and certainly—I hope—not out of any malice. And malicious spoofs are not unknown in archaeology. In 1966, Lewis Binford and Sally Binford published an article in *American Anthropologist* as a spoof of Robert J. Braidwood, the distinguished archaeologist of the ancient Near East (a conceptualist of both the "agricultural" and "urban" revolutions as revealed by the excavations he pursued at Jarmo, Iraq, and other Near Eastern sites), about whom Binford continued to make hostile (and maybe somewhat unfair) remarks even at the height of his own fame, which eventually was as great as Braidwood's. The Binfords' "The Predatory Revolution: A Consideration of the Evidence for a New Subsistence Level" began, Binford said, as a "joke" done "over a weekend … search[ing] the writings of Braidwood for every silly statement … and [weaving] them into a plausible sounding argument." (Supposedly the editor of the journal "recognized it as a put-on but accepted it anyway." The academic referees, however, had "taken the article seriously"; "that proved what a state archaeology was in"; Binford 1976, 7).

In order for my performance of archaeological writing to work sufficiently well for the purposes of this essay, I have, of course, temporarily simulated a certain strand of avowedly empirical and highly positivistic writing in paleoanthropology, rock art studies, and elsewhere. I take no grand stand for or against such empiricism and positivism *as such*, for which I have great respect when they are functioning appropriately in their domains—a more specific matter engaged critically in my thought experiment, as I'll explain. In addition, and more specifically, the thought experiment (putatively discovering "the earliest dated pictures" in current worldwide documentation) deliberately enacts the problematic "search for origins" that characterizes much of prehistoric archaeology (see especially Gamble and Gittins 2004) as well as art history (see Davis 1996)—a search that transpires at both empirical (or ontological) and metaphysical (or epistemological levels). These issues need some untangling, to which I now turn, with the proviso that neither the thought experiment nor its explication could possibly resolve them fully—my intention being, instead, to raise limit questions for current practice and theory in rock art studies.

My first point—partly in qualified hommage to Binford—is taphonomic and stochastic. It's easy and common enough to say that the record of human "symbolic" behaviour in the multitudinous forms of human "symbol systems" (Goodman 1968)—from gesture and language to counting and cartography to dance and decoration—often doesn't directly fossilize in an archaeologically accessible way, though "cognitive archaeology," "forensic art history," and other dubious inferential procedures have emerged to address the gap. Often these procedures in archaeology are analytically indistinguishable from the highly developed inferential procedures of art historians (see Davis 1996, 2011a), who claim to reconstruct (and when necessary to deconstruct) the intentionality of individual makers and the culture of a historical visuality on the basis of the tiniest involutions of a brushstroke or a chip from a quarry-side, after these traces have been studied (and clarified forensically) by skilled conservators trained in the most subtle morphologies of soil samples and the chemical behaviors of complex pigments, oils, and glazes over time (to speak only of the case of Western painting since the fourteenth century).

But certain limitations and consequences of the underlying positivist attitudes can be troubling. Certainly a taphonomy can clarify the material data (as understood by both archaeologists and art historians) that will then be subjected to diverse methods of historical analysis—from behaviour of the "reduction sequence" (in prehistoric archaeology) to the practice of "*Kopienkritik*" (in classical archaeology), possibly the most highly developed analytical procedures among scholars who must deal explicitly with style and depiction in any global context. As Binford urged, taphonomy might, for example, disentangle "natural" non-human processes in the formation of a behaviour, assemblage, or site and "intentional" human processes (for critical discussion, see Davis 1992). But taphonomy has nothing much to say about what isn't there at all materially—that is, about what doesn't survive archaeologically as a behaviour, assemblage, or site, or even in other forms of trace and memory such as stylistic replications and iconographic traditions. It acknowledges there are—must be—vast blank spaces in our chronologies and topographies. But it's reluctant to *fill in* those spaces in advance of the consolidation of a material archaeology of the territory. My thought experiment of the Hunter's Shelter, then, simply enacts what taphonomy *knows* but usually doesn't *do*.

The thought experiment also engages another commonplace, closely related to the previous—namely, that artifacts made in certain media, predominantly subtractive media such as "engravings" and other "incisions," have a greater chance of survival over the very long term (or at any rate they *have* survived differentially), whereas artifacts made in other media, predominantly additive media such as painting, have less chance of survival (or at any rate they have *not* survived differentially) (see Davis 2013). Perhaps this is a truism in prehistoric archaeology, given its seemingly necessary focus—at least in the not-so-distant past of the discipline—on sticks and stones and pots and bones. But it would not be taken for granted in archaeological art history, in which there is a plethora of evidence in many cultural traditions for assiduous long-term curation and conservation of (relatively fugitive) *additive* media (for

example in the long-term preservation of medieval Chinese "literati" paintings) and, conversely, for dedicated efforts to eradicate and exterminate the products of (relatively permanent) *subtractive* media (for example in the Egyptian pharaohs' obliteration of monuments of previous rulers). It's probably fair to say *in general* that additive media as ancient as the Pleistocene—such as pigments painted on rocks in the open air—probably had far lower survival rates (from our point of view) than subtractive media. Still, the thought experiment posits a *particular* survival given certain circumstances, namely, preservation in a sheltered place and partly covered by sand. It's not wholly incredible, then, for me to insert my Middle Paleolithic shelter into the general mix as an exceptional example of painting that *could* have been preserved—substantially qualifying the supposed general taphonomic rule.

A more theoretical or analytical point should be made in this regard. Because a behaviour doesn't survive materially doesn't in itself entail that we know nothing about it. (I set aside the self-evident case, beloved by art historians, in which "lost" artifacts were nonetheless documented in pictorial representations and discursive descriptions of them—veritable cornerstones of *Kopienkritik* in classical archaeology). The very fact that a behaviour has a style and, if pictorial, that it must manifest some kind of iconography requires that it belongs to a set, sequence, tradition, and/or corpus of artifacts with which it shares syntactic and semantic "forms of likeness" (as well as whatever the entire set of forms might be "likened to" in the wider world) (see Davis 2011a). In theory, then, it should be possible for us to project from what *does* survive of the set (the sequence, tradition, corpus …) to what *doesn't* survive. Indeed, archaeologists and art historians do this all the time, though mindful of such factors as stylistic drift (Riegl 1893) and iconographic disjunction (Panofsky 1962) and sometimes cautious about possible anachronisms (though see Nagel and Wood 2010).

Of course, perhaps the *entire set*—sequence, tradition, corpus—has completely vanished from the face of the earth, including all later representations and descriptions of it as well as nonmaterial traces and memories. But one could still project the possibility of the entire set itself from the existence—even the mere likelihood—of *other* sets with which it overlaps, intersects, and/or nests within. This was the basis of George Kubler's "seriational" approach to the "history of things," though he himself felt that he had to posit what he called "prime objects" as a kind of primordial virgin birth or Big Bang in the material development and dissemination of the real series of material things (Kubler 1962; see discussion in Davis 2011b). Elsewhere I have advocated that such series—traditions, corpora, etc.—are "unruly" and therefore to an extent unpredictable and ungoverned by the projection of pre-existing "cultural" conventions (Davis 2011b), and indeed that human cultural behaviour in general is not well described in terms of rules and conventions at all, whether local or more global (Davis 2011a). Still, the "bending," "spreading," and "breaking" of a rule or convention is a material historical process in its own right—even if it leads to what might be called "queer" cultural formations (Davis 2010). Indeed, I've suggested that paradoxically the material evidence for this unruliness might be more plentiful than the evidence for normative rule-following: intense replicatory activity, I've argued, often accrues to and accumulates around the objects, sites, and agents of conflicts in, contradictions about, and dis-coordinations, deconstructions, and devolutions of rules and norms (styles, iconographies, traditions, cultures). Rules unfold smoothly in social enaction, practically unremarked—as not marked—by their practitioners. Unruly replication leaves a palpable mess behind. Arguably the mess—a kind of palimpsest—should be the primary forensic and methodological focus of art historical archaeology. In my thought experiment, I have side-stepped this deeply important problematic. As suggested, the Hunter's Shelter can be plausibly related to real sets and series of artifacts. But its relationship to a cultural convention, rule, or norm—to a pre-existing tradition, iconography, etc.—nonetheless remains out of view. (*Ex hypotheosi*, there are no earlier pictures anywhere in the world that could be cited as a precursor possibility or cognitive-historical context). Indeed, I have imagined that as a work produced in the context of the migration and dispersal of a population—and its necessary traversal of territories to which it was not phenotypically adapted in its anatomical, behavioural, and psychological "origins"—the pictures cannot be said, on the (fictive) evidence, to belong squarely to a stabilized visual culture.

Given the concern of this volume with "Rock Art," the case of "art" is intriguing with respect to specifically replicatory histories. According to a philosophy or theory of art—an "aesthetics"—that I'd be inclined to accept (Davis 2022), there's nothing that an artwork must possess and display at a material, morphological, and/or formal level. Any old thing can be or can become an artwork, coming to carry and relay its numinous, enigmatic, and/or striking aspects and affects. This perspective would put paid, of course, to some paleoanthropologists' quixotic attempts to discover the evolutionary-developmental origins of human art-making in artifacts that do indeed *look* a certain way—regularly patterned, decorative, non-instrumentally though intentionally concerned with non-functional features, and so on. Art need not look any way at all; though pattern and visibly non-instrumental intentionality might say something about perception and cognition, they say nothing

about art in the terms of this particular philosophical definition (not the only one, of course). Rather, what makes an object "Art" (again according to this account) is a network of analogical and other conceptual relations attaching it perceptually and cognitively to what already has properly been taken as "art" in the past and to what can successfully be proposed to be taken as "art" at its given time and place. (This approach must generate an analytic regress in which art could be immemorially ancient in the primate phenotype whereas pattern, symbol, and picture might be relative newcomers as modern-human practices; I have urged elsewhere that pictures might be seen as one the modern*ism*s of "psychologically modern humanity" (Davis n.d.-c)). Perhaps one of the ironies of the current world-wide globalization of art studies—that is, the interdisciplinary emergence of "World Art Studies" as the world-wide frame of analysis of a class of artifacts provisionally described as above—is that the *more* we admit different forms and definitions of "art" into the canon of world art (nowadays often by way of post-colonial critiques of existing canons of what has counted as art in the past) the *less* art we actually have—that is, the more spaces of "prehistory" open up as the necessary condition of any arts that we actually possess historically and that any known historical process can constitute. But in this paper I'm not especially concerned with arthood as an aspect of a behaviour. Insofar as my interest is with the history of picture making, whether or not as art making or to be described as artistic, it's not especially interesting to me whether the pictures at the Hunter's Shelter were (or are) also art.

However, I do want my thought experiment to dramatize certain other conceptual and disciplinary tensions. Above all, at the moment there's a tension in world-wide art studies and in globalized studies of visual culture between, on the one hand, positivist historicist chronotopography—in it, as I've already noted, supposedly we include only what there's material evidence for—and, on the other hand, the potential role of projections, reconstructions, visualizations, virtualizations, and pure imaginations and fictionalizations of what we might call the "logically necessary" and "cognitively required" artifacts, styles, and traditions for which "material evidence" is paltry or nonexistent, possibly even limiting and misleading. (Elsewhere I have called this approach "counterfactual"; in analytic philosophy, counterfactuals are used to clarify the facts of the world (Davis 1996, Chapter One)). This tension has been vastly increased by powerful automatic and digital technologies for generating images and for manipulating them under almost any conceivable algorithms of transformation. Employing whatever degree of imaginative license we might allow ourselves, with the press of a button we can repopulate entire prehistories that we have projected must lie in the vicinity of the actual archaeological histories—the artifacts, art, styles, iconographies, traditions, and cultures—that we *do* have.

The question is: *should* we do this? Though it's possible for me to produce a pretty convincing Hunter's Shelter that *could* be out there, is it *right* for me to do so? If I do so, might I contaminate someone's understanding of actual human culture and creation? (For example, by suggesting a considerably earlier vintage for pictorialism than has been generally accepted to date). But, by the very same token, if I do *not* do so, might I compromise someone's opportunity to understand human culture and creation? (For example, by obscuring the relations between psychological modernity, pictorialism, and population dispersal; we deal with pictures only in their many different chronotopographical "contexts" rather than as a condition of their traversals). These questions are too complicated and open-ended to be answered by a single author. Perhaps this volume will bring a number of possible answers to view.

At this point we reach the internal argument of the thought-experiment itself. As I've already intimated, the "archaeological" point of the thought-experiment imagines the recursive interaction between the migration of modern humans "Out of Africa" c. 70–40 ka and their production of pictures as an epigenesis of their modernity in that dispersal. The premise—and the imaginary implication of the thought experiment—is that among anatomically and behaviorally modern humans, already evolved in and adapted to central east Africa, pictures were a *psychological* condition—the on-going platform—of their dramatic mobility on the global stage, which was accomplished relatively quickly across dozens of different ecologies world-wide. For pictures make a decisive difference in "the world" not only by multiplying it into "worlds"—that is, visions of what can only be seen and fully known in pictures—but also by converting the world itself into a field of pictorializations, that is, understandings of—and interventions in—the world relayed to human minds in virtue of their having made pictures of it. (The history of art is chock-full of examples, which I have argued are the proper subject of visual culture studies; one example would be the influence of the landscape settings in paintings by Salvator Rosa, Claude Lorrain, and other mid-seventeenth century European painters on subsequent aesthetic conceptualizations of the "picturesque" in nature, in turn enacted in actual garden and landscape design in the eighteenth century—in the nineteenth century more or less naturalized as "the English countryside" (Hussey 1927 remains a classic study)). This recursion ramifies exponentially. Pictorial imaginativity sustains human dispersal throughout the world while at the same time human dispersal generates pictorial productivity.

Of course, in a sense it is difficult to demonstrate my proposition. It is possible that picture making practices and traditions developed independently of one another (in Middle and/or Upper Paleolithic prehistory) in different contexts throughout the world, generating the current global chronotopographies of "earliest" documented pictorial efflorescences in different regions of several continents (Fritz et al. 2017), leading in turn to the notion that picture making—as a putatively pan-human phenomenon today—was and is a pan-human capacity that was and is activated psychologically and historically in multiple ways in multiple places at multiple times. But the very same current global chronotopography also supports the narrower point, which is not contradictory: that picture-making was carried in a global migration as part of early humans' equipment for navigating such dispersal out of central east Africa ca. 95 ka to c. 45 ka, helping them adapt to new locales as they encountered them (new geology, new climatic regimes, new flora and fauna). In other words, one possible *explanation* of the pan-human capacity and its distribution today can be found in the history of human dispersals and migrations, whether one species-wide spread ("out of Africa") or many spreads (in more local if still transregional contexts) or most likely both. (Our approach, then, could stress both *conjunction*, examining the intersection of the human species with its proximate visual and other environments, and *disjunction*, insofar as such conjunctions, one to the next, are likely disparate and diverse—even singular). In itself, the thought experiment does not *resolve* this question, but rather *raises* it: All known psychologically modern human cultures are wholly *within* the recursions of pictoriality in constituting the world as internally "depictured" (Husserl 1982)—as having-been-pictured. And therefore the *pre*-pictorial prehistory of modern humans (that is, human prehistory "*before* pictures") is an uncharted territory. To use the title of this volume, it is a truly "deep time" not yet analytically conceptualized in modern anthropology and philosophy—which assume pictures as much as natural languages in characterizing "psychological modernity," insofar as we can suppose that complex grammatically differentiated linguistic ostension points not only to the real world, whatever that might be "before" pictures, but also to the *depictured* world, to the classes and types and the universals and particulars re-presented to human perception and cognition by pictures.

On the basis of the available global evidence, I have speculatively placed the "depicturing revolution" in the context of modern-human dispersal "Out of Africa," and I have dated it accordingly. Implicitly, then, I commit myself to the claim that archaic humans, such as the Neanderthals, didn't make *pictures*. Though archaic humans might sometimes have made marks that could be taken to resemble an ostensible referent, in itself this wouldn't be *depiction* in the fullest sense. Depiction demands the material replication and variation of that pattern in order to *preserve* the resemblance—therefore securing its cognitive status precisely as a "reference" rather than a "resemblance"—despite the inherent material modifications entrained in the reiteration of the configuration and the artifact (Davis 1996, Chapter Two).

As readers will have noted, I have imported into the Hunter's Shelter some of the most subtle capacities of pictoriality, such as my imagined confluence in the paintings of *both* "naturalism" *and* "realism"; of *both* the real beholder's standpoint *and* the internally constituted "depiction points" (of the virtual pictorial space) and the "points of view" (of the virtually realized human agents in the picture); and of *both* the picture as a record of "what is seen," whether in the real world of the pictorialist's visual space or in their pre-pictorial imaginative and visionary consciousness, *and* as a provocation for such seeing.

It could be that the pictorialists at the Hunter's Shelter were remembering the elephants and lions known to their African ancestors, though reconstituting them pictorially in their new world in their migration—a world in which the elephants would have been just as hard to see and as hard pictorially and linguistically to describe as their ancestral prototypes in central east Africa. Could it be, in fact, that making pictures was provoked by the ways in which the humans dispersing "Out of Africa" had *lost* their phenotypic calibration to their environments of original adaptation—which as immediately visible and intelligible to them in a sense needed no pictures to be navigated? That in traversing and migrating through *new* worlds their pictures were both a life-line to the past and a life-boat for the future? In other words, I have endowed the Hunter's Shelter with all the work of pictoriality that art historians have documented in the world-wide history of pictorial art. And I have also imagined it as a crossroads of the dispossessed and the transient—an account that must reflect my own present-day historicity *as* an art historian. (In the framework of this essay an explicit exploration of this unavoidable sociopersonal, intellectual, and rhetorical context had to be somewhat left aside for the purposes of the simulation, but see, Davis 2016, 2017b). Pictures can anchor people despite their removals, whether voluntary or forced. Let's imagine pictures that can help to make such migrations as productive as possible, despite displacement and loss.

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Understanding Rock Art: What Neuroscience Can Add

12

John Onians

Abstract

In this chapter, I will make a case that neuroscience can help with the understanding of any art, and that in the context of rock art, with its deep history, it offers particular advantages. Most importantly it can give us new access to the minds of its makers and users, something much needed in the absence of the verbal commentaries associated with most other categories of material. That access, I suggest, can be obtained by using the latest knowledge of the extent to which the formation of the individual brain is affected by the environment to which it is exposed. This knowledge can help not only to reconstruct salient aspects of the neural resources of any individual or group whose material and social environment is sufficiently familiar to us, but also to infer how those resources are likely to have influenced such art-related behaviours as their motor inclinations and visual preferences. When these insights are supported by an understanding of such other newly discovered properties of our brains as its neural plasticity and neural mirroring, we can build up a new understanding of the mental activities behind the similarities and the differences in the way people living at different places and times have marked rock walls. A neural approach also allows us to re-evaluate assumptions about the history of culture that have been taken for granted in the fields of archaeology, anthropology, and art history, such as the pre-eminence of the role of language in the formation of culture and the associated insistence that art is necessarily a symbolic activity. In this way neuroscience can add a new dimension to cultural history.

Keywords

Neuroscience · Phylogenetic · Ontogenetic · Cognitive fluency · Neural plasticity · Neural mirroring · Gestalt psychology · Neurography

12.1 Introduction

There are reasons why the study of rock art can benefit more from the insights of neuroscience than any other category of art. Most other forms of art have some helpful cultural framing, a written or oral commentary, an architectural setting, or a known institutional context, any of which can provide us with understandable ways to make inferences about the minds of their makers and viewers. With most rock art these other sources of contextual information are lacking. In those circumstances neuroscience can play an important role, offering a biologically-based understanding of human mental activity at a time when such creative projects as Francisco Varela's 'neurophenomenology' (Varela 1997) Tim Ingold's 'environmental perception'(Ingold 2022), and Andy Clark's '4E cognition'(Clark 2008) have together created a new sympathy for somatic approaches, and an openness to relational thinking (Watts 2013).

The potential role of neuroscience in rock art research was already envisaged by Desmond Collins, the archaeologist, and myself in our 1978 essay on "The origins of art", which, perhaps for the first time in an archaeological article, already invoked the role of 'neurons' (Collins and Onians 1978,15). But it was the expansion of knowledge of the brain in the subsequent decades driven by new technological developments that was to provide a wider and deeper engagement with neuroscience for art research. This has resulted in such productive extended treatments as those of David Lewis-Williams (2002) in *The Mind in the Cave. Consciousness and the Origins of Art*, Barbara Alpert (2009) in *The Creative Ice Age Brain: Cave Art in the Light of*

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Neuroscience, and Jill Cook (2013) in *Ice Age Art. Arrival of the Modern Mind*. It has also inspired older scholars to elaborate on their earlier biological perspectives, as Ellen Dissanayake (2009) did in her "The artification hypothesis and its relevance to cognitive science, evolutionary aesthetics and neuroaesthetics" and as Robert Bednarik did in "Neuropsychology and Palaeoart" (Bednarik 2008). For others, recent neuroscience research has prompted them to confront more theoretical issues, as Lambros Malafouris (2007) did in his discussion of 'visual thinking' and Whitney Davis' (2011) did in his reflections on 'neurovisuality. By now a larger group of scholars have added original perspectives, from John Halverson (1987) and Derek Hodgson (2003) to Ben Watson (2011) and Ahmed Achrati (2013). I have made my own contributions, such as the more narrowly focussed "Neuroarchaeology and the origins of representation in the Grotte de Chauvet" (Onians 2007) and a more wide-ranging section on "Prehistory: 30,000 to 4,000 BC Art Before literature" in *European Art. A Neuroarthistory* (Onians 2016).

From all this work it is clear that neuroscience can contribute to rock art studies, as by showing how neuropsychology may have led to the ability of hominins to make 'conscious' decisions based on cultural percepts or concepts (Bednarik 2008). However, it is still unclear how great is that contribution, given the resistance to these advances. Some scholars appear to be held back from more expansive insights by assumptions that became ingrained long before knowledge of the brain had reached its current level. They thus continue to assume that the knowledge of /information from modern hunter gatherer societies, such as the Australian Aboriginal people, is core to the understanding of rock art, and that some contemporary practices, such as shamanism, should be central to rock art interpretations. Indeed, such a perspetive is taken for granted by major authorities. As Clottes argues: 'The hypothesis that best accounts for the facts as we currently understand them is that Palaeolithic people had a shamanic religion and created their art within its framework' (Clottes 2008). Once such an assumption of a universal framework is taken for granted it becomes easier for scholars to adopt ready-made explanations without attending to the specifics of each case. Similarly, many have assumed that language always had a dominant role in the formation of culture just because it supplies an easy solution to the problem of understanding how beliefs and practices come to be shared. From these points of view neuroscience is seen only as a supplement to existing approaches, when, if we really want to measure its potential importance, it would be better to treat it as a primary core tool, and the source of completely fresh explanations, as several of the scholars just quoted have done (e.g., Helvenston and Hodgson 2010). This would allow us, for example, to show how aboriginal behaviours and shamanistic practices themselves have origins that are ultimately neural. It would also allow us to recognise that, from the beginning of human culture, the main reason why groups share beliefs and practices is not because they are transmitted to them by words but because the sharing of experiences (including language and words, chants, etc.) has resulted in the formation of shared neural resources, and that it is the sharing of neural resources that predisposes people to similar responses, as shown by the sociobiologist Bedaux (Bedaux 1999). Such a neurally-founded perspective has two clear merits. One is that it creates a new space for enquiry that is not held back by prevalent assumptions. The other is that it puts us in the same position as our ancestors were before culture became consolidated through the formalisation of practices and the authorisation of verbal commentaries. In that situation, lacking the constraints consequent on a dependence on language use and intense socialisation, they will have been much more conscious than we are of the promptings of their nervous systems. If we want to understand them better, it can only help if we too sensitise ourselves to those promptings.

With this goal in mind, and in full awareness of the risks analysed in the 'Workshop on Cognitive Neuroscience/ Neuroscience and the Humanities' which I ran in 2011 at the Center for Advanced Study in the Behavioral Sciences, Stanford, with its then director, the psychologist and neuroscientist, Steve Kosslyn, this paper looks again at some examples of rock art from a range of periods and deploys a range of neuroscientific knowledge, setting out to contribute directly to two important dimensions of enquiry, the phylogenetic and the ontogenetic.

As far as the phylogenetic is concerned, that is the species-wide features of our neural make-up, neuroscience sheds light on the neural resources and associated abilities that we share with all our primate relatives. It also clarifies those that distinguish each hominin genus and species as they appeared, from Australopithecus to *Homo sapiens*. Above all, it makes us aware of the importance of the progressive enlargement of the brain and illuminates the properties that were critical to the well-being of each successive human type. Of particular importance was the brain's plasticity, that is, the way the networks in the individual brain change in largely predictable ways after birth in response to changes in its owner's social and material environment (Doidge 2007). It was this property of the brain that helped our species to adapt to different environments, first in Africa and then beyond, ensuring that the neural equipment of each individual was not just based on a common genetically determined template but adapted to its particular ecology (Grove 2015). Neuroscience thus helps the scholar of rock art to understand the full spectrum of our inclinations, from those that are widely shared, being genetically driven, to those that are purely individual, being the product of one person's experience. In the light of the need to pursue our enquiry on both dimensions we will explore experimentally the successive contributions to the history of

art of representatives of three hominin types: Australopithecus, Neanderthal and *Homo sapiens,* each with their own distinctive neural resources.

12.2 Three Hominin Types: Three Types of Art

12.2.1 Australopithecus: The Makapansgat Pebble

When our australopithecine ancestors first made marks and selected materials that later members of the European tradition found visually interesting enough to dignify with the term art, they had little idea of what they were doing or why. In this they were like all the other creatures who have left their traces on the earth's surface. In most cases there was no intention, conscious or otherwise behind their actions, nor did those actions normally evoke a response. An exception to this rule might be the piece of stone known as the Makapansgat Pebble, a reddish dolerite rock eight centimetres in diameter (Fig. 12.1). Because it was found in a cave in South Africa occupied by a hominin member of the genus *Australopithecus* around three million years ago, many miles from its natural source, we can be sure that something about it caught that creature's interest, caused it to pick it up and take it with them. Wilfred Eitzman, the teacher who found the rock in 1925, thought that it attracted that creature because of its resemblance to a human face. We would agree with him, but how are we to understand that response? Eitzman, being familiar with the role of images in later times and very much embedded in his own cultural assumptions, thought it was likely that the rock was a community's 'god'. Raymond Dart, the anatomist to whom he first showed it, being familiar with a wide range of imagery, came to think it might have elicited mirth as a caricature (Dart 1974). Robert Bednarik, whose recent examination showed that the origin of its "markings" is natural, has said that the australopithecine who found it was clearly responding to its 'visual properties'(Bednarik 1998: 6). These interpretations are engaging, but none is supported by any evidence or derived from any theoretical framework. Can neuroscience help us to do more with this intriguing object?

Fig. 12.1 The Makapansgat pebble. (Reproduced with permission from Bednarik (2013))

Neuroscientific findings certainly provide some explicit support for the inference that it was the recognition of a face that elicited the interest in the pebble. Experiments have shown that all primates share a brain area in the fusiform gyrus, the fusiform face area (ffa), that is specialised in the perception of faces (Parr 2011) Indeed, so precisely located is the process involved that we can observe how the alternation in the perception of a face and a vase during exposure to the face/vase illusion is matched by an alternation in the activation of the different brain areas in which the two categories of objects are processed (Andrews et al. 2002; Qiu et al. 2009). This allows us to infer that any of our primate relatives who picked up the pebble would, as they turned it in their hand, have been likely to experience periodic activation of their face-sensitive neurons, leading them to respond to it as they would to a face.

This then provides a new insight into their probable reactions. It has long been understood that a genetically driven human interest in faces has been selected for by evolution because an engagement with faces is critical for our survival. It has been shown by the ethologist Konrad Lorentz (Lorentz 1943) and psychologists working with his ideas (Gardner and Wallach 1965) that our responses to babies' faces are particularly positive, being also genetically driven, because caring for the young is an essential path to the transmission of our genetic material, and it has been argued that this response has had a powerful effect on art (Bedaux 1999). So, given that the face-like form on the pebble is paedomorphic, or child-like, with its bulging forehead and large eyes, it is plausible that its appearance would have encouraged our australopithecines not just to see it as face-like, but to respond to it with parental affection, encouraging them to pick it up and take it with them. If so their behaviour would recall that of young, and especially female, monkeys, who have been seen to 'carry around soft or hairy objects against their chest…just as if they were cuddling a baby' (Byrne 1995),

Nor is this the only dimension to their positive response to the face-likeness of the markings on one side of the pebble. The above noted insights into the brain's workings yielded by one set of experiments have been added to by another.

These are the experiments that have suggested that our pleasure in the perception of a shape, such as a "face" can be correlated with the so-called 'fluency' of the perceptual processes involved (Chenier and Winkielman 2009; Winkielman et al. 2003). This provides, among other things, that the more easily we perceive a shape the greater will be our pleasure in its perception. Given the ease with which we recognise the markings on one side of the pebble as face-like we can be sure of the fluency of the perceptual processes that involves compared to those involved in looking at other pieces of stone in the environment, including the less determinate markings on the pebble's other side, and we can be somewhat confident that that fluency is largely a reflection of the extent to which the neural resources of a typical viewer, whether ancient australopithecine or modern *Homo sapiens*, will necessarily have been shaped by repeated exposure to baby faces. Neuroscience thus sheds light on both our perception of the pebble and our emotional response to it. It not only illuminates the neural processes involved, it also explains their potential "power".

The concept of 'cognitive fluency' can be understood without reference to neuroscience, but the phenomena it captures are a direct product of neural processes. One of the reasons why we experience an increase in cognitive fluency in any perceptual encounter is because the more often and the more intently we have looked at anything the more the contacts between the neural networks involved will strengthen, so making it easier for us to see it. We can confirm the pleasure-giving, or 'hedonic', nature of such perceptions by noting that they are associated with the activation of the zygomaticus, or 'smile' muscle, rather than the corrugator, or 'frown', muscle (Winkielman et al. 2003). The neural pleasure associated with this type of successful perception has its parallels in other perceptual engagements, for example in the responses identified a hundred years ago by the Gestalt psychologists, Wertheimer, Koffka, and Köhler. They noticed the way our perception of phenomena is influenced by their display of particular properties, including good 'figure/ground' differentiation, 'similarity', 'symmetry', 'continuity', 'closure' and 'grouping' (Koffka 1935). Such neurally driven preferences for particular Gestalts have been selected for in our genetic make-up because they help us to see, by facilitating the discrimination of objects in our visual environment. However, a significant corollary of their manifestation is that they render the particular visual experience involved less effortful, so contributing to perceptual fluency. Our vision constantly benefits from the influence of these preferences without our being aware of it. They must have been guiding the hands of humans since they began making, marking and manipulating, in most cases leaving no traces.

12.2.2 Homo Neanderthalensis: The Bruniquel Cave

One place where we may perhaps find the traces of Neanderthal visual preferences is in the cave of Bruniquel in southern France, the site of what is, to us, a mysterious accumulation of broken stalagmites and stalactites, or speleothems, discovered in 1990 (Jaubert et al. 2016) (Fig. 12.2). These speleothems were found in a series of groupings 300 yards from the entrance to the cave system, where they can only have been reached using some sort of lighting. Dating of the associated calcite deposits suggests that they were assembled about 175,000BP, a period at which the only creatures in western Europe capable of constructing them were the Neanderthals. Their agency is evident in the way that the stalagmites have been broken off and arranged so as to constitute two rings, one larger, containing two separate piles, and one smaller. The only other evidence of human activity are the remains of several fires made using animal bones as fuel. There are, as yet, no clues as to the function or cultural context of these assemblages, but given their impressiveness and the absence of analogous dispositions elsewhere they demand some sort of explanation. So, until more is known, we are free to consider a range of scenarios for their creation,

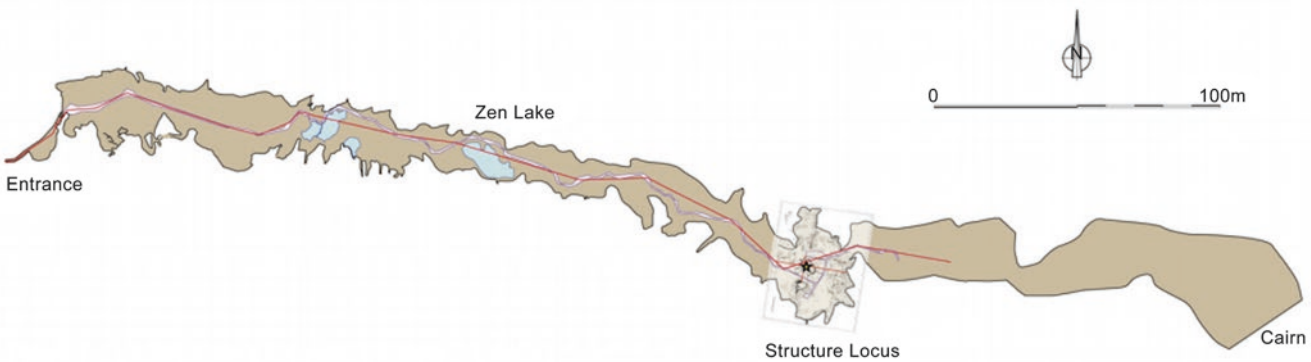

Fig. 12.2 Map of the Bruniquel Cave with indication of the location of the structures. (Reproduced with permission from Sophie Verheyden et al. (2018))

whether more social or more individualistic, more organised or more spontaneous. Whichever path we choose, given our interest in exploring the potential role of neuroscience in explaining such behaviors, it seems difficult to exclude some influences from the general principle of 'perceptual fluency' by reference to the visual preferences identified by Gestalt psychologists. We are also more justified in attributing the capacity to perceive Gestalts to our primate predecessors since experiments have shown that monkeys, whose brains are less developed than those of humans, already demonstrate the capacity to see the 'global' forms on which Gestalt perception depends (Neiworth et al. 2006).

We cannot know what the cave looked like before it was entered by humans, but it is likely to have presented a scene combining order and disorder, a regular forest of stalactites and stalagmites still standing in the places where they were formed and a confused array of fragments that had been accidentally broken off as a result of the activities of cave bears or earthquakes or other geological processes over millenia. Against this chaotic setting the speleothems will have manifested to Neanderthal viewers such Gestalt properties as 'similarity', 'symmetry', 'continuity' and so on, and an initial pleasure in these attributes may have encouraged some individuals to increase them by moving the pieces around and further breaking them down. If they did, they may well have found themselves unconsciously guided by a pursuit of enhanced perceptual fluency. For example, in the case of the two ring-configurations, we can imagine that if two or three fallen speleothems suggested to viewers an incipient 'continuity' they might have strengthened this by moving some elements and adding new ones. Each increase in 'continuity' would have been rewarded by the networks that help us in the perception of form, until a circular shape emerged. Similarly, we can envisage that the laying of speleothems in courses within the edges of the rings may be the product of preferences for 'similarity' and 'continuity', just like the parallel rows of dots in a Gestalt psychologist's diagram.

Such explanations are necessarily speculative, but they at least meet one of the requirements of any commentary on artistic activity, that it is based on a plausible reconstruction both of the mental processes involved and of the actions to which they led. They also have the added advantage of being able to absorb elements of alternative explanations, such as the suggestion that those rings recalled the layout of shelters or protective enclosures, or that the actions of the individuals involved were controlled by verbal instruction. If we pursue this line of argument, we can suggest that both the large ring and the small ring could be seen to reflect preferences for 'closure', while the large pile in the large ring meets the requirements of 'proximity' and 'similarity'. There are also several points at which speleothems have been placed parallel to each other so allowing them to be perceived as possessing 'symmetry', while all the groupings, with their strong forms, stand out as 'figures' from the relatively featureless 'ground' of the cave floor. Perception may thus have begotten composition.

The advantage of a Gestalt approach is that it enables us to account for how such configurations could come into being without any need for planning or co-ordination. If so, there could be some analogy with the behaviour Köhler observed in a chimpanzee who was able spontaneously and without trial and error, to pile up boxes to reach food (Köhler 1925). Gestalt principles can also be invoked when explaining another feature of the configurations at Bruniquel, that is the relative standardisation of the stalagmite fragments, which average 34.4cms in length for the larger ring and 29.5 for the smaller (Jaubert et al. 2016). It is difficult to credit a Neanderthal with a rational explanation for this conformity, but it can be understood as gratifying simply in terms of cognitive fluency. We cannot conceive of why Neanderthals might have consciously measured things, but we can at least assume or suggest that enjoyment of the pleasure of perceptual fluency will have given them an unconscious preference for such 'similarity'. So, if one or more individuals found some speleothems that had been broken, whether by seismic events, or by cave-bear activity, and sensed some emergent order in them, they may have been tempted to increase that order by moving pieces so as to enhance their Gestalt properties. Whatever the number of the individuals involved, or the nature of the relationship between them, their motivations to complete the structures may have derived above all from the pleasure associated with an increase in the perceptual fluency associated with their viewing.

12.2.3 *Homo sapiens*: The Cave of Chauvet/ Grotte Pont d'Arc

At Bruniquel, we suggested that neuroscience can add something to our understanding of the stalagmite assemblages by allowing us to invoke universal properties of the human nervous system. Where neuroscience comes into its own, however, is when we can use a knowledge of the particular neural formation of an individual or a group to explain particular aspects of artistic behaviour at a specific place and time, especially when these cannot be explained in any other way. A good test case is the art found in the Chauvet cave in the Rhone region of southern France, officially known as the Grotte Pont d'Arc after the nearby rock arch over the Ardeche river (Figs. 12.3, 12.4, and 12.5). At any period in the Palaeolithic the imagery here would be extraordinary both for its quality in our eyes and its quantity. It is even more remarkable now that it is widely accepted, after much controversy and objection (Pettitt and Bahn 2015), that it is exceptionally early in the Upper Paleolithic sequence, being now reliably dated to two phases in the Aurignacian period,

Fig. 12.3 Bear painting in the Chauvet cave. (Hulton Fine Art Collection via Heritage Images/Getty Images)

Fig. 12.4 A panther marked by dots above marks left by a clay-covered bear paw, Chauvet Cave. J. Clottes/Ministère de la Culture

Fig. 12.5 Lionesses hunting, Chauvet Cave. (Bonnafe Jean-Paul via Getty Images)

36 to 35,000BP and c.30,000BP (Sadier et al. 2012). The limitations of currently available approaches to the interpretation of this art are evident from the first publications of the site (Chauvet et al. 1996 and Clottes et al. 2003). These are meticulous in their descriptions of the topography of the cave, and the identification of the techniques and subjects of the paintings and engravings it contains, but the authors are understandably hesitant when it comes to addressing the ensemble's many features that are so original as to call for some sort of explanation.

12.3 Why Is There Such Art at Chauvet? The Role of Neural Mirroring

The most obvious of these is the number and range of the images. Although there is some early art at other sites, like the paintings recently discovered in Sulawesi, Indonesia, they are very limited both in number and in subject matter. At Chauvet we find many different animals and many different techniques. No known palaeolithic site can rival it, although there are some, such as Lascaux or Altamira, which come close in their richness. What was it that inspired this exceptional expressive outburst? One factor is suggested by a widespread feature of the imagery, the use of techniques that are possibly influenced by the actions of earlier occupants of the cave, cave bears. There are several places where humans have made their engravings with hard implements close to places where bears have first marked the wall with their claws. There is also one where a human has made a painted image of a panther near where a bear has marked the wall with muddy paw prints, and, in this case, there is an even closer resemblance between the two activities because the shape of the panther has been built up by repeatedly pressing pigment-covered hands to the wall (Fig. 12.4). In all these cases one might suggest that the humans are imitating the bears in their clawing and pawing of the walls. Such, a relationship between humans and bears was first identified in later Palaeolithic art a hundred years ago by the psychologist G.H.Luquet (Luquet 1930). Today, we can even perhaps explain it in terms of what is called 'neural mirroring'.

Neural mirroring has many dimensions (Rizzolatti and Craighero 2004) (Freedberg and Gallese 2007). One is the way the neurons of our motor networks are liable to be activated just by watching the actions of others. Such mirroring was first discovered when it was observed that a class of premotor neurons in a monkey's brain that normally control its hand could also be stimulated just by seeing the hand of another monkey, or a human, making a similar movement. Indeed, they might fire just because the monkey heard a sound that was caused by another monkey's hand movement, such as the cracking of a nut. Later, neural mirroring has been observed more widely, especially in the higher primates. Indeed, it is clear that it is one of the main ways we all learn skills from our elders and betters. Knowing of the exis-

tence of this mechanism and knowing that it could be triggered merely by the sound of an action that involved a particular movement, we can easily see how the sight of the marks left by the bears might have caused the mirroring neurons in the brains of humans to fire, so causing them to initiate engraving and colouring activities of their own. Such imitation is all the more likely to have happened if we reflect that members of a human population only relatively recently arrived from Africa would have looked with envy and admiration at the bears, who were bigger, stronger, and in all ways physically better equipped than they to survive in a cold and inhospitable Europe. Given human envy, as well as fear and apprehension for the bears, we can well hypothesize that the bear paw and claw marks, which were everywhere, not just on the walls of the cave, but also on the floor, might have evoked a wave of similar human marking. Such neural mirroring would also explain another puzzling feature in the cave, the repeated use of handprints, finger marks and hand silhouettes. The mere sight of the marks left by the bears' paws could well have activated the neural resources governing the analogous movements of human hands. Given the depth of the respect for animals, and especially bears, evident in the cave's paintings, and the witness to the mirroring response provided by the juxtapositions of claw scratches and engravings, it is not difficult to see the numbers of dots, prints and silhouettes as testimony to the overwhelming power of the animal examples over human neural resources.

12.4 Why the Life-Likeness? Neural plasticity and Admiration

Another aspect of the art of Chauvet which asks for some explanation is the exceptional vitality and life-likeness of many of the painted and drawn animals, especially a bear in the Hall of the Bears (Fig. 12.4). Most striking is the angle of view, a three-quarter perspective from above. This, combined with the exploitation of the natural relief of the cave wall, gives a powerful impression of a three-dimensional figure moving through space, very different from the schematic outline silhouette used in much other Palaeolithic art. In western art history we will not witness such perspective again until Greece around 400 BC. Less obvious, but equally important, is the capturing of what might be taken as the bear's intelligence and alertness as it moves purposefully forward guided by its senses. Nothing like this is found in later Palaeolithic art, and it is hard to rival it in later European traditions. Indeed, it is only matched by another Chauvet image of two lions (Fig. 12.5). There is nothing comparable to this until modern wildlife photography (Fig. 12.6). To capture such lifelikeness the artist, or artists, involved must have possessed exceptionally rich neural resources for the perception of these animals and neuroscience teaches us that those

Fig. 12.6 Lioness stalking, Masai Mara, Kenya. (Peter Blackwell/naturepl.com)

resources can only have been built up by intense and repeated observation owing to the plasticity of the neural networks involved.

Neuroscience provides that each experience we have, sensory, motor, emotional and so on, depends on the activation of particular neural networks and plasaticity provides that each time we repeat that experience the connections in those networks are liable to be strengthened and their function improved by reinforced insulation. In the field of vision such neural enhancement makes us better at perceiving the object concerned and even gives us a preference for looking at anything that shares its salient features. Today we are familiar with the benefits of such plasticity as we acquire enriched neural resources of many kinds by study and practice driven by social pressures and structured education. The impact of such neural enhancement at the level of the individual can also now be directly measured by experiment, as in the calculation of the enlargement of the posterior hippocampus, the brain's topographic memory area, in London taxi drivers who were successful in their training in the city's layout (Woolett and Maguire 2011).

12.5 Neurography?

What was it that caused what we interpret as an exceptional enhancement of the visual cortex of the artist or artists who happened to use this cave? At a time when they were members of a vulnerable population thinly spread in a challenging environment there can be no question of the social pressure and institutional formation with which we are familiar in later urban cultures. What else might have caused them to build up neural resources for the perception of animals perhaps richer than those of anyone on the planet? When looking for an explanation of such astonishingly fresh images we can hardly refer to TEK, traditional ecological knowledge.

Everything about them suggests not traditional knowledge but first-hand observation. We cannot know what drove that observation, but the content of the images is highly suggestive. What sets them apart, not only from other palaeolithic art, but most later art, is the artist' or artists' documentation not of the strength and savagery of their animal subjects, but their intelligent alertness, for which the artists' admiration is palpable. And this admiration will have had neurological consequences, whose impact we can invoke when developing our explanations, allowing us to suggest that the image-makers were inspired by their admiration for the bear, which they might otherwise only have seen as dangerous. In this view, admiration could have caused individuals to look at bears so intently that they built up exceptional neural resources for their perception. It was only because of the impact of such visual concentration on their neural formation that they were able to produce an image whose accuracy would be unrivalled until the appearance of photography, which is why I am tempted to call the naturalistic art of Chauvet neurography. It is, after all, the product of the action of neurons, as photography is the product of the action of light.

My claim for the role of admiration in the background to the making of this bear image can be expanded by another comparison, this time between the Chauvet bear and one drawn by Leonardo da Vinci (Fig. 12.7). Da Vinci is thought today to be an artist who made strong images because he knew how to look, but his bear, for all its anatomical detail, comes over as weak. He had clearly examined the bear carefully, but evidently not often enough or, I would suggest, not with enough admiration. So the bear that Leonardo drew at the height of his artistic powers can be seen as a limp creature compared to the charismatic beast at Chauvet. The beneficial impact of admiration in stimulating 'powerful' imagery is well brought out in a paper entitled 'Neural Correlates of Admiration and Compassion', which points out that admiration for someone else's physical skill activates our own muscular skeletal networks and concludes that the experience of that emotion produces a sense of heightened self-awareness that 'incites our own desire to be. . . skillful' (Immordino-Yang et al. 2009). It is as if the painter of the bear has so admired the intelligence of its movements that they have wanted to rival its skillfulness in their own handiwork. That is why most people find the Chauvet artist's bear to be much more impressive than Leonardo's.

Fig. 12.7 Leonardo da Vinci, *Bear walking*, early to mid 1480's, metalpoint on pink-light brown paper, 10.3 x 13.4 cm New York, The Metropolitan Museum of Art, Robert Lehman Collection, 1975. www.metmuseum.org

12.6 Admiration and the Reward System

Neural plasticity laid down the rich neural resources needed to make such a painting, but the drive to execute it probably came from another neural process, neural reward, of which we have just seen an example. When we look at anything we experience as potentially beneficial to us, a potential sexual partner, a desirable food, or an attractive landscape, we are apt to experience a release of the neurochemical dopamine in our nucleus accumbens, the brain's crucial interface between motivation and action (Zeki 2009). This gives us pleasure, and this is significant, because dopamine contributes to the laying down of memories, so that, when the opportunity for a similar experience presents itself, we are neurochemically encouraged to repeat it (Molina-Luna et al. 2009). We are used to writing a social history of later art based on our understanding of the role of social rewards in developed cultures (Baxandall 1972). We can now propose a much more wide-ranging neural history of art based on our understanding of rewards which are neural. If we are right in saying that the individual who painted our bear admired it greatly, it follows that they must have derived considerable pleasure from the appreciation of its many natural assets. This means that the sight of the bear will have triggered a release of dopamine in their reward mechanism. Significantly, though, they will have got an even bigger 'hit' from their painting of it. When they looked at that, they will have been admiring not just the resources of the bear, but their own skill.

12.7 Why Here? The Rock Arch

Neuroscience can help us to answer many questions about the unique features of the art of Chauvet, but one remains, 'why do we find them only there?' All the points made so far would apply to many other humans in many other caves.

Why, then, did they not – as far as we know today – produce anything remotely comparable? Was there something about the site of Chauvet that uniquely promoted the intense observation of animals which neuroscience suggests was the key to their extraordinary properties? Fortunately, there is an obvious answer. The cave is sited at a point where the Ardèche river running from west to east is spanned by a great rock arch, a rare conjunction that had a particular significance in the ice age. In those climatic conditions the herbivores on which Palaeolithic humans fed would have been forced to migrate, together with the carnivores who preyed on them, northwards in spring and southwards in autumn, and they would have found in the rock bridge a safe passage across the great natural obstacle. The humans who lived there would thus have enjoyed exceptional opportunities to watch animals, and they would also have had an exceptional motivation to do so, since the severity of the climate would have caused the comparatively delicate hairless humans, originally adapted to tropical Africa, to look with envy at the animals' superior equipment, the teeth and tusks, the claws and horns, the warm furs and, above all, the skills at exploiting the hostile environment of the creatures with whom they shared it.

The cave's unique situation overlooking the rock arch gave those who used it an unrivalled ring-side seat of one of the great spectacles of nature, the seasonal migration of all sorts of animals, and we can sense the consequence of this rare exposure in the expansive painting around the great niche in the End Chamber. It seems that looking at the animals crossing the arch had so strengthened the neural networks of viewers that, when they came upon the niche, its shape activated the networks laid down by exposure to the arch, and this in turn reactivated the networks shaped by exposure to the stream of animals passing over it. So persistent was the visual memory of this scene that they were provoked to effectively recreate it. This hypothesis, that the painting on the wall of the End Chamber reflects a visual memory of migration over the arch helps us to understand many of its unique features. It explains why the composition reads as a sweeping procession of animals moving in one direction from right to left, something unknown in palaeolithic art, and also why the species are so mixed, something that only happens under stress. It also helps us to appreciate such details as the elephant to the right of the niche who appears to be climbing uphill.

We cannot know the neural processes that led to some individuals turning that imagined scene into a representation, but it is likely that because getting to know the animals by watching them generated a neurochemical reward, they would have experienced a similar reward when they imagined them on the cave wall and even more as they made them visible again in paint. Probably the process would have been encouraged by marks on the surface of the rock which already matched a particular neural memory, as so often happens in prehistoric art. An eloquent example is the painting of our bear (Fig. 12.3). There the unusual perspective seems to have been triggered by the way some lines in the cave wall matched the visual memory of the left forepaw of a bear seen from above in ¾ view. The acuteness of the memory will have been a consequence of the bear's viewer having been particularly impressed by the animal's exceptional alertness and mobility, just as the acuteness of the memory of the individual or individuals who painted the animals around the niche may have been due to their having been impressed by the purposiveness of their migration.

A neural approach thus helps to explain the sudden appearance of naturalistic representation, and, significantly, it also explains why it dies out and is never seen again. Indeed, it does not just help us to explain the absence of comparable work later, it predicts it. The core argument in relation to the extreme naturalism of some images at Chauvet is that because the individuals who made them had looked with exceptional intensity at the animals represented they had acquired exceptionally rich neural networks for their perception. What they could not know is that this achievement of naturalism ensured that it would never be repeated. The representations were so good that their makers would have got a strong neurochemical reward from looking at them. They would have admired their painting as they had once admired the live animal itself, and that led them to get more rewards by making more images. The downside to this sequence was that the new images were made with networks now degraded by looking intently not at a live animal, but at a representation, which was inevitably more schematic. So the second image would have lacked the lifelikeness of the first. Indeed, we can see this happening already with our original bear painting. Just behind that image the artist has made another incomplete version from an identical perspective, and in front he has made yet another. We thus have two copies of the original, each weaker than its predecessor, and there is yet another weak copy in the adjoining gallery. Looking at the original masterpiece has made it impossible for even its maker to repeat it, because exposure to the image had degraded the networks once laid down by looking at a real animal. Other images in the cave tell a similar story, such as the series of rhinoceros to the left of the niche and the lions to the right, each more stereotyped than its predecessor. Again and again at Chauvet we see images being repeated and becoming more schematic. We have always been told that images start out schematic and become more naturalistic, but, whatever the relevance of that account to later phases of art, it does not apply at Chauvet. The first art is much the most naturalistic because it was made by people who had only been exposed to real animals. Later art is less naturalistic because it was made by people who had had the disadvantage of also having been exposed to representations of them.

They had of course also been exposed to real animals, but their exposure to painted animals would have had a greater neural impact because pride in their handiwork would have ensured that it brought a greater neurochemical reward, especially if they themselves were the makers, as appears to have been the case with the bear.

12.8 The Mind in the Skull

Neuroscience adds enormously to our understanding of the art at Chauvet. Most obviously it provides answers to the crucial questions, which are not even posed by scholars who rely on other approaches, presumably because they have no answers to them, illustrating the truth of the ancient observation that if you cant explain something you are less likely to see it. Among those questions are: why is there nothing comparable at other sites? why is Chauvet so early? why does it portray so many animals? why are some of these portrayals so fresh, original and lifelike, while the majority consist of copies and schematic derivatives/ and why is there a particular concentration on sensory alertness and intelligence? Neuroscience would suggest that the answers to all these questions depend on a recognition that at Chauvet a few members of the new species of *Homo sapiens* recently arrived from Africa and finding themselves in a hostile climate to which they were not adapted, taking advantage of the opportunity offered by the rock bridge across the Ardèche, looked with envy and admiration on the members of rival species who seemed better equipped from birth, both physically and mentally.

This last claim, that the humans at Chauvet were particularly impressed by the minds of their rivals, will strike many as surprising. After all we are used to thinking that the mind only became a subject of reflection with the ancient Greeks, as when Plato in the *Timaeus* materialised it in the brain inside the head. We are not used to crediting the inarticulate inhabitants of ice age Europe with such philosophical concerns, but Chauvet suggests we may have underestimated them. If admiration for the intelligence of bears and lions caused some individuals to look at them so intently that they could capture that intelligence in an image we can see how such a concentration might have left its trace elsewhere in the cave. It would, for example, provide a context for the concentration on the head, not just in the bear but in many other paintings, such as the rows of lions to the right of the niche in the End Gallery and the aurochs' and horses' heads on the left of the Panel of the Horses, or the frontal bison and the engraving of an owl, seen from the back, but with the face turned to the front. But the most remarkable celebration of the head at Chauvet is the cave bear skull placed on a rock in the Skull Chamber, where it is surrounded by forty more on the cave floor, some perhaps lying where the animal died, but others perhaps having been collected from elsewhere. Cave bear bones are found in many caves, but never with this emphasis on the skull. If we reflect that the painters of the bear and the lions seem to have sensed that their most remarkable resources resided in those creatures' heads, we can see how others might have shared their perception, so that their insight could have become communal. There may have been some verbal commentary, but it is not necessary for a neural explanation. All that was needed for the original insight was for one or more humans to have been so impressed by the head's role as the seat of sensory alertness and mental focus that they were moved to give prominence to its bony residue after death, the skull.

Such a special treatment of a body part is not without parallels in nature. Other animals pay differential attention to particular bones and organs. Elephants give attention to the skulls of conspecifics, visiting and touching those of dead group members, and many predators kill by consistently clamping either the muzzle or the throat of their prey, as if it is the location of an on/off switch. Differential treatment is also paralleled in later human history, as at the site of one of the first towns, Neolithic Catal Huyuk in Turkey, where the skulls of both oxen and humans were the focus of ritual attention. There it is a symptom of a new trend in the emergence of religion, one manifested in many different ways at other Epipalaeolithic and Neolithic sites. In each case, I would argue, such behaviours can be better understood if we relate their specificities, as revealed by archaeologists, to the principles of neuroscience, as I have tried to do here.

12.9 Conclusion

Before archaeologists and anthropologists had access to neuroscience it was easy for them to assume that cultural history developed in a series of necessary stages, because, although they could follow the social and behavioural transformations involved and had a good grasp of their general manifestations, they had no understanding of the detailed mechanisms underlying change. Today, neuroscience, by giving insights into those mechanisms, allows us to write a more fine-grained account, explaining for the first time why particular changes in particular fields happened at particular places and particular times.

This transforms our relation to our research materials, as the development of my thought in this article demonstrates. The tools that were available before I studied neuroscience, which were primarily social, didn't allow myself, or anybody else, to explain all the myriad features that make Chauvet unique. They didn't even allow me or anyone else to see them. Once I learned about neural plasticity and became aware that the resources an artist uses when making a representation must have been shaped by what they have earlier

been looking at with intensity, it became obvious that the individuals who painted the bear and the lions must have been looking in a different way than the makers of other Palaeolithic representations. Most telling was the realisation that at Chauvet I was watching a cascade of reprised activities. The subjects of their paintings were individual animals who were looking with special intensity, and they, the artists, were doing the same, this activity in both cases being driven by particular neural mechanisms, those that cause mirroring and those triggered by admiration.

It is only a small further step to realise that I too figured in this cascade. I was reprising the intense looking of my subjects, just as they reprised the intense looking of theirs, the bear and the lions, being driven by the same mechanisms. It was humbling to realise that, although I, as an art historian, had been trained to look, I looked much more closely at the art of Chauvet after I had received a lesson in looking both from the Chauvet artists and from their subjects. Without realising it, I had fulfilled the project I outlined at the beginning, when I said that "If we want to understand" the makers of rock art better, it can only help if we sensitise ourselves to what must have been "the promptings of their nervous systems." If I am right, anyone who looks closely at the paintings of the bear and the lions knowing about neural mirroring and the neural correlates of admiration, will end up looking more intelligently.

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"… And Those Who Expect to Return to the Source Will Find Fog": Resonances of Prehistory in Modern Art

13

Rémi Labrusse

Abstract

Since the authentication of Paleolithic cave paintings at the beginning of the twentieth century, modern artists have approached deep-time remnants (including images, tools, and traces of all sorts) in three main ways: they have either represented them, imitated them, or made them resonate conceptually and emotionally in their own artwork. In general, these attitudes—representation (or contextualization), imitation (or reenactment), and resonance (or meditation)—are at the core of modern 'primitivism'. They have shaped the different ways of dealing with aesthetically-distant artworks and the quest for supposedly authentic origins in them. Within this 'primitivist' framework, I argue in this chapter that modern artists have a specific kind of relation with 'prehistoric art', one that privileges time rather than space. I suggest that what has attracted them is the "dark abyss of time" and, in particular, the shocking contrast between the sheer materiality of 'prehistoric art' (see, for instance, the freshness of a number of rock images) and the immesurable temporal lapse that separates these images from us. To be more precise, I will show how, at least in modern art, the 'quest for the origins' (so popular in the field of archaeology) has somewhat been substituted by a fascination for the unaccountability of time. In this context, I argue that modern and contemporary artists did not only react to new discoveries and interpretations in the archeological field but, moreover, they have actively contributed to promoting a relationship to prehistory that is more conceptual than factual and, therefore, producing a globalized concept of 'prehistoric art' that has been with us for many decades.

Keywords

Archaeologism · Historicism · Immemorial · Memory · Modern art · Primitivism

13.1 Conceptualizing Deep-Time Art: 'Archaeologism' *Versus* 'Primitivism'

In 1926, Christian Zervos founded the art journal *Cahiers d'art*, which became the main avant-garde art journal in Paris during the inter-war period (Derouet 2006). It sought to present the most recent trends in contemporary art together with the artistic new discoveries "from other civilizations" (Rivière 1926, 177; Rivière 2004, 179). Zervos delegated to Georges-Henri Rivière, then a young jazz critic, the task of writing about archaeological and ethnographic artworks. Rivière's first paper in the journal was accompanied by reproductions of African and Oceanic sculptures from the collections of the *Musée d'ethnographie du Trocadéro*, the leading museum of ethnography in France, of which Rivière was to be appointed Assistant Director in 1928 (Peltier-Caroff and de Sevilla 2017; Calafat and Viatte 2018). In connection with these images, one would have expected a text on what was then praised as "primitive" art (Goldwater 1938; Rubin et al. 1984). Rather than referring to 'primitivism', however, Rivière coined the word "archeologisms" as a title for his paper (Rivière 1926; Schnapp et al. 2004, 6–8). Both terms ('primitivism' and 'archeologisms') share a similar etymology (one from Latin, other from Greek) that refers to a quest for origins. That said, while the idea of 'primitivism' suggests the desire for a direct identification with cultures often seen as 'primeval', Rivière's notion of "archaeologism" designates a sympathy for the *movement of thought* that leads to investigating these allegedly original worlds, digging them out, whatever they are. The objective is no longer to value an origin as such, but rather to develop a questioning of the quest for origins, which constitutes the

"Et ceux qui croiront remonter aux sources trouveront le nuage".

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foundation of the archaeological approach. The use of the plural accentuates this de-essentialization of the modern taste for the primeval, leading, at the end of Rivière's text, to an explicit criticism: "… And those who expect to return to the source will find fog" (Rivière 1926, 177; Rivière 2004, 179). Given the impossibility of finding an original 'source' or 'origin' of meaning, he suggests that modern artists should, in fact, reflect on the temporal difference that separates 'primitive' artwork from our contemporary world. For him, to replace 'primitiveness' with archaeology and, especially, 'primitivism' with "archaeologism", was mainly to replace the musings on a primeval essence with a self-critical reflection on temporality.

It is in this conceptual framework that the reference to 'prehistory' takes all its significance, as Rivière himself points out in his paper when he writes that the modern poet or artist should look at Paleolithic decorated caves instead of visiting museums: "If [the writer] Louis Aragon and [the artist] Jean Lurçat visited Madrid, I am sure that they would neglect El Prado and, instead, they would go in search for Altamira" (*ibid*.). Indeed, the temporal distance makes the 'prehistoric' reality, specifically, a fundamentally nebulous or "foggy" field, whose meaning seems destined to remain forever indistinct. Here the discontinuity appears maximal between the material presence of the objects or images, and the indecipherability of their 'original' meanings.

In this chapter, I suggest that the *tension* between the intense material presence of 'prehistoric' artifacts and images (revealed by archaeologists since the nineteenth century), and the extreme—though hardly determinable—temporal distance of deep-time remnants is at the core of the attraction that many contemporary artists have experienced for 'prehistoric art' in general and Paleolithic images in particular. In other words, the history of the relationships between modern art and the so-called 'prehistoric art' is the story of the different ways in which artists and art critics have conceptualized the tension between (A) the materiality of 'prehistoric art' and (B) its intangible temporality. To illustrate this point, I will examine different artistic conceptualizations of deep-time images.

For this purpose, in a volume mainly devoted to archaeologists, a few clarifications are in order. In the first place, from an art-historical perspective, the term 'primitivism' typically refers to "the interest of modern artists in tribal art and culture, as revealed in their thought and work" (Rubin et al. 1984, 1). At least, this is the way in which art critics and historians used this term during the twentieth century, notably since Robert Goldwater published the first version of his seminar *Primitivism in Modern Painting* (Goldwater 1938). In this setting, one must of course distinguish between the notions of 'primitive art' and 'primitivism'. If the use of the term 'primitive art' can be traced back to the early nineteenth century, referring, among others, to a number of non-Western arts, it has been under growing attacks since the mid-twentieth century, for its ethnocentric and colonial meanings. On the other hand, the notion of 'primitivism' does not refer to Indigenous or non-Western arts themselves, but "to modern Western interest in it" (Rubin et al. 1984, 4) and is still in use in art history, in particular in the history of reception, in order to characterize this long-lasting Western "preference for the primitive" (Gombrich 2002).

In the second place, 'primitivism' ordinarily refers to the allure of both 'prehistoric' (i.e., those objects and images made in remote times) and 'exotic' (i.e. those objects and images made in distant places) arts among modern artists. In this setting, it was traditionally assumed that some contemporary non-Western Indigenous arts shared a number of cultural and figural structures with European 'prehistoric' art—the first to be identified, much before the evidence of non-Western 'prehistoric' art was established. While 'prehistory', for a while, was considered exclusive to Europe, most Indigenous arts were considered 'prehistoric' in a structural sense. Both assumptions are problematic. First, what we used to call 'prehistoric art' is by no means exclusive to Europe, as it became obvious from the 1930s on, in particular in Northern and Southern Africa, and ever more later (see, for instance recent discoveries in Sulawesi and Borneo). It is important to keep in mind that, as early as the early 1930s, avant-garde circles were aware of North and South Africa rock arts through highly influential exhibitions (by the Frobenius Institute) and publications (like the special issue on "L'Afrique préhistorique" in *Cahiers d'Art*, 1930). At the end of the 1930s and 1940s, similar exhibitions and publications took place in the USA (Frobenius and Fox 1937) and the UK (ICA, London, 1948–1949). Second, more recent Indigenous arts can by no means be systematically compared to what was called 'prehistoric art' among modern artists, who mainly referred to European Paleolithic art (with some additional knowledge of African rock paintings and engravings).

Finally, in this chapter, I use the term 'prehistoric art' in its original normative sense in the field of art history (i.e. to refer predominantly to the Paleolithic images and objects that archaeologists have found in Europe since the end of the nineteenth century). It should not be ignored, however, that the term 'prehistory' itself assumes different meanings in Europe or elsewhere in the world, notably in South Africa (MacDonald and Mazel 2021), Australia and the USA (Moro Abadía and Palacio Pérez 2021), where it was first applied to Aboriginal and Indigenous peoples. This is why it has been subjected to intense criticism in archaeology, because it historically served to exclude these peoples from history. More generally, a long-lasting criticism against the word 'prehistory', since its invention in the nineteenth century, has been part of a typically positivist cult for 'history'—be it "deep" or "shallow" (Shryock et al. 2011, 5)—among archaeologists. In this context, it is important to note that I

recognize the problematic character of the term 'prehistory' (see, for instance, MacDonald and Mazel 2021). and that I am not using it in a pejorative sense, when I try to identify its dialectical agency in the distinctively modern Western fascination for historical sciences.

13.2 Representation, Imitation, Resonance

Since the mid-nineteenth century, the question of artistic creation has been placed at the center of the reflection about the first human societies. It was already present in the reveries of Jacques Boucher de Perthes, one of the 'founding fathers' of "antediluvian" archaeology, as he used to say, about what he called "*pierres figures*" (Boucher de Perthes 1847, 478–480; 1864, 481) or stones that he wrongly interpreted as intentional artwork (Schlanger 2015; Cohen and Hublin 2017; Labrusse 2022). Almost at the same time, together with the English banker Henry Christy, Édouard Lartet discovered Paleolithic figurative artifacts in the cave of Aurignac (Lartet 1861) and in other sites of South-Western France (Lartet and Christy 1864). The two men immediately proclaimed their aesthetic admiration for these 'works of art', something that greatly contributed to consolidate the idea of a "truly extraordinary development of the culture of the arts" among the "Cave-dwellers of Cro-Magnon" (Lartet and Christy 1865, 121).

Soon after, contemporary modern artists (including painters and sculptors) began to represent these "first artists" (Dagen 1994; Pfisterer 2007, 33–41). These representations transform early archaeological evidence into a sort of "imaginary prehistory" (Ducros 2000); creating a context for interpreting the so-called 'primitive art' that was inspired by a number of ethnological or pseudo-ethnological accounts (Moro Abadía 2015). In doing so, these modern European artists adopted the formal academic language of 'mimesis' that they praised for its supposed capacity to make visible, in full color, not only a global depiction of the past (whose material traces remain rare and never explicit), like in a landscape, but also specific events and actions, such as hunting or art-making which did not have a material form and were therefore entirely imagined like in a theatrical representation. Prehistory was then 'objectified' as if it were faithfully unveiled by an omnipotent observer. In fact, it was reinterpreted through the lenses of European contemporary life.

These early representations are not just recreational fancies. On a deeper level, they can be considered as a form of coping—more or less unconsciously—with the amazement, not to say the trauma caused by the discovery of 'prehistory' in general and 'prehistoric art' in particular. In fact, Lartet and Christy's discoveries expanded human history in immense (and immeasurable) periods of time and, therefore, they revealed both the incommensurability of time and the incomprehensibility of these remote cultures. This could not but create a veritable shock among late nineteenth- and early twentieth-century Europeans (as it still does for us today), who needed to incorporate these new findings and ideas into their worldview. In this setting, illustrating 'prehistoric' scenes as if they were perfectly well known, up to the smallest detail, by the painter-observer, was a way to reduce the dizzying impact of this new temporal perspective and to repress, so to speak, the shock it had provoked and that was to come to the surface only progressively in the Western modern mind. Early illustrations of 'human prehistory' played a fundamental role because they seemed to be able to make visible what was, in fact, invisible. These efforts to control what was actually out of control are particularly obvious in Paul Jamin's painting of a group of 'prehistoric' people admiring the making of cave art during the Magdalenian. This painting, which was first presented in the 1903 academic *Salon de la Société nationale des beaux-arts* in Paris, was inspired by the discovery of the Paleolithic paintings and engravings of the Font-de-Gaume cave. Jamin was a friend with many prehistorians of his time, especially Louis Capitan who, together with Henri Breuil and Denis Peyrony, discovered the caves of Font-de-Gaume and Les Combarelles in 1901 (Capitan 1903). In Jamin's painting, the accuracy of his reproductions of some animal motifs in Font-de-Gaume parallels the vivid, but utterly fictitious reconstruction of the scene that he imagines. These Paleolithic people looking at paintings (fallaciously transposed from the walls of the cave to its threshold, in the daylight) resemble modern connoisseurs, contemporary visitors of an art gallery. This has less to do with the suggestion that 'prehistoric' art was the result of a pure aesthetic impulse (de Mortillet 1885, 411–422)—a thesis that was still defended by some prehistorians at that time—than with the desire to equate 'prehistoric' life with our own and thus to ward off its enigmatic character. But there is more to the point. Evidently, one cannot but feel a sense of humor in Jamin's representation. A kitschy tone clearly reveals the artist's disbelief in the 'historical' faithfulness of his own image, a disbelief that he shares with his beholders. Both the artist and us are made aware of the deliberate anachronism of the image seen; concurrently, we are led to feel that under this fancy, intentionnaly unfaithful evocation of 'prehistoric' rock art function, something else, something unknown if not uncanny, is still lurking.

At the turn of the twentieth century, the authentication of cave paintings and engravings inaugurated a number of 'magical' interpretations about the meaning of rock art (Reinach 1903) and prompted its wide media dissemination, henceforth increasingly embedded into a sort of superior, almost sacred, meaning. At the same time, new images of prehistoric art began to circulate under different formats, especially in books and journals. Those were meant to be

copies of actual rock art images. These alleged reproductions, however, erased the materiality of the underground support, isolated the different motifs, stylized the shapes and, consequently, greatly diminished the singularity and diversity of deep time images by somewhat assimilating them to modern drawings and/or paintings. Additionally, a growing process of iconization encouraged the reproduction of a reduced number of "favored images" (Conkey 2010, 273) and rendered a few portable objects—such as some of the so-called 'Venuses' (Cook 2015)—and sites world-famous, culminating in the 1940 discovery of the cave of Lascaux, the so-called "Versailles of prehistoric art" (Ichac 1941).

These reproductions, rather than the originals, reached the contemporary artworld and inspired imitations. We find one of the first instances of this formal imitation of Paleolithic art in modern art in the animal figures sketched on the right side of Matisse's 1906 painting, *Bonheur de vivre*. While there is no documentary evidence of this influence, an article was published in the mainstream magazine *L'Illustration* in which the editors mocked the artists of the *Salon des Indépendants* (the group exhibition in which Matisse's painting was displayed) for bowing "before the unknown ancestors who engraved on the stone of the caves the rudimentary images of plants [*sic*] and animals" (*L'Illustration* 1906).

'Prehistoric art' copies multiplied after the First World War, a period during which avant-garde art magazines regularly published reproductions of Paleolithic objects and images, including the already mentioned *Cahiers d'art*, Le Corbusier and Amédée Ozenfant's *L'Esprit nouveau*, or Georges Bataille's *Documents* (Di Stefano 2019). In addition, some artists also possessed plaster casts of 'prehistoric' artifacts, like the two versions of the Venus of Lespugue in the Picasso's collection (Loreti 2019; Coquet 2021). Others, although few in number, went to see real 'prehistoric' places, including the visits of Amédée Ozenfant to the Périgord sites in 1927 (Ozenfant 1931, vii–xiv), Henry Moore or Nicolas de Staël to Altamira in 1934–1935 (Di Stefano 2021, 158, 197), or Willy Baumeister to the caves of the Swabian valley of the Lone river (Floss 2020). These visits became even more frequent after 1945, stimulated by the discovery of Lascaux, which was opened to the public from 1948 until 1963. Most of the time, however, modern artists' knowledge of 'prehistoric art' was largely informed by the (selective) photographic reproductions that circulated in Europe at that time. This was the case of the sketches of Paleolithic animal or human figures by Ernst Kirchner, Henry Moore, Pierre Bonnard or Alberto Giacometti, among many others, made after photographs seen in books or art journals of the time (Labrusse 2019, 158). These documentary studies sometimes resulted in the insertion of 'prehistoric' motifs in modern art compositions. For instance, Joan Miró, in his famous series entitled *Constellations* from 1939–1941, reused "schematic signs (…) as in the prehistoric figurations" (in his own words) that he saw reproduced in historical textbooks (*ibid*., 166). This new visual familiarity with prehistoric art, biased as it was, also inspired a number of aesthetic reflections, like the observations of Giacometti in a notebook in 1946, before visiting the caves of Périgord: "Drawings of caves, caves, caves, caves. There and only there, the movement is successful. To see why, to discover its possibilities, yet doubt" (Dufrêne 2020, 83).

We will reflect upon this "doubt" expressed by Giacometti, a doubt that may evoke his skepticism about the possibility of authentically connecting Paleolithic and contemporary art. At this stage, however, it should first be noted that these different forms of imitating 'prehistoric art' were part—and, in fact, only a small part—of the modern 'primitivism', considered as a quest for supposedly authentic origins. Without a doubt, reference to 'prehistoric art' (e.g., the Paleolithic cave paintings and engravings) were less numerous than references to the Indigenous arts from Africa, America or Oceania. A number of factors can explain the relatively modest role played by 'prehistoric art' in the broader context of Western primitivism. First, its impact was limited by the scarcity of objects (compared to the wealth of works plundered in the Non-European countries under colonial pressure) and the remote or impossible access to the caves. Second, Paleolithic 'art' was perceived as focused on 'animalistic' motives, whereas the presence and meaning of animals tend to fade away from modern artistic representations that emerged within the framework of a modern industrial culture in which nature becomes increasingly alien. Third, and most significantly, the style of some iconic artifacts (such as animal representations on bones or ivory) and rock art sites (such as Altamira or Niaux), as it seemed to be highly naturalistic to a modern eye (Morales et al. 2013), did not fit well with the project of many avant-garde artists of exploring new artistic languages beyond mimetic representation. Finally, by their predominantly European location, these 'prehistoric' works of art lacked the geographical exoticism which was part of the craving for authenticity so characteristic, at least in artistic terms, of a modern Western culture always anxious to search for more essential origins outside itself.

For all these reasons, formal imitations of 'prehistoric' art' have remained a minority within the more general framework of modern primitivism. However, the admiration of modern artists for 'artistic' testimonies considered as 'prehistoric' has always been widely spread. As I have argued elsewhere (Labrusse 2019), this modern fascination for deep-time images rests thus on other reasons, not stylistic or iconographic in the first place, but conceptual. From this point of view, there is a fundamental difference between the modern artistic interest in Indigenous non-European arts and in 'prehistoric art'. In the first case, what can be called ethno-

graphic primitivism could easily give rise to formal appropriations—most obvious in cubism around 1907–1910 (Laude 2006) –, given the abundance of objects spoiled all around the world and their non-mimetic character. This may also have prompted artists to enhance their personal aura by presenting themselves as the heirs of 'primitive' sacred values, which they fantasized from ethnographic or pseudo-ethnographic data collected and popularized in the West since the nineteenth century: this was the case of surrealist circles, as when Max Ernst was dreaming of assimilating the function of the modern artist to that of a "shaman" (Ernst 1948, 93). Nothing of the sort is possible in relation to 'prehistory'. First, the main element of fascination is no longer the distance in space but in time: the geographical exoticism is replaced by an archaeological enigma. Second, this archaeological context is so poor and fragmentary that questions and uncertainties largely predominate over positive assertions, and this makes appropriation behaviors difficult, if not impossible.

Certainly, the primitivist exoticism has sometimes converged with the attraction for the idea of 'prehistory'. From 1914 onwards, in particular, German traveler and ethnographer Leo Frobenius and his team revealed the antiquity of rock art in Africa in their Saharan and South-African expeditions (Hélène et al. 2016). When the corresponding tracings were exhibited in Europe and the United States in the 1930s, these monumental images of African 'prehistory' prompted the artworld to bring together colonial primitivism and prehistoric "archaeologism", using Rivière's term. But even in these instances, the deep-time and, therefore, enigmatic dimension remained dominant for the presentation of images identified as 'prehistoric'. In 1946, Alfred Barr, then advisory director of the Museum of Modern Art in New York, still referred to the 1937 exhibition of Frobenius' copies of rock art from all around the world under the motto "Modern Art, 5,000 Years Ago" (*ibid*., 151–152). And in 1948, art writers Herbert Read and Roland Penrose highlighted again the temporal dimension in the title of their exhibition at the Institute of Contemporary Art in London: "40,000 Years of Modern Art. A Comparison of Primitive and Modern Art" (Read 1948), which included copies lent by the Frobenius Institute alongside other 'prehistoric' images, 'ethnographic' ones and contemporary works of art (Stavrinaki 2019, 254–265).

In a word, in relation to 'prehistory', the focus on the "dark abyss of time" (Rossi 1984, Olivier 2008, after Buffon) naturally connected the penchant for Paleolithic artifacts with the extreme depth of geological time, as revealed by natural sciences. It induced a specific type of relationship, one in which formal copy or anthropological imitation were substituted for philosophical, poetical and/or existential meditation, with a particular fascination for the indistinctness provoked by this thickness of time. This is most likely the reason why Giacometti, in the abovementioned quotation, connected prehistory with a position of existential "doubt," which counteracts his initial project of technically studying "movement" in prehistoric carvings, engravings or paintings and of using their formal possibilities in his own drawings and sculptures. It is as if the imitation process was blocked or, at least, undermined by the inner resonance, in the artist's mind, of an unaccountable temporal depth which rendered Paleolithic images enigmatic and, so to speak, aesthetically indomitable. The prevailing, aporetical speculation on this unaccountability of time, bringing together geology, fossils and 'prehistoric' human productions, is as much obvious in the case of Joan Miró who, in the 1920s, painted canvases like the 1925 *Birth of the World*, where disassembled irregular geometric forms float on a muddy chaotic diluvial ground, shortly before he declared in 1928 that "painting was in decadence since the Ice Age" (Tériade 1996, 143).

But there is more to the point. If cave 'art', specifically, became such a central, reiterative reference for a number of modern artists, in the global framework of their fascination for deep-time, it was certainly because of the intrinsic expressive power of these images, but also because of the clash, within them, of two opposite temporal regimes. These archaeological remains were not univocal witnesses of infinitely distant times; they manifested rather the complexity, the dialectical nature of the regimes of temporality inherent in human perception. On the one hand, the exceptional state of conservation of some of these works—namely those that were the most widely reproduced and admired—and traces—in particular the hand, finger and footprints –, caused by the specific conditions of an underground environment, made of them something fully alive in the *present*. On the other, these images irremediably evoked an indescribable remoteness in time, an impression provoked by the motifs of extinct species (or those then confined to far-northern areas of the planet) and, more fundamentally, by the impenetrable enigma of these arrangements of animals, humans or semi-humans, abstract motifs and bodily marks within the cave. Looking at Pleistocene 'cave art', the Western observer inevitably feels the merging of two temporalities: an archaeological one, based on scientific knowledge, and an embodied one, so to speak, based on the observer's physical experience (that is not so intense, but still exists, in the contemplation of photographs and drawings). Both temporal perceptions are undermined by their opposites: the scientific ambition to clarify the chronology of prehistory runs up against a number of technical and epistemological obstacles; in turn, the impression of presence (as if images and marks had been made just before the visitor came) is somewhat challenged by the intellectual certitude of the antiquity of what we see and by its mysterious, uninterpretable quality for our modern mind. This deeply conflicting temporal structure of perception inevitably produces a questioning of the controlled rep-

resentation of time as a measurable depth and a blurring of the categories of the past and the present, all the more so because the measures of 'prehistoric' times often remain approximate, even from a scientific point of view, and difficult to integrate subjectively: while we can quite easily imagine durations of a few centuries, tens or hundreds of millennia, on the other hand, defy our capacities of representation. This is best expressed by the notion of 'thickness', rather than by the depth of time. While the notion of 'deep time' still suggests the possibility of some measurement, a *thick* period of time evokes something that is impenetrable. In other words, time in a 'prehistoric' context is experienced not so much as an enigma, asking for intellectual clarification, but as an irreducible abyss, causing a sense of existential anxiety.

13.3 Overlappings

So far, we have examined three artistic modes of artistic expression (i.e. representation or contextualization, imitation or reenactment, and resonance or meditation) that have shaped the different ways of dealing with a 'prehistoric' dimension. In this section, I will examine how many times these different dimensions coexist and overlap in modern images and artworks.

The theatrical representation of the context of creation in prehistory that was prevalent during the second half of the nineteenth century has been perpetuated until now in popular representations (Semonsut 2013), such as movies (Schefer 2021), cartoons, videogames, and pedagogical illustrations. These have been often inspired, in their style and composition, by the academic paintings of the nineteenth century, to complement the paucity of archaeological data and to recreate them visually. As for the direct or indirect imitation of Paleolithic artifacts and traces, it has continued from the first decades of the twentieth century to the present day (Lippard 1983; Pique et al. 2013; Labrusse and Stavrinaki 2013–2014). Recent contemporary artistic allusions to graffiti-like signs, handprints, humans and even animal representations from the Paleolithic reflect, among other possible reasons, a sort of nostalgia for a proximity to natural life, a celebration of tactility prior to any image-making, or a desire to revitalize public urban spaces by assimilating them to prehistoric painted caves (see, for instance, street artist Banksy's famous panel *Whitewashing Lascaux* in 2008). Finally, the third mode of expression of a modern artistic relation to 'prehistory' (i.e. the reflection about deep time and the radical questioning of narrativity in the image), that this reflection involves, cannot be considered only as an outcome that would have been preceded by phases of representation and imitation. Even if this inner resonance of 'prehistory' seems to be particularly important in modern and contemporary art from the 1930s onwards, some early instances can be traced back to the end of the nineteenth century. This is the case, for instance, of Paul Cézanne who, in the 1890s, sought to manifest in his landscapes of Mont Sainte-Victoire the feeling that "the red earth is coming out of an abyss" (Gasquet 1978, 113), drawing on the lessons in prehistory that his childhood friend, geologist, naturalist, and archaeologist Antoine-Fortuné Marion, had taught him in the late 1860s (Athanassoglou-Kallmyer 2003, 149–184; Causey 2020). Based on then-recent geological, paleontological, and paleoanthropological discoveries made in Aix-en-Provence, the meditation on deep time had profoundly transformed the painter's relationship to his environment, permeated by a metaphysical anxiety. Shaken by this sensation of prehistory, so to speak, Cézanne's ontological meditation became the source of a radical reconfiguration of his conception of the image in general and of landscape painting in particular, as if an indescribable temporal vibration were now introducing its chaotic energy into the deep structure of appearances.

In general, imitative processes lie at the hinge between representation and resonance. Resorting to the imitation of 'prehistoric' rock art motives can certainly be instrumentalized in distanced, contextualizing reconstitutions, like the motives of the panels of Font-de-Gaume in Paul Jamin's previously mentioned canvas. But it can also serve to reinforce a feeling of inner resonance, as it happens in Miró's *Constellations*, where the female motifs, in the form of two facing triangles, borrowed from Neolithic rock paintings in Spain, contribute to expressing the forever indecipherable character of signs, floating on a nebulous background as if illegibility were the fate of all meaning engulfed in the abyss of time. Rather than telling the story of a fake myth, so to speak, as one could expect from a primitivist attitude, Miró's composition reveals the fragility of any signifying superstructure, which cannot subjugate the material thickness of a perpetually moving 'fog' underneath. And this is exactly the lesson he seems to have drawn from the idea of 'prehistory', in his own aesthetic vision.

Interestingly, representation, imitation, and resonance are sometimes intertwined in the artist's creative process. During the 1960s and 1970s, this was the case of Robert Smithson (Tsai and Butler 2004; Labrusse 2019, 177–185), who illustrated our prehistoric fancies in his collages of intermingled dinosaurs and pin-ups (these images actually being second degree representations, alluding to prehistoric scenes in B-movies and academic paintings). Concurrently, he imitated 'prehistoric' procedures by erecting stone monuments *in situ,* like his *Spiral Jetty* (1970) or *Broken Circle* (1971), both evoking Neolithic cairns or megalithic structures. And throughout his career, he unfolded a poetics of time, within which the melancholy idea of a "future [that] tends to be prehistoric" (Smithson 1996, 194) resonates. In this case, 'prehistoric' means 'inhuman', referring to a state of the Earth where human species had not yet developed, since, for

Smithson, the modern world of mechanization fossilizes, so to speak, humanity's own agency and expels us from our history, thus echoing the early days of a Nature without humans. In fact, both his reconstruction of pseudo-Neolithic monuments using bulldozers and his kitsch images incorporating cut-outs of popular illustrations of dinosaurs serve to make a global idea of prehistory resonate as a nihilistic allegory of a universal law of 'entropy' (a concept that Smithson (*ibid*., 10–23) made the axis of his work), confronting the human with its own lack of substance and programmed disappearance.

With regards to 'prehistory', modern visual cultures can certainly use images as way of repressing the fundamental anxiety provoked by the thickness of time. But this ontological anguish can also be reversed by a creative power, and this is the case of the most authentic artistic creations of the twentieth and twenty-first centuries, when referring to a perception of deep time. By transforming the haunting resonance of the idea of prehistory into a force, at once inspiring and destabilizing, within the creative process, these works make us realize that the revelation of the 'dark abyss of time', using Buffon's famous expression, is not the result of an external event but of an inner collective desire, inherent to our invention of the idea of prehistory. In other words, artists do not passively echo a notion of prehistory whose conceptual substance would have been already established, they also contribute to *produce* it in all its intellectual and emotional complexity.

13.4 'Prehistory' and the Immemorial Present

Since its invention in the nineteenth century, the idea of 'prehistory' is an ethnocentric term that reflects the intellectual categories and spiritual needs of modern Western societies. In this setting, this idea has a symbolic dimension, allegorizing a new and conflicting relation to time and history. In this section, I define the terms of this complex, dialectical relation to historicity, of which 'prehistory' has become the allegory. Then, I will seek to show how modern and contemporary artists did not only appropriate 'prehistory's symbolic dimensions but how they actively participated in their definition.

As many authors have pointed out, nineteenth-century scholars proposed different labels to designate 'prehistory' both as a period and as a science. For instance, Boucher de Perthes used the term '*antédiluvien*' to refer to the time before the biblical Flood. Similarly, a number of scholars used the term 'paleoethnology' to refer to the scientific study of the 'prehistoric' periods (Blanckaert 2017). Besides this diversity, the fact remains that, in places such as England and France, terms 'prehistory' and 'pre-historical' quickly became the dominant terminology, not only in scientific circles but also in popular culture.

This is related to what Claude Blanckaert has called the "historicist turn of human sciences" (2011, 79) and, more broadly speaking, a "formidable call for history since the nineteenth century", when philologist Ernest Renan defined history as "the necessary form of the science of everything that is governed by the laws of the ever-changing and successive life" (Renan 1852, II–IV). This 'historization' of Western societies has a scientific dimension and a rhetorical one, which are closely interdependent. The scientific dimension means that all things are transformed into *objects* under analytical observation, as on a theater stage where the spectator can see them playing their role. The narrative dimension establishes that these objects are considered only in their capacity to evolve, to appear and to disappear. The dream of nineteenth-century history was to fuse together these two dimensions and to develop a number of *rational narratives* (from geology to archaeology and history) in which storytelling and demonstration, succession in time and causal consecution would converge. As historian and theoretician Hayden White (2006, 30) has put it, "one cannot historicize without narrativizing, because it is only by narrativization that a series of events can be transformed into a sequence, divided into periods, and represented as a process in which the substance of things can be said to change while their identities remain the same." In other words, objectivation and narrativization went hand in hand in the over-arching process of historicization specific to modern Western societies. At this stage, we can already note that there is a contradiction at the core of this twofold process, between the desire to define the unchanging identity of things and the awareness of their insuperable relativity in time. The result can only be a conflicting relation to history itself, mixing together faith and melancholy, or to put it into philosophical terms, progress and nihilism.

In this setting, what was the role played by the notion of 'prehistory'? At first sight, paleontology and 'prehistoric' archaeology can be considered as an achievement of the historicist approach. They sought to provide a total scope to the historical view of reality—of which the very expression of 'natural history,' used interchangeably with that of 'natural science,' is an eloquent example. In short, 'prehistory', or 'prehistoric archaeology', has been presented from the very beginning as a form of 'hyper-history'. In the context of encyclopedic positivism, the prefix "pre-" sought to demonstrate that *everything* could virtually belong to history. One of the founding 'fathers' of prehistory as a science, Gabriel de Mortillet, expressed this idea as early as 1867: "One can say that everywhere, in time as in space, humans followed the same global evolution in their industrial and moral development" (de Mortillet 1867, 186). This need to extend history to the beginnings of time and to the comprehension of all phenomena has been perpetuated until now in scientific circles. For instance,

Daniel Lord Smail has recently proposed a theory of "deep history" according to which "there is an urgent need to recuperate the history of Paleolithic peoples, to bring them into the purview of historical studies in the same way that we have brought in Incans, Africans, peasants, and all the peoples who have been denied historicity." (Smail 2010, 10).

However, prehistory as a subject of study seems to exert an extraordinary resistance to this process of 'historicization'. First, from a scientific perspective, we know very little about this vast period of time, since most of the materials employed by 'prehistoric' people have disappeared. Second, from a syntactic point of view, the facts emanating from deep time are somewhat difficult to fit with the structure of our historical discourse, which requires a combination of demonstration and narration. The cognitive capacities of the "synthesis of the heterogeneous" that, according to Paul Ricœur (1983, 128) constitutes the condition of any narrative, are incompatible with the long duration. As already mentioned, it is not only difficult, but structurally impossible to construct a narrative, with its chain of events, referring to thousands even millions of years. Two main solutions were proposed at the end of the nineteenth century to overcome this difficulty. First, some denied the epistemological specificity of deep time, and they implicitly reduced this long duration to the usual measures of the historical discourse, as if one could think about thousands of years as one thinks about centuries or decades, in order to transform 'prehistory' into a *story*. Second, others conceptualized time as an abyss and they suggested that 'prehistoric' facts or events were simply unknowable and lost forever, i.e. lay not only before but *outside* history.

In other words, together with the project of historizing deep time, 'prehistory' emerged in Europe as the harbinger of a radical questioning of the historical project. This widespread questioning, which philosopher and sociologist Ernst Troeltsch (1922) famously called "the crisis of historicism", was evident in Nietzsche, Bergson, Husserl and others' philosophical critiques of the historical understanding of the real, as well as in the aesthetic attacks against 'historical painting' in advanced art debates. This reveals a collective concern about the fact that historicism was at the same time culturally contingent, epistemologically contradictory, and existentially constraining, and it also reveals the emergence of a need to explore alternative forms of understanding reality. The invention of the idea of 'prehistory' reflects in many ways the tension between these two poles. On the one hand, it expressed the scientist's desire to react to anti-historicist criticism by pushing their historicist project to the extreme. On the other hand, the same idea seemed to escape its own inventors, so to speak, and, whether they liked it or not, marked the relativity, if not the irrelevance of any process of historicization whatsoever.

Prehistoric archaeologists were certainly aware that the crisis of historicism was at the foundation of their field of research. This explains why they either tried to close the debate by asserting one single 'historical' interpretation of the collected archaeological data, against their challengers, or, in other cases, they melancholically recognized the empirical limits of their own approach without calling into question its epistemological principles for all that. This was the case, for instance, of Ernst Grosse (1894, 21) who argued that storytelling lacked scientific relevance in terms of the study of the "beginnings of art," and that "the answers are uncertain and often contradict each other, so that, after studying dozen of most famous works on prehistoric art, we close the last one with the sad conviction that prehistory is the fiction of sociology". Similarly, almost a century later, André Leroi-Gourhan (1965, 27) recognized that "prehistoric science was well-equipped to give certain precisions as to the direction in which one piece of ochre was used in prehistoric art, but it remains silent to understand the meaning of such a gesture.". Even Max Raphael, one of the scholars who most passionately committed himself to a (Marxist) historicization of prehistory recognized (and regretted) in the late 1940s that "in the best of cases we conceal the indistinctness [*Unerkennbarkeit*] of the Quaternary *Homo sapiens* under a series of illusions which contradict each other and constitute what we call 'progress of knowledge'" (Raphael 1993, 124). Instead, Raphael (1968, 205) proposed to rely on an "empirical theory of art," that would take into account the fact that "no matter how far back in history we go, the birth of art immediately escapes any purely historical explanation" (Raphael 1933, 172). Certainly, he dreamed that this "empirical theory" or "science of art" [*Kunstwissenschaft*]—based on a strictly formal analysis of the images and their mutual relations in space—could allow a precise understanding of Paleolithic art and, therefore, of Paleolithic societies in all their religious, political, and social dimensions. But he also recognized the irreducible part of obscurity which characterized prehistoric artistic creation. It was precisely this darkness or "indistinctness" that was at the center of the exploration of avant-garde artists, with whose works Raphael had long been familiar.

It was indeed to be the task of visual arts and literature to offer a creative response to the revelation of deep time as the reverse of history. While a number of popular and academic representations have contributed to reinforce the historicist narrative, since the end of the nineteenth century, some artists and writers have been engaged in a struggle against the supremacy of the narrative logic as such and meditated the idea of prehistory in this perspective. The example of Picasso can illustrate this point. André Malraux remembered a conversation in which the artist wondered about his attraction to *Venus of Lespugue,* of which he owned two plastercasts: "Why do I like my prehistoric Venus? Because nobody

knows anything about her (Malraux and Picasso 1974, 123)." For the artist, the interest of 'prehistoric' artifacts lies in the vastness of their possible meanings, in their structurally enigmatic nature which calls no elucidation but, on the contrary, establishes semantic indeterminacy as such, as the object of a paradoxical knowledge, of existential order. Certainly, this lesson was based on a consideration of 'prehistory' in general. However, the reference to material things, considered as artwork, was central, insofar as the experience of art allows specifically for the reversal of historical temporality, shifting the intellectual knowledge into an emotional experience involving a physical presence, a paradoxical feeling of 'here-and-now' in front of real objects.

We have seen how the resonance of Paleolithic art in modern art was not mainly related to the primitivist mode (seeking to recreate a mythical universe) but it was more mainly fueled by an attraction for the silent material presence of the artifacts and rock images, including bodily imprints (particularly the negative or positive hands), digital tracings, the illegible chaos of superimposed outlines, and what Georges Bataille (1955, 90–91) called "unintelligible figures": "We will have to confess finally not to know anything. […] The more we feel overwhelmed, the further we are likely to go into the secrets of this [prehistoric] world that has disappeared forever." We also saw that the resulting aesthetic experience is rooted in the tension between two temporalities, producing this contradictory feeling of extreme presence (or extreme materiality) and extreme distance (or extreme unintelligibility). This is what allowed the photographer Brassaï (1933, 6) to notice, when he compared Parisian graffiti and Paleolithic engravings, that "living analogies establish vertiginous connections through ages, *by a simple elimination of the temporal factor*." It should be noted that the "temporal factor" to which Brassaï refers is that of the historical time, i.e., the time that is chronologically organized and thus connected to the present by the consequential and narrative means of history. On the other hand, what manifests itself more strongly than ever in these connections between the present and the deep past is a temporal thickness, something which we might call a non-discursive density of time.

In the act of perception, the sense of the thickness of deep time can be defined as one of the forms of experience of the immemorial. Perceiving something as immemorial (i.e. as originated in the deep, or *thick* past) does not mean that it belongs to an abstract timelessness, but that it is endowed with a non-discursive temporal dimension, which confers it a particular aura. Memory shapes the past in a narrative form, and oblivion creates a clear cut discontinuity between the present and the past. Between memory and oblivion, the immemorial designates a relationship to the world saturated of time that is not informed by history. We often feel this sense of the unfathomable temporal thickness of our surroundings without being able to formulate it explicitly. Yet the relation with 'prehistoric' artifacts and, even more specifically, with cave 'art' allows us to give an explicit form to this feeling, a form originated by the clash between the fascinating impression of a recent action and the indecipherable enigma of its meaning, lost in time forever. It is as if the lack of meaning were releasing the direct perception of an ever-present human gesture, in all its power. Immediacy and distance are thus tied together in our experience in the most disturbing manner. When contemplating these images, even under the form of pictures, the tension between the past and the present can no longer be synthetized in a narrative interpretation. One could say that history is forcefully unplugged. But this does not erase our time-related feelings. On the contrary, the uncertainty of interpretations and the suspension of any definite content leaves the field open to them: the *question* of time is coiled on itself, so to speak, with no answer to it, so that this immemorial thickness which tinges so many of our perceptions without being formulated, is violently brought to the fore and invades our consciousness in the species of the uncanny. An analogous sensation of non-historical temporal clashes is grounded on a number of modern artistic and literary creations, haunted by the desire to get rid of the historical narrative that orders (and makes sense of) time, and it is this analogy that feeds their attraction for a 'prehistoric' dimension, through the encounter with deep time artifacts and images.

We cannot underestimate the global cultural impact of these powerful artistic expressions of deep time, all the more so because they correspond to one of the driving forces that presided over the invention of the idea of prehistory, even if it was inevitably held back in scientific elaborations. In fact, the world of prehistoric science and that of modern art have always been in contact. For instance, some of the founders of rock art studies, such as Henri Breuil and Leo Frobenius, were well aware of the experiments of avant-garde artists in France and Germany, which they discovered in publications such as *Cahiers d'art* in Paris (Breuil and Frobenius 1930), or in museums such as the Museum of Modern Art in New York (Frobenius and Fox 1937). Signs of this influence can be observed in the stylistic evolution of the drawings of French, Spanish, and South African sites that Breuil made in the 1930s and 1940s. And the same can be said about the monumental African compositions copied in the 1930s by Leo Frobenius' team, composed partly of students from German progressive art schools (Hélène et al. 2016). Conversely, some relevant commentators about prehistoric art in the 1940s and 1950s, such as Max Raphael (1993), Georges Bataille (1955), or Siegfried Giedion (1957), belonged to different literary and artistic avant-garde circles. Even if they cannot be considered academic prehistorians, they devoted a number of works to prehistoric art and they had an impact in a relatively large audience during the post-

war period. This attraction between the contemporary art world and the world of prehistoric archaeology has continued to this day, occasionally leading to meetings and collaborations between individuals belonging to these two different fields, like that of the Chauvet cave (Dallaporta et al. 2016; Barceló 2019). In this context, we must not resort to a simplistic cultural determinism, seeing these conjunctions as the sole source of recent important changes in prehistoric studies, such as an increased sensitivity to the materiality and the indeterminacy of meaning in Paleolithic works. Still, it is appropriate to note the persistent connection between these two different kinds of relations with 'prehistory', one based on objectification and historicization, the other oriented towards subjective integration and poeticization (something which has nothing to do with the invention of arbitrary fantasies). Although contradictory, these two tendencies are inseparable, as they are the two major factors in the development of the idea of prehistory in the Western world since the mid-nineteenth century. By appropriating all that remains enigmatic in the data of prehistoric archaeology and exalting it, modern artists transform an epistemological challenge into a poetic truth. It favors a complex process of de-objectification and internalization of the prehistoric dimension, which is more potent than ever in our present time.

At a moment in which human societies perceive themselves, rightly or wrongly, at a turning point, the aesthetic confrontation with the paradoxical *presence* of deep time images is particularly relevant. Their resonances are diverse: they can embody a reserve of concrete wonder, spurred by the physical strangeness of the caves, in a materialistic age; they can feed a meditation on the evanescence of humans—just a scratch in the infinite reconfigurations of matter—and on the imminence of the catastrophe which would make the near future a counterpart of the Earth before humans; they can also incite the re-initiation of the links between art and life, through a renewed participation in the natural world and the physical engagement of the body with its material environment. Wonder, catastrophe, new beginnings: all these stances unfold the creative power of an inner 'prehistoric' dimension, of which deep time images have always been privileged intercessors, continuously giving shape to our present.

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Part IV

Tensions in Rock Art Management: Local vs Global

The UNESCO World Heritage List in a Globalized World: The Case of the Paleolithic Caves of Northern Spain (1985–2008)

14

Eduardo Palacio Pérez

Abstract

Northern Spain is home to one of the richest concentrations of Paleolithic cave art found anywhere in the world. The universal value of this heritage was first recognized by UNESCO in 1985, when the cave of Altamira was inscribed in the World Heritage List. In 2008, a further seventeen cave art sites in the region were added to the original list. In this paper I examine this process with reference to two main issues. First, taking the case of Cantabria as a paradigm, I examine the archaeological and heritage narratives that, since the end of the nineteenth century, have made these caves a center of global rock art research. In particular, I discuss the role of these narratives in the nomination process that led to securing UNESCO World Heritage status. Second, I analyze the impact that the World Heritage status has had for Cantabria, a region in which a plurality of stakeholders must be satisfied. I suggest that the economic (tourism), conservation (heritage value), and academic (intellectual value) factors that were the primary drivers in establishing the World Heritage status of the caves constitute a plurality of diverse (and sometimes opposed) interests that have yet to be reconciled. This case study has important implications for the ways in which Paleolithic rock art is globalized by archaeological, heritage, and local communities alike.

Keywords

Cantabria · Conservation · Eurocentrism · Paleolithic cave art · Research · Tourism · World heritage

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14.1 History of the Inscription of "Cave of Altamira and Paleolithic Cave Art of Northern Spain" on UNESCO's World Heritage List

The Cantabrian Mountains are riddled by numerous caves, many of which contain large ensembles of Paleolithic art. Their favorable state of conservation makes this region a privileged place for the study of these prehistoric images. The engraved and painted motifs in the caves of Northern Spain, despite displaying some peculiarities, form part of a wider tradition that encompasses the whole of Paleolithic art in south-west Europe.

On July 7, 2008, UNESCO added seventeen cave art sites in this region to the World Heritage List: Peña Candamo, Tito Bustillo, La Covaciella, Llonín, El Pindal, Chufín, Hornos de la Peña, El Castillo, La Pasiega, Las Chimeneas, Las Monedas, El Pendo, La Garma, Covalanas, Santimamiñe, Ekain, and Altxerri (Fig. 14.1). This designation was the culmination of a long process that started with the inscription of Altamira Cave in the World Heritage list in 1985 (UNESCO 1985). The universal value ascribed to Altamira was based on its definition as a unique prehistoric artistic site and as outstanding evidence of Magdalenian cultures in southern Europe. However, most experts were aware that Altamira was not an isolated site and that many other caves in Northern Spain displayed similar qualities (Ontañón Peredo 2009). Consequently, the Autonomous Communities (administrative divisions into which Spain has been organized since 1978) of Asturias and Cantabria drafted a proposal to include the Paleolithic art cave in the region in the World Heritage List. At that time, about a hundred sites were known. In 1998, this proposal was added to the 'Spanish Tentative list of World Heritage.' It should be noted that the World Heritage Committee only considers candidatures that have been previously placed on the tentative list of each state party (Spain in this case). This was a sensitive proposal with some solid antecedents. For instance, in 1979 UNESCO had listed the

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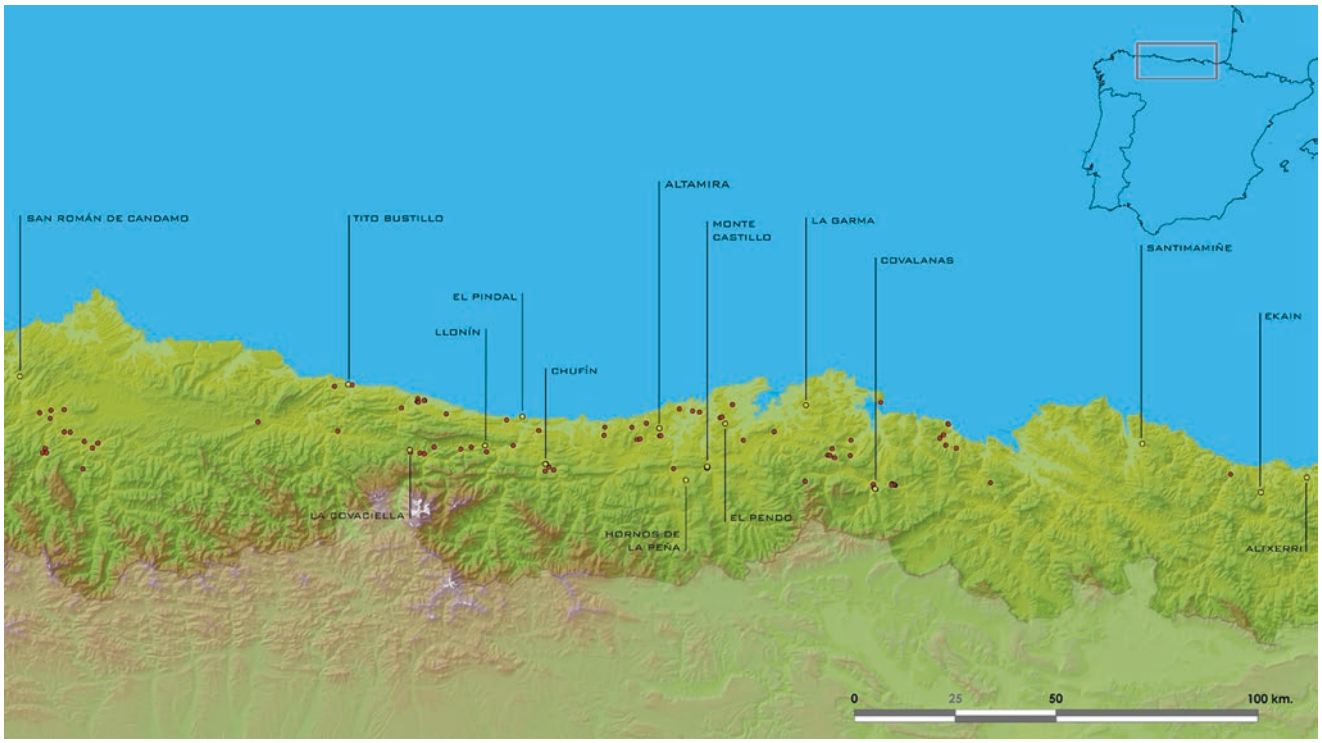

Fig. 14.1 Map of the Cantabrian region in Northern Spain representing the cave art sites. The names of the World Heritage sites are indicated (© Ingenia S.L.)

property 'Prehistoric Sites and Decorated Caves of the Vézère Valley,' comprising 172 archaeological and cave art sites, such as Lascaux Cave (UNESCO 1979). More recently, in 1998, the 'Rock Art of the Mediterranean Basin on the Iberian Peninsula' was added to the World Heritage List, comprising 758 rock art sites (UNESCO 1998). Both inscribed sites reflect the idea of 'serial properties' consisting of multiple related sites.

In the early twenty-first century, ICOMOS (International Council on Monuments and Sites) carried out studies that demonstrated the benefits of including the northern Spanish Paleolithic cave art sites in the World Heritage List (Clottes 2002). Finally, the proposal of extending the inscription of Altamira to other caves from the same region was given impetus in 2005, when the Basque Country supported the original 1998 proposal. However, the candidature had to be reformulated in the light of the new requirements that UNESCO had defined as a part of its new global strategy. The 'Global Strategy for a Representative, Balanced and Credible World Heritage List,' created by UNESCO in 1994, sought to accomplish two main goals. The first was to expand the definition of World Heritage beyond cultural properties and to include places with a particular natural value. The second was to encourage the candidature of under-represented regions around the globe, as most sites listed until then were located in Europe (and associated with Christianity). The ultimate goal was to include properties that were not only "evidence of human creative genius" expressed in the great works of world social elites, but that also reflected "human beings in society" and "human coexistence with the land" (UNESCO 1994).

Certainly, this was not the most favorable context in which to extend the inscription of Altamira to the rest of cave art sites in the region, especially considering that in 2005 Spain was the country with the second-most properties on the World Heritage List. However, the Spanish state was able to take advantage of this situation by presenting the case as an instance of an under-represented type of property, as prehistoric sites were a minority on the World Heritage List (Clottes 2002; Sanz and Coord 2009).

Additionally, extending Altamira's World Heritage designation to the rest of the caves in the region implied expanding the number of protected sites without increasing the total number of Spanish properties on the World Heritage list (Ontañón Peredo 2009). The proposal required a rigorous selection of cave art sites, which meant that several criteria had to be applied: numerical proportionality between the three autonomous communities, archaeological representativeness of the art ensembles, and the quality of the conservation and management of the sites. Finally, specialists chose the 17 abovementioned caves mentioned (please see Fig. 14.1). Moreover, to be successful, the candidature had to fulfil at least one of the ten criteria that UNESCO established to justify the universal value of the property. This extension

applied the same criteria as used for the original nomination of Altamira: "i) it bears testimony to the creative genius of man during the different periods of the Upper Paleolithic" and "iii) bears outstanding and unique testimony to an ancient stage, which vanished more than 10,000 years ago, of the origins of human civilization" (UNESCO 2008).

Although adding the northern Spanish caves to the World Heritage List has resulted in numerous advantages for the management, conservation, research, and dissemination of knowledge of the properties (for a more detailed account, please see Ontañón Peredo and Rodríguez Asensio 2016), the inscription in the list also posed a number of challenges. In this setting, many questions are relevant: What do the caves with rock art mean for the regional and local communities that live near them? Are they relevant for all humankind? Are the many conservation, dissemination, and economic dimensions of the caves contradictory? To what extent is the approach to this archaeological heritage the product of subjective decisions based on historical inertia, ideological conceptions, and economic interests? To answer these questions, I would like to examine two key aspects. First, I will focus on how a number of archaeological and heritage narratives about these caves has been constructed. These narratives are not univocal but express different ways of conceiving the significance of the past. Different ideas, conceptions, and values are superimposed and intermingled, generating tensions and contradictions. Second, I will analyze how heritage (conservation), economic (tourism), and intellectual (research) factors have been projected to cave art and have become the key forces behind the designation of the northern Spanish caves as World Heritage sites. To do this, I will concentrate on the case of Cantabria, where the long tradition in the study, conservation, and tourist use of this kind of archaeological heritage is particularly relevant.

14.2 Archaeological and Heritage Narratives About Cantabrian Cave Art

Narratives around Paleolithic art in the region, like that of other heritage properties, have been constructed as a mechanism to create new forms of the social and individual identity generated by modernity (Hernando Gonzalo 2002, 2006, 2009). These narratives form part of the scientific discourse about the origins of humankind; they select the most outstanding works of our past and transform them into identity symbols.

These narratives about historical heritage have varied over time and have changed depending on the opinions of experts, engendering a variety of feelings in different individuals and communities. In particular, archaeological narratives have promoted nationalist feelings on different scales (Kohl and Fawcett 1996; Díaz-Andreu and Champion 1996), but they have also been used to promote universal values supposedly shared by all humans. (Merode et al. 2003).

The narrative of Cantabrian cave art has formed part of this debate since its scientific discovery; it is not independent of the discourse proposed for the rest of European Paleolithic cave art, but does possess some peculiarities. The Paleolithic art of Northern Spain has also been used to promote different feeling and ideologies, including nationalism and universalism. That said, the construction of a narrative with universalist pretensions on the origins of art and modern human behavior was dominant until the late twentieth century (Palacio-Pérez 2013, 2017). Besides the obvious fact that this concept has been driven by eurocentrism (Moro Abadía and Tapper 2021), this narrative has four main traits. First, Franco-Cantabrian Paleolithic art was included in a unified category of art that connected the remotest past of humanity with the present through a universal aesthetic feeling (Moro Abadía and González Morales 2005a; Palacio-Pérez 2013). Second, according to this narrative, art originated in Europe (Dowson 1998, 68–69). Third, archaeologists and art historians maintained that European parietal art was the finest manifestation of 'primitive art.' This was related to the prevalence in art history of a paradigm that valued artistic form and skill, as well as the ability to achieve highly naturalistic depictions (please see Fig. 14.2) (Moro Abadía et al. 2012). Fourth, cave art in Western Europe was regarded as representing the first form of religiosity (Palacio-Pérez 2010). In other words, Cantabrian Paleolithic art was viewed as the origin of the artistic and symbolic capacity of humans, ignoring other artistic traditions. This view concealed a par-

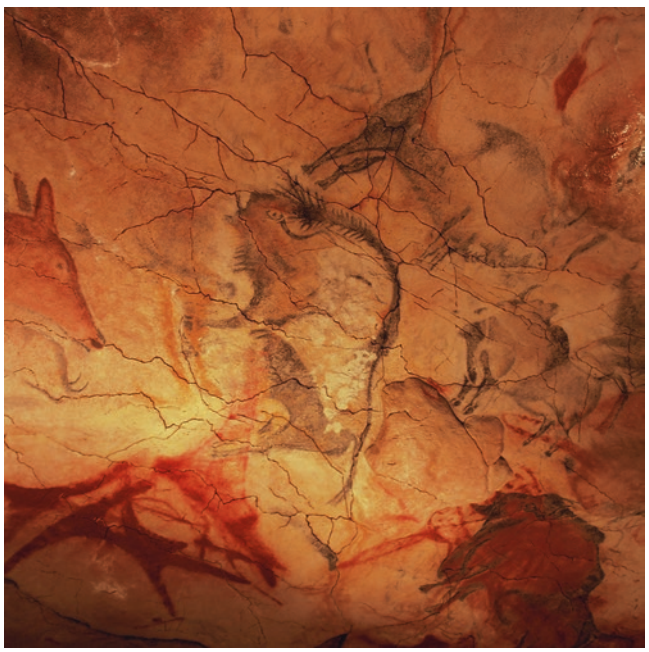

Fig. 14.2 Polychrome Ceiling of Altamira Cave (© UNESCO, Author: Yvon Fruneau)

ticularistic logic because it involved granting European cultural heritage an innovative character that was implicitly denied to other cultures.

Prehistoric cave art has also fueled nationalist sentiments. Spanish archaeology has not systematically exploited its earliest prehistory for the creation of a national identity; that active role has been the reserve of protohistory (Díaz-Andreu 1995; González Morales 1992). However, cave art in Cantabria was at the core of two Spanish myths. The first one concerns the glorifying story of the discovery and recognition of Altamira (Moro Abadía and González Morales 2005b). This symbol of Spanish prehistory was constructed in the early twentieth century, in a moment in which most research in the caves of Cantabria was carried out by foreign prehistorians mainly based at the *Institut de Paléontologie Humaine* (Moure Romanillo 1996, 25). The narrative celebrated Spanish prehistory by exaggerating French prehistorians' rejection of the discovery of Altamira: "For 20 years, the French obscurantists maintained the error in the field of science, in opposition to the learned Spanish" (Carballo 1910 cited by Madariaga de la Campa 1972, 240). Since then, traditional historiography has tended to exaggerate the debate about the acceptance of Altamira by presenting it as a "struggle that had both provincial and international boundaries" (García Guinea 1979, 37) or as a "romantic adventure" (Madariaga de la Campa 2002, 10). Naturally, the main figures in this debate, Marcelino Sanz de Sautuola and Juan Vilanova y Piera, were praised, presented as "Spanish heroes" (Carballo 1950, XLIII), or as the "noble and zealous knights committed to fighting the mistake that questioned the discoverer's honorability" (Madariaga de la Campa 2002, 9).

Altamira and other prehistoric caves served to justify another Spanish myth, i.e. the idea of a genuine Spanish creative genius that could be traced back to prehistoric times: "Spain is the land of art, of originality, of spirituality. These qualities were already present in (Spanish) Paleolithic art" (Marqués de Cerralbo 1915, IV). Similarly, the paintings and engravings of Cantabria proved "irrefutably that in those remote times Spain was at the head of civilization and the greatest human culture shone in it" (Carballo 1924, 93). Prehistoric depictions were described as the pinnacle of art: "Neither in beauty nor in antiquity, nothing has been able to supersede the art of Northern Spain. With Altamira it reached a peak that now cannot be surpassed" (Pericot García 1953: 25).

The death of General Franco in 1975 led to a change of the Spanish political system. Dictatorship was replaced by democracy and the country was reorganized into new administrative divisions called 'Autonomous Communities'; Cantabria being one of them. In this new context, prehistoric caves became one of the symbols of the new region (Moro Abadía 2008). The caves of Monte Castillo and, especially, Altamira became *the* icons of Cantabria. For example, Altamira's paintings were used in advertisements by regional businesses and were the symbols of numerous tourism campaigns. However, it is important to note that, since their designation as World Heritage sites, this narrative has been reoriented towards a much more universalistic and international perspective. For instance, the President of Cantabria said in 2010: "The caves […] are the most outstanding example of the history, cultural diversity and cross-border, international character of the region of Cantabria" (Fernández Vega et al. 2010, 5).

To sum up, cave art sites have fuelled three main narratives: (1) a universal narrative that depicts Altamira and the Cantabrian caves as the origins of art, (2) a national narrative that made cave art a symbol of Spanish identity since the beginnings of the twentieth century, and (3) a local narrative that, starting in the late 1970s, made of Altamira and the other prehistoric caves a symbol of the Cantabrian region.

It is important to note that there is no opposition among the narratives above. In fact, the three narratives function in an interconnected and complementary way. For instance, the universal narrative about the origins of art is often evoked in terms of national and regional pride. Moreover, there is no contradiction between the national and the local narratives because the Spanish and Cantabrian identities are not opposed.

In any case, the dominant narrative was based on a Eurocentric perception that considered cave art to represent the origins of artistic skill and modern symbolic behavior. This discourse surrounding Paleolithic art was not challenged until the late twentieth century. However, as Moro Abadía and Tapper have pointed out (2021), in the first years of the present century, the introduction of novel techniques of analysis (especially new dating methods) and the impact of globalization in prehistoric research have called this Eurocentrism into question. First, after discoveries such as the two pieces of ochre engraved with geometric motifs in Blombos Cave (Henshilwood et al. 2002), it is no longer possible to maintain that Pleistocene art originated in Europe. It is even problematic to sustain the notion that Pleistocene parietal art was predominantly a European phenomenon, since many discoveries have been made in Asia, Africa, South America, and Australia in the last decades (Clottes 2012). The global character of Paleolithic art has been confirmed by recent discoveries such as Narwala Gabarnmang (Australia) (Bruno et al. 2013), Sulawesi (Indonesia) (Aubert et al. 2014), and Lubang Jerili Saléh (Borneo) (Aubert et al. 2018), among others.

Paradoxically, the UNESCO nomination of 'Cave of Altamira and Paleolithic Cave Art of Northern Spain' (UNESCO 2008) did not reflect this global dimension of Paleolithic art. Rather, it was anchored in a Eurocentric point of view in which Cantabrian caves were presented as the beginnings of art and symbolism. This is related to the fact

that the nomination sought to satisfy several stakeholders in contemporary society, rather than develop a critical view on cave art. In this setting, the nomination continued to celebrate Paleolithic art from Northern Spain as the symbol of a "new human culture involving profound material changes, the invention of new techniques, and the development of artistic expression through painting, engraving and sculpture" (UNESCO 2008, 181). Furthermore, it continues to place European Paleolithic hunter-gatherers at the peak of cultural innovation, because they "achieved an accomplished artistic, symbolic and spiritual expression of their human society" (UNESCO 2008, 182). This poses the question of what underpins the designation of World Heritage status. In this case it undoubtedly was not a critical reflection on the past, but rather the elaboration of a symbol that embodies values to be preserved, reaffirmed, and, if possible, exploited.

14.3 Research, Conservation, and Dissemination of Paleolithic Art in Cantabria: A Long Road Towards World Heritage Status

The caves from Cantabria are a paradigmatic example of how research, tourist exploitation, and conservation are usually interconnected in the management of rock art. In this section, I discuss some of these issues with reference to the research, conservation, and knowledge dissemination of the caves from Northern Spain.

14.3.1 A Long History

After the authentication of Altamira in the last years of the nineteenth century (Moro Abadía and González Morales 2005b), archaeologists undertook intense fieldwork in the region. For instance, in 1902, Henri Breuil and Émile Cartailhac extensively worked in Altamira (Cartailhac and Breuil 1906). From 1903 to 1910, the so-called 'race of discoveries' (Madariaga de la Campa 1972, 38) was headed by two local amateur prehistorians, Hermilio Alcalde del Río and Lorenzo Sierra, who found a large number of cave art sites (including El Castillo, Hornos de la Peña, Covalanas, La Haza, etc.). Prince Albert I of Monaco funded a number of cave art studies between 1906 and 1910, especially those that culminated in the publication of *Les Cavernes de la Région Cantabrique* (Alcalde del Río et al. 1911). Those studies helped to establish some ideas about the procedures, chronology, and meaning prehistoric art that were prevalent until the mid-twentieth century.

After 1910, individual initiatives were replaced by research promoted by national and international institutions. Particularly important is the role played by the *Institut de Paléontologie Humaine* (IPH), founded in 1910 thanks to the sponsorship of Prince Albert I of Monaco (Hurel 2015). In Cantabria, the IPH funded excavations in El Castillo (Cabrera Valdés 1984) as well as the publication of La Pasiega (Breuil et al. 1913). The excavation in El Castillo, directed by Hugo Obermaier, had an international impact because of the depth of the stratigraphy and the scientific reputation of the archaeologists. International collaboration ended in 1914 with the advent of World War I. At that time, the main Spanish institution devoted to the study of cave art was the *Comisión de Investigaciones Paleontológicas y Prehistóricas* (CIPP), founded in 1912 with its headquarters in the Museum of Natural Sciences in Madrid. The CIPP played a key role in the institutionalization of prehistoric research in Spain and published some key text in those years, such as *El Arte Rupestre en España* (Cabré Aguiló 1915) as well as *Fossil Man in Spain* (Obermaier 1916), whose chapter on Cantabrian prehistoric art was the best synthesis published on this topic at that time. An international institution that played an important role in the study of cave art in Cantabria was the *Forschungsinstitut für Kulturmorphologie* (Germany) and its excavations in El Castillo, La Pasiega, Altamira, and Hornos de la Peña in 1936 (Gracia 2009).

Almost from the beginning, this intense research was accompanied by the tourist exploitation of the sites. The use of cave art as an economic resource intensified with the development of tourism as a form of affirmation of national identity and as a leisure industry (Díaz-Andreu 2019).

From the initial discovery, Marcelino Sanz de Sautuola had to take measures to protect Altamira Cave because the controversy over the age of the paintings brought many people to the cave. He closed the entrance of the cave with a wooden door in 1879 that was replaced by a metal gate 1 year later (Lasheras and Prada 2015). In the case of El Castillo Cave, the discoverer Hermilio Alcalde del Río took charge of its management from 1903 to 1931 (García-Díez et al. 2012). Generally speaking, in those years, the discoverer (or a local guide without scientific training) showed the caves to a reduced number of visitors. The person in charge usually kept the key to the cave door and led the visitors inside, showing them the paintings and engravings on the walls. Consequently, the figure of the 'local guide' emerged and became a key role in the tourism of the time. Hotel owners in the towns near the caves, specifically in Santillana del Mar (near Altamira) and Puente Viesgo (near El Castillo) began to note the first arrivals of tourists in those years.

In the 1920s, a number of Spanish institutions, such as the *Comisaría Regia de Turismo* (later *Patronato Nacional de Turismo*), were created to promote tourism in archaeological sites (Díaz-Andreu 2014, 21–22). The caves were an attraction for an educated and exclusive public, who also enjoyed visiting the towns of the region, like Santillana del Mar and Puente Viesgo. The first institutions were created to manage

the increase in the number of tourists. In particular, the *Junta Protectora de la Cueva de Altamira* (which became *Patronato de Altamira* in 1925) was created to take charge of the conservation of the cave and the renovations to adapt the cave for tourist visits. For instance, a small museum was created, an access road was built, and electric lighting was installed inside the cave. At the same time, the natural form of the cave began to be irreversibly altered with the construction of interior walls (Lasheras and Prada 2015). The first illustrated guidebook about the cave of Altamira was published in those years (please see Fig. 14.3) (Obermaier 1928). In 1940, the *Patronato de Altamira* began to manage the caves of Monte Castillo too, and, starting in 1944, it changed its name to the *Patronato de las Cuevas Prehistóricas* and took charge of all the rock art sites in the region.

The Spanish Civil War (1936–1939) and the long post-war period interrupted archaeological work. The dictatorship of General Franco (1939–1975) marked a time of isolation in regional research. In the early 1950s, Jesús Carballo and García Lorenzo discovered the caves of Las Monedas (1952) and Las Chimeneas (1953), whose parietal art ensembles then began to be studied (González Echegaray 1952; Ripoll Perelló 1954).

The end of international isolation following Eisenhower's visit to Spain in 1959 and the new role of Spain in the Cold War marked the start of a period of international collaboration. For instance, a number of American archaeologists (F. Clark Howell, Karl Butzer, and Leslie Gordon Freeman) came to Spain, and they played an important role in the resurgence of Spanish archaeology (Straus 2016). The collaboration between Joaquín González Echegaray and Leslie G. Freeman was particularly important, not only because of their excavations in Cueva Morín and El Juyo, but also because of their seminal work in Altamira (Freeman and Echegaray 1987). Nevertheless, at that time, the most influential researchers in Paleolithic art studies were the French academics Annette Laming-Emperaire and André Leroi-Gourhan (González Sainz 2005; Palacio-Pérez and Moro Abadía 2020). During the 1970s, the caves of Chufín and Micolón were discovered (Almagro Basch 1973; García Guinea et al. 1982) and two conferences on Paleolithic art achieved an international impact: *Santander Symposium* (Almagro Basch and García Guinea 1972) and *Altamira Symposium* (Almagro Basch and Fernandez-Miranda 1980).

Fig. 14.3 Cover of the first tourist guide to the Altamira cave, published in 1928

The end of Spain's international isolation in the 1950s and '60 s brought about new policies, mainly centered on mass tourism. In the span of a few years, tourism became the new driving force of the Spanish economy. The democratization of family transport with the use of cars increased the possibilities for travel. Spanish provinces hastened to display their best monuments, which in the case of Santander were the prehistoric caves. The *Patronato de las Cuevas Prehistóricas* started a program to adapt and prepare the caves for the massive arrival of tourists, including El Castillo, La Pasiega, Las Monedas, Las Chimeneas, Covalanas, La Haza, and Hornos de la Peña (García-Díez et al. 2012). In 1971, the road that gives access to Altamira was widened and three new buildings were built to provide a cafeteria and a restaurant for visitors. These renovations sought to make the caves more accessible, but failed to consider the impact of the renovation works and, especially, the massive numbers of visitors on the condition of the art. Some numbers can illustrate this point. 55,000 people visited Altamira in 1955, and by 1975 that number had risen to 175,000 visitors per year. In 1967, 1300 people visited the cave in a single day. The popularity of Altamira was used to promote visits to other Paleolithic art sites in the region (including discount tickets to other caves). Altamira became the center of an economy built around prehistoric art, resulting in the opening of numerous hotels, restaurants, souvenir shops, etc. However, the touristic exploitation of the sites quickly endangered the conservation of the art.

The triumph of democracy in 1976 entailed the introduction of a number of changes to Spain's administrative structure (decentralization and the creation of autonomous communities) and academic institutions (creation of new universities), and these changes impacted archaeological research in regional prehistory. The establishment of Prehistory Department at University of Cantabria fueled archaeological research in an unprecedented way. On one hand, a number of cave art sites were reevaluated, included La Pasiega (De Balbín Behrmann and González Sainz 1993), Covalanas, and La Haza (Moure Romanillo and González Sainz 1991). On the other, new sites were discovered, including Fuente del Salín (Moure Romanillo et al. 1984) and La Garma (Arias et al. 2004). At the same time, new theoretical frameworks were introduced (Conkey 1980, 1984; Moure

Romanillo 1994). From the 1980s onwards, rock art research in Cantabria has enjoyed a revival, with the introduction of new methods and techniques that have placed the Cantabrian caves at the center of major international debates about Paleolithic art (e.g., White et al. 2020).

In the past 50 years, the conservation policy of the caves has undergone a number of profound changes. For instance, in 1976, the Spanish Ministry of Education and Science created a commission to study the state of the paintings of Altamira. As a result of the commission's report, the cave was closed to the public in June 1977 (Lasheras and Prada 2015). After that time, conservation policies were redesigned in order to maintain the environmental conditions in the caves, principally by strictly controlling the number of visitors. In 1982, Altamira was re-opened with a limit of 11,500 people per year. The inclusion of the cave in the World Heritage List in 1985 did not involve any significant changes in the conservation measures. However, the closure of the cave demonstrated the need to build a replica in its vicinity that could channel the flow of tourists and protect the original. This project became a reality in 2001. The following year, the authorities closed Altamira again as new concerns about the spread of microorganism on the walls of the cave arose (De las Heras 2020). Since then, only two more new caves with Paleolithic art have been opened to visitors: El Pendo, after the discovery of a large group of red paintings in 1997, and Cullalvera, where the monumental size of the cave is the main attraction, rather than its paintings.

In 2005, the autonomous community of Cantabria decided to facilitate the inscription of the caves of Northern Spain onto the World Heritage List, in conjunction with the communities of Asturias and the Basque Country, because of the extensive experience they had accumulated.

14.3.2 Ongoing Debates

Some positive outcomes have resulted from the inscription of the caves onto the World Heritage List (Ontañón Peredo and Rodríguez Asensio 2016). The protection areas (buffer zones) around the caves have been completed and infrastructure built around the World Heritage sites. In Cantabria, a new visitor center has been built near the caves of Monte Castillo, similar to the centers already existing at Ekain Cave in the Basque Country and Tito Bustillo Cave Art Center in Asturias. In terms of conservation, UNESCO requires national administrations to maintain unified management of the designated property. To fulfill this obligation, a joint commission of the Spanish Historical Heritage Council developed a management plan. At the same time, this commission coordinates the work of the different administrations involved: The State, the Autonomous Communities, and the Provinces. However, there are significant differences in the management of these sites. For example, none of the inscribed Basque caves are open to the public for conservation reasons, whereas six caves are open in Asturias (and seven in Cantabria). These differences can be explained by their historical contexts. In fact, Cantabria enjoys a very long history of tourism associated with cave art. This has resulted in the creation of an economic network (restaurants, hotels, shops, etc.) built around cave art sites, but which is often opposed to any policy aimed at closing the caves to the public (De las Heras 2020).

That said, the inscription on the World Heritage List has consolidated a commitment to the conservation of the cave art, especially among the political agents. In 2008, the Head of Culture and Tourism in Cantabria expressed this idea in the following terms: "We are convinced that management decisions must be based on exclusively technical criteria oriented towards the conservation and the rational use of the resources […] Although our deepest feelings might be different, we have to act responsibly with heritage" (García et al. 2011, II). Despite these good intentions, the management of the Cantabrian caves faces a number of challenges. These are not specific to these caves, but they take place within the regional context.

First, conservation measures and legal protections are often too vague and difficult to put into practice. For example, in 2017, only two of the Cantabrian caves on the World Heritage List (Altamira and La Garma) had enacted a preventive conservation plan with multi-disciplinary work teams (Dirección General de Cultura 2017, 33). Secondly, rock art research in this region is divided into two main fields: (1) Research on the conservation and documentation of cave art, and (2) research seeking to examine some specific aspects of rock art. Until now, this work has not been carried out as a coordinated effort, but has instead depended on the particular interests of research teams belonging to different institutions (from universities to research centers). In this regard, Cantabria Autonomous Community's administration is attempting to plan and coordinate the work, but it is not easy to overcome the inertia of an historically established research tradition (Dirección General de Cultura 2017, 36–37). Third, although seven caves are open to the public, this is not without problems. One of the main points of conflict lies in how to maintain public visits to those properties without jeopardizing the conservation of the paintings (Ontañón Peredo et al. 2014). The tourist demand on the caves has increased in the last two decades with the development of new forms of cultural-heritage tourism. In 2003, 64,570 people visited cave art sites in the region and, after they were listed as World Heritage sites, that number increased to 117,731 visitors in 2019. Most of the visitors come in the high and middle tourism seasons (from May to September), which coincides with the natural cycles of higher temperatures in the caves and their consequent influ-

ence on other parameters (humidity, CO_2, etc.) (Jurado et al. 2022). Some caves are receiving greater demand than others. For instance, in 2019, 48,200 people visited El Castillo but only 12,710 visited El Pendo. To change this would require the active generation of alternatives to reduce seasonality and avoid the concentration of visits to the better-known caves. In this regard, large caves like El Pendo, with a loading capacity much larger than the numbers of visitors it receives, should be promoted as tourist destinations, and pressure should be reduced in the case of smaller caves with more unstable micro-climate conditions, like Hornos de la Peña and Covalanas. In sum, there is a pressing need for redistributing the visitors.

Another serious challenge is that, aside from Altamira Museum, the region lacks the necessary cultural infrastructures required to alleviate visitor pressure on the caves, something that could increase the quality of the visits and multiply the economic benefits of heritage tourism without risking the conservation of the caves. The Interpretation Center currently being built at El Castillo is essential; similarly, a Cave Art Center should be developed at La Garma, and the small reception centers at other tourist caves should be improved.

Finally, a major impediment to the dissemination of Paleolithic art in Cantabria is the difficulty in attracting more international visitors. For example, of the 45,612 visitors at El Castillo Cave in 2019, 35,238 came from Spain, 7061 from other European countries, and only 3313 from other parts of the world. In this regard, strategies to promote this heritage at a global scale have been proposed as a key goal for the future (Dirección General de Cultura 2017, 58–59). This implies not only new policies (inclusion in European routes, international publicity campaigns, development of technology for the dissemination of heritage at a global level, etc.) but also the creation of an historical-scientific discourse that integrates Cantabrian Paleolithic art in a global context. This will require a new paradigm that considers the existence of different places in the world where Pleistocene art emerged and flourished.

14.4 Conclusions

The inclusion of a cultural property on the World Heritage List should be understood within the social context that underpins it (Logan 2012). In the case of the Paleolithic art of Northern Spain, this context is the result of a long history. The research, conservation, and dissemination of this archaeological heritage have been interwoven over time and shaped a complex framework of values and interests that have developed in a disorderly and unforeseeable way, following the flow of contemporary society. The need to research, explain, and conserve this prehistoric art has formed part of a general process through which people in modern Western societies have constructed their individual and collective identities. A hybrid product has been generated between the prehistoric images and the use that contemporary culture makes of them. Unlike in other parts of the world, research and management of this prehistoric art has not needed to reconcile social contexts in which a state-based legal system has clashed against the traditional worldviews and ontologies that local populations held about their heritage (Mumma 2004). However, European societies are haunted by their own ghosts expressed in the form of nationalism and Eurocentrism. As this paper has shown, both have been present in the historical interpretation of Paleolithic art in Northern Spain (and in Europe in general). In particular, Eurocentrism nourished a dominant conception of these paintings and engravings as the oldest and most complex artistic and symbolic expressions of the Pleistocene. Furthermore, new ghosts have been added to those old ones by way of commercialization and spectacularization, both amplified by globalization. Thus, the dissemination of this heritage and the expansion of tourism have gone hand in hand over the last hundred years.

These realities have been projected onto the regional Paleolithic art at different levels. Their display as a spectacle in museums, replicas (physical or digital), and the interiors of the caves themselves have constructed and still construct the identity of the contemporary population. This has encouraged research to seek, demonstrate, and explain the oldest and greatest human achievements of the past, therefore transforming the Paleolithic art of Northern Spain into a symbol of the intellectual conquests of our species. This has generated and sustained the need to conserve this heritage, because it has become of significant value for the citizens. Undoubtedly, conservation requires funding, and the generation of such requires visitors to the sites.

The inscription of the caves in Northern Spain and the policies that have followed it form part of this framework of intellectual and material values. In this regard the issues that endanger Paleolithic art in this region are very similar to those in other parts of the world: first, a research agenda obsessed with highlighting the greatest antiquity and symbolic complexity of this phenomenon; second, a conservation in constant friction with the right of the public to know and enjoy this heritage; and third, a public image of cave art subject to risks of banalization, owing to marketing strategies that generate a superficial and acritical vision of the past (Baram and Rowan 2004). Slogans constantly repeated in guidebooks and tourist leaflets create simplistic clichés by presenting Paleolithic paintings and engravings as a "journey to a Cantabria full of mystery, at the dawn of art and symbolic thought" (Dirección General de Turismo del Gobierno de Cantabria 2008: 3). Consequently, in the new context wherein research has discovered the existence of different centers in the world where Pleistocene images emerged and

developed, we must reconsider our public discourse on the Paleolithic art of Northern Spain and all of Europe. Broaching plural narratives implies complex conversations that avoid reductionist interpretations of the past.

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Local—National—Global: Defining Indigenous Values of Murujuga's Cultural Landscape in the Frame of International Patrimony

15

Amy Stevens and Jo McDonald

Abstract

Murujuga, as the Dampier Archipelago (including Burrup Peninsula) National Heritage Listed Place is known to its traditional custodians, is on the Pilbara coast of northern Western Australia. Murujuga's scientific values are endorsed on Australia's National Heritage List under a range of significance criteria. This chapter describes how an Australian local Aboriginal community's contemporary connections and significance values have been framed through the lens of Outstanding Universal Value in a world heritage nomination—and the scaffolding required to translate local and national heritage values into the global purview. The World Heritage List (WHL) criteria distinguish between natural and cultural values: an anathema to Aboriginal custodians who see *ngurra* (country) as both a natural and cultural domain. We describe the disjunct between Aboriginal custodial connections to country and UNESCO's framing of Outstanding Universal Values (OUV) for a world heritage nomination. The Ngarda-Ngarli are pursuing World Heritage by documenting outstanding universal cultural values under criteria i, iii, and v). For Aboriginal custodians this journey towards international recognition provides an opportunity to assert their local connection and control over this significant place, in the belief that global recognition will increase its protection. This chapter explores whether World Heritage recognition will help its traditional custodians to manage this extraordinary heritage estate, particularly in the face of the national economic value being placed on Industry in this same landscape.

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Keywords

Outstanding Universal Value · World heritage · Cultural landscapes · Rock art · Murujuga · Dampier Archipelago

15.1 Introduction

As this book explores the globalization of deep-time art and the increased awareness of both early and persistent image-making phenomena across the globe, in this chapter we explore how the concept of global patrimony, as enshrined in UNESCO's World Heritage List, requires a translation of value-making from both national and local scales. We also discuss what is often a tension between the objectives of the UNESCO's nomination process—and national agendas of identity and heritage valuing with the desires of the local community (Bergman Rosamond 2022; and see De Cesari 2010). Tensions have been documented elsewhere across the globe where UNESCO's 'global protection ambition' (Meskell and Van Damme 2008) creates significant distress for local communities whose local aspirations for self-determination and sustainable economies at a World Heritage (hereafter WH) place may be contradictory to the national economic interest (McDonald 2015a). Identity assertions of the state party who nominates and administers the WH Place—and ultimately provides the protective regime to manage the Place—invariably has economic ambitions to balance in this process, making it a complex mix of political and economic decision-making balanced with their responsibilities under global charters of UNESCO (UNESCO 1945, 1972) to respect human rights and protect the world's natural and cultural heritage (Colwell and Joy 2015).

The globalization of archaeological practice means that shared techniques and approaches are now instantly transportable to an international audience. Almost instantaneous communication of research findings through digital platforms and social media means that knowledge, and

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approaches to understanding this, can be instantly appreciated, and disseminated into most counties around the world. International coverage means that local and national research and management agendas can be transformed into international realms (Baptista and Fernandes 2007; Kemp et al. 2021; McDonald 2020): the destruction of the Juukan Gorge rockshelters by RioTinto in 2020, being a recent case in point!

The UNESCO World Heritage List, with its criteria for Outstanding Universal Value (OUV), strives to define significance on the world stage. To be enshrined on the World Heritage List, a property "must be of outstanding universal value and meet at least one out of ten selection criteria". These ten criteria are defined as seven cultural and three natural criteria recently reconceptualised by UNESCO in their revised Operational Guidelines (UNESCO 2021). These are described and justified through a nomination process administered by the State party—and the prescriptive nature of this process highlights inconsistencies between what is fundamentally a Eurocentric world view—and in this Australian case study—an Indigenous worldview.

Murujuga is the traditional *ngurra* (country) of the *Yaburara* people, located in the Pilbara region of Western Australia (Tindale 1974). Murujuga means 'hip bone sticking out' in *Ngarluma*, one of the traditional languages spoken by Ngarda-Ngarli (the collective term for the Traditional Owners and Custodians who look after Murujuga today). Murujuga is Land and Sea Country—an archipelago covering c. 40,000 hectares and with 42 islands, islets and rocky outcrops ranging in size from 2 to 3290 hectares (see Fig. 15.1).

Murujuga is widely held as a sacred place within the broader Pilbara region. Despite recent displacement and dispossession of country through colonisation and the devastating Flying Foam massacre of local Aboriginal people in 1868 (Gara 1984) and the state based BMIEA agreement which excluded native title from this landscape (Flanagan Flanagan n.d.; Zarandona 2015), detailed knowledge of

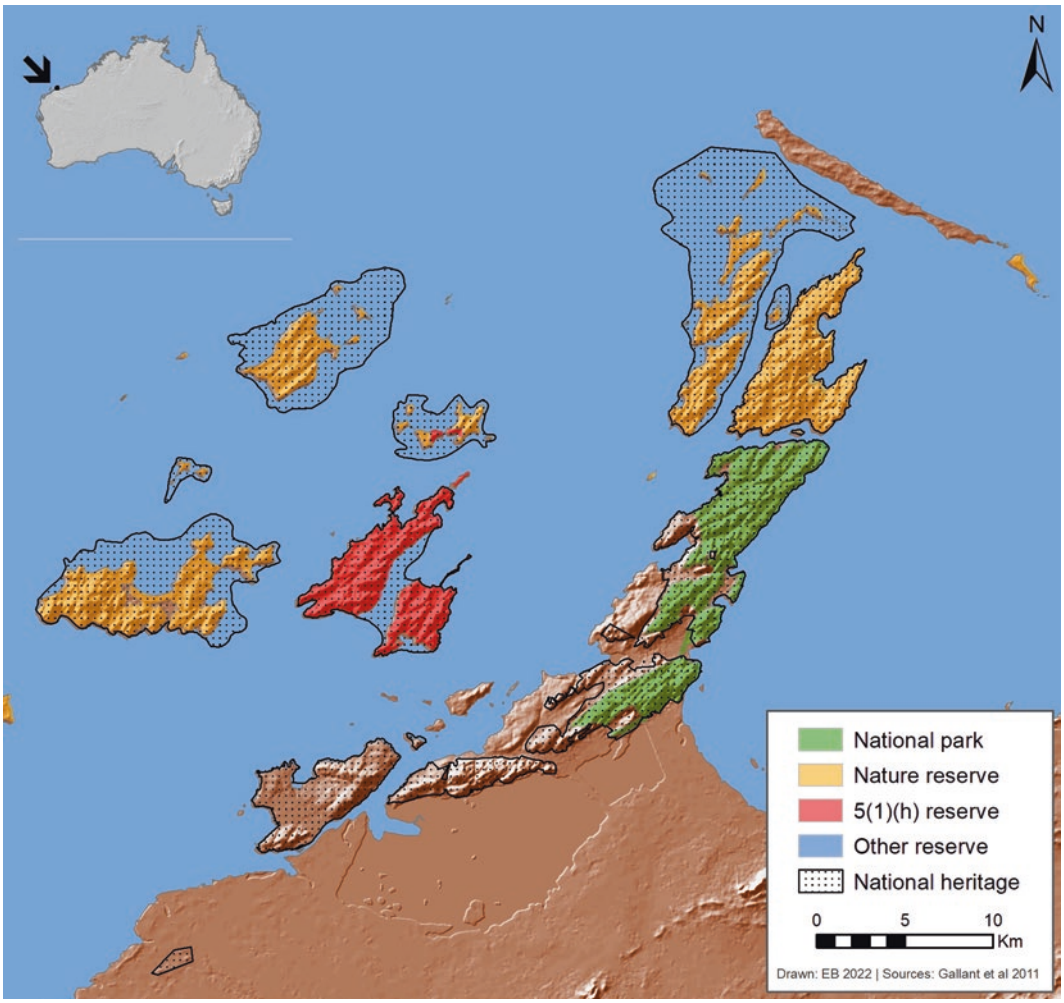

Fig. 15.1 The Dampier Archipelago in north-western Australia showing the boundaries of the National Heritage Listing and land management tenure. Areas outside the conservation estate are a mixture of land uses

Murujuga has been maintained through the practice of Law in surrounding communities by the custodians who come together to care for this country (Daniel and Others 1991).

The significance of Murujuga has been recognised at varying scales through local, State and Commonwealth protective listings (see https://www.dcceew.gov.au/parks-heritage/heritage/places/national/dampier-archipelago), however the heritage values that are recognised are typically archaeological and scientific values associated with the rock art and other physical attributes of the property due largely to the nature of documentation that has been undertaken, and the definitions deployed by the various legislative instruments (see Lawrence 2012). The National Heritage listing recognised the scientific values of the rock art and stone structures and did not explore the contemporary values of the place, despite it being nominated by the Aboriginal community (Bird and Hallam 2006; McDonald and Veth 2009). The continuing separation between natural and cultural values in the OUV criteria and in the nomination process by governments is mysterious to Aboriginal people given the integral interconnection between country and culture. In the case of this cultural landscape, the risk that this continued separation brings is in misidentifying the extraordinary significance that is apparent only through a consideration of how the natural and cultural world at Murujuga have been inextricably connected for thousands of generations (Fig. 15.2).

So how can the translation of Indigenous community values through national heritage legislation (The *Environmental Protection and Biodiversity Conservation Act* 1999) and nomination processes and into the perspective of international patrimony be achieved, and what does this mean for the recognition of cultural and scientific values at these different levels?

How do Aboriginal people make sense of these global perspectives as they demonstrate the connection between culture, rock art, mythological narratives and *ngurra* (country)?

How do Australian national identity agendas which have led to the listing ANZAC sites (the Kokoda Trail and Gallipoli), the Melbourne cricket ground and the Sydney Opera House: values of a state-nation founded in the nineteenth century, align with Indigenous heritage and cultural value identification in the World Heritage process? Murujuga is only the second property in Australia which has been nominated for its Indigenous cultural values (Smith et al. 2019), although there are properties with combined natural/Indigenous cultural values and several other Australian world heritage properties (such as Kakadu and Uluru-Kata Tjuta) originally listed for their outstanding natural values that have had cultural values added retrospectively to their WH values (e.g. criteria i) and vi)), largely because of their rock art (Logan 2013; McDonald and Clayton 2016; and see UNESCO 1999).

15.2 National Heritage Instruments

Following amendments to the Australian *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Australia's National Heritage List (ANHL hereafter) was established in 2003. The ANHL was established to recognise and protect natural, historic and Indigenous places of

Fig. 15.2 An aerial view of Murujuga at the northern end of archipelago

outstanding heritage significance to the nation. The Australian Government is responsible for protecting places of world and national significance and for ensuring Commonwealth compliance with State heritage and planning laws (*EPBC Act 1999*, Chap. 5, Part 15, Division 1A, sections 324X-Z). To be on the ANHL, heritage places must have demonstrated heritage values against one or more criteria (Australian Heritage Council 2009).

15.2.1 National Heritage Assessment Processes

The Dampier Archipelago (including Burrup Peninsula) was nominated by traditional custodians for inclusion on the ANHL in 2003, the same year that Ngarluma, Yindjibarndi, Yaburara, Mardudunhera and Wong-Goo-Tt-Oo people entered into the Burrup and Maitland Industrial Estates Agreement (BMIEA). The BMIEA agreement granted freehold title over what is now the Murujuga National Park in exchange for the compulsory acquisition of all native title rights and interests on the Burrup Peninsula (McDonald 2015a).

The Brief for assessing the national heritage values process required only the identification of the scientific values for the place (see McDonald and Veth 2005, 2006). Cultural values assessments, while excluded by this Brief, were assumed by the nomination process and were addressed by the Commonwealth Department. The commissioned study (McDonald and Veth 2005, 2006) concluded that the nominated property was of outstanding scientific significance—and that it met at least four of the national criteria—noting it is only necessary for an area to meet one criterion to be added to the List. The listing for the property on Australian Government website (https://www.dcceew.gov.au/sites/default/files/env/pages/d53ee213-2f1e-481e-b0f6-85d861a52de2/files/10572701.pdf) defines Murujuga's rock art and stone structures as meeting criteria a, b, c, d and f, and also defines explicitly how the values of the place meet each individual criterion (and see McDonald 2017).

Part of the nominated Murujuga Cultural Landscape was inscribed on the National Heritage List in 2007 and it was an important step for Ngarda-Ngarli in their efforts to protect Murujuga. However, the legislative protection that is awarded by virtue of a ANHL inscription protects only those attributes that contribute towards significance according to the identified National Heritage Values and ANHL criteria. In the case of Murujuga, it is only particular rock art characteristics and stone structures that are protected by the Listing, not the cultural, spiritual or natural attributes that are considered by Ngarda-Ngarli to be innate features of a cultural landscape. This is the antithesis to Indigenous concepts of 'protecting country' and fails to ascribe cultural meaning to rock art or its context that might allow for a more holistic consideration of what would be considered a 'significant impact' to the values within the National Heritage property boundary. The prescription of what is significant according to a scientific review restricts the consideration of impacts to those scientifically valued attributes only and places decision-making in the hands of scientific experts and regulatory bodies rather than the traditional owners and custodians who have managed this landscape for more than 50,000 years and who have a more complex and holistic understanding of how elements within a cultural landscape are fundamentally intertwined.

The exclusion of any consideration of cultural values during the National Heritage nomination process means that although the EPBC Act applies to any proposed development either inside or outside of the property, it is only stone structures and explicitly identified characteristics of the rock art that are protected. The National Heritage Listing of Murujuga was undertaken with the Free, Prior and Informed Consent of Ngarda-Ngarli at the time of the nomination process, however without the meaningful participation of Ngarda-Ngarli in the identification of values and criteria for inscription, the National Heritage Listing has failed to protect the significance of the cultural landscape a whole.

Australian Commonwealth legislation (the EPBC Act) protects both National and World Heritage Listings under the same mechanisms, however the World Heritage Listing for Murujuga has been an entirely indigenous led nomination to ensure the better identification and protection of attributes and values for protection.

15.3 Defining Outstanding Universal Value for World Heritage List

15.3.1 World Heritage Nomination

The perceived value in World Heritage Listing of the Murujuga Cultural Landscape then lies not in additional protection mechanisms through the legislation, but in the protection of additional attributes that recognise the property as a cultural landscape (defined under the World Heritage Convention as a landscape which represents the combined works of nature and man).

The Murujuga Cultural Landscape is being put forward to UNESCO as demonstrating potential Outstanding Universal Value through:

- Criterion (i): to represent a masterpiece of human creative genius;
- Criterion (iii): to bear a unique or at least exceptional testimony to a cultural tradition or civilisation which is living or which has disappeared; and

- Criterion (v): to be an outstanding example of a traditional human settlement, land-use or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change.

Developing the nomination required serious consideration of how the physical attributes of the property are envisaged, not only in terms of its outstanding creativity (i), as most rock art properties across the world are registered, but also how this bears exceptional testimony to a living cultural tradition (iii), and how the present property represents human interaction with the landscape/seascape over periods of dramatic climatic and environmental change (v).

While the State party is the official nominator of a property to UNESCO, the Murujuga Cultural Landscape nomination provided an opportunity to develop a process to support indigenous participation based on genuine leadership rather than the documentation of free, prior and informed consent that is often held as the measure of Indigenous engagement in World Heritage processes. At Murujuga, it was Ngarda-Ngarli that ultimately decided what was significant about this place and what they wanted to see included within the nomination document. Critical to Ngarda-Ngarli was that this document – written to comply with the revised operational guidelines (UNESCO 2021; following UNESCO 2008), international assessment criteria and comparative themes – did not jeopardise the authentic Indigenous perspective of the property through the artificial siloing of cultural and natural significance and tangible and intangible values, for the sake of demonstrating OUV and management mechanisms. The current dossier preparation has taken 4 years, following the announcement in 2018 that the West Australian State government would support this, 8 years after the commissioning of the initial OUV assessment (McDonald and Veth 2011; Lawrence 2012). This was a long-term goal by the Ngarda-ngarli, as showcased in the World heritage summit held in Karratha in 2018, weeks before the State's announcement (see Standen 2018).

A successful nomination to the World Heritage list requires not only the documentation of potential Outstanding Universal Value, but also a demonstration of authenticity and integrity, as well as an adequate monitoring, management and protection regime for those values. In Australia, the meaningful engagement of Aboriginal people in decision-making over country and in the management of land and sea is not automatically embedded in legislation or existing protection mechanisms. That is not to say that it does not routinely happen: there are examples across Australia of superb Aboriginal management (e.g. the Budj Bim Cultural Landscape, Willandra Lakes World Heritage Area). However, these are negotiated on a property-by-property basis and a significant part of the Murujuga nomination necessarily involved negotiating the recognition of these processes in formal agreements that would meet international assessment criteria. Such negotiations have required meaningful commitment by both State and Commonwealth governments in formalising structures that include Aboriginal decision-making. These processes would benefit from embedding best-practice standards into existing Commonwealth legislation that manage World Heritage properties within Australia.

The World Heritage assessment processes are necessarily prescriptive to enable comparison of sites across regions, countries and the world. This prescriptive approach, however, immediately creates issues when it comes to rock art and Indigenous cultural landscapes. These main issues can be broadly categorised as:

- The Eurocentric (or Western) focus on criteria, themes and significance indicators at both a national and an international level;
- The relative immaturity of Australia as a settler nation and how the national identity agenda deals with the significance of its deep time Indigenous history compared to its comparatively recent colonial history; and
- The homogenisation of OUV significance across cultures and timescales and the ways in which the nomination process requires documentation and evidence of places and rock art as expressions of culture, beliefs and experience.

The documentation and demonstration of significance pose several additional challenges:

- The requirement to provide evidence for connection between culture and rock art requires a siloing of what are holistic concepts of country, Law and culture;
- The challenge of revealing sacred and secret information, which is the nexus between country, culture and rock art in Australian Aboriginal culture;
- Representing complex information at a national and international level, where Indigenous world views and the concept of Aboriginal Lore and Law are not universal but provide a critical basis for understanding significance of a living cultural tradition and the landscape within which it operates.

The separation of natural and cultural values in the OUV is seen as a challenge to indigenous management of cultural values, as it creates an unnatural divide between indigenous perceptions of country which do not distinguish their management of country in this way.

The assembling of a dossier which complies with the current operational guidelines (UNESCO 2021) requires documentation of significance, monitoring and management within a system of western hegemony that is fundamentally foreign to Indigenous concepts of country, place and the way Aboriginal people see the world as being intrinsically interconnected.

15.3.2 Murujuga Cultural Landscape—Translating Local Significance Into International Values

The Murujuga Cultural Landscape is currently nominated for inscription onto the UNESCO World Heritage List and is on Australia's UNESCO Tentative List (as of February 2021). The property is renowned for its rock art and stone arrangements, but Murujuga is extraordinary for reasons far beyond the simple physical attributes that have been documented within its boundary. The Murujuga cultural landscape has been occupied for at least 50,000 years, from when Murujuga was an inland desert rangeland, through periods of dramatic climatic and environmental change including the last Ice Age, and to its most recent formation as a coastal archipelago made up of islands which are the former high points of the now submerged rangeland.

Murujuga's cultural landscape includes land and sea country, across which is inscribed some of the world's most abundant and diverse rock art as well as myriad stone structures (Lawrence 2012; McDonald and Veth 2009, 2011; Mulvaney 2015). The scientific values are imbued in the more than one million petroglyphs (Fig. 15.3) that demonstrate the use of this arid landscape through more than 50,000 years (Veth et al. 2017), as well as subsequent millennia of attachment to this place by the first peoples who arrived on the northwest coast and persisted through massive environmental change and evolving coastlines to thrive as coastal hunter-gatherer-fishers-collectors until the 1860s–and the arrival of European explorers, whalers, pearlers and pastoralists (Mulvaney 2015; Paterson et al. 2019; McDonald and Mulvaney 2023, Vinnicombe 2002). A chronological sequence of styles has been identified which trace these deep-time changes in art production (Mulvaney 2013, 2015; McDonald 2015b), chronicling changing human forms (e.g. the widespread desert archaic faces and subsequent Murujuga stylistic variants), a range of anthropomorphic styles which reveal changing ceremonial accoutrement; changing environmental conditions associated with the transition from an arid landscape to a seascape, and the advent of a maritime-coastal adapted economy since 7000 years ago (McDonald and Mulvaney 2023; Wade 2022).

For thousands of generations, Murujuga has been managed by Ngarda-Ngarli according to the Indigenous principles of Lore for country, put in place at the creation, and traditional Law for men and women which was put in place for them to maintain the balance of the natural world. It is this Lore and Law (see, for instance, Robinson and Raven 2020) that is inscribed through the rock art onto country at Murujuga, and it is the encyclopaedic knowledge for country that is held within continuing cultural practices that pass on knowledge of the interconnectedness of country and how to

Fig. 15.3 Examples of Murujuga petroglyphs (clockwise from top left): Thylacines on large vertical panel; human feet; fat-tailed kangaroo; and turtle panel on large block that has been flaked amongst tool-stone quarry

manage a dynamically changing environment within the context of a continuing Lore/Law.

Murujuga Land and Sea Country is held to be a continuous cultural landscape by Ngarda-ngarli, a deeply storied and significant place that records both the movements of the ancestral creation spirits and the interaction between the landscape and generations of ancestors. Every part of this *ngurra* (i.e. 'country') and the ways in which this landscape has been inscribed are intricately connected to people's history, identity, and sacred beliefs.

This means that it is not possible at Murujuga to protect cultural values without protecting natural values or vice versa. It is the holistic concept of the combined natural and cultural world at Murujuga which has maintained balance within this land and sea country for 50,000 years. Nature and culture are not just connected; they are inextricably linked. And it requires some contortion to adequately represent this significance within the existing significance criteria and themes for both the national and international Heritage covenants.

15.4 Challenges for Indigenous Custodians to 'Fit' Knowledge Into UNESCO's Criteria and Thematic Frameworks

The nomination of a cultural landscape that is a part of a living cultural tradition is a complex undertaking for those cultures where knowledge of country, culture and ceremony is secret/sacred. In these instances, the information that would effectively demonstrate how the property meets the criteria for inclusion on the World Heritage List is often restricted to those who have gone through traditional protocols of initiation into Aboriginal Law.

The very differentiation between Lore and Law for the purposes of the nomination was an exercise in the artificial separation of concepts to convey a complex worldview and belief system in language that speaks to an international audience and fits within the documentation and management expectations of the World Heritage nomination, assessment and state of conservation reporting processes. In this case, Lore refers to the narratives that were put into place for Country at Creation, which include creation stories, ancestral movements, jinna (songlines) and the rules or ordering the natural world. Law refers to the Aboriginal practice of cultural Law and ceremonial Business, which includes men's business, women's business, social and cultural obligations and the system of rules that exists to ensure the ongoing balance of the natural world. Regulatory law is a separate concept that has no connection to either Lore or Law.

Although Lore, Law and Land and Sea management include profane concepts and open information, the detailed knowledge of how these understandings interact is often restricted to those who have demonstrated the understanding and conduct required for the progressive acquisition of cultural knowledge. The inscription (modification) of a cultural landscape and the ritual interaction between Aboriginal people and the *ngurra* they inhabit can only be comprehensively understood by those who are immersed in the rules and ideology of the specific culture tied to that *ngurra*.

A State Party must provide sufficient explanation and documentation of indigenous culture to raise reasonable expectation for these to contribute to Outstanding Universal Value according to the World Heritage criteria, whilst respecting the cultural protocols that restrict the documentation and dissemination of knowledge.

At Murujuga, where Ngarda-Ngarli have sought to include the intangible values of Lore/Law and ongoing protocols for decision making in their Land and Sea Management, this was an essential attribute contributing to the significance of this cultural landscape. Rather than attempting to demonstrate the extensive knowledge that is held for the Murujuga Cultural Landscape, the Murujuga nomination has attempted to convey the complex interaction between attributes critical to comprehending the significance of the Murujuga Cultural Landscape from the perspective of Ngarda-Ngarli.

15.4.1 Cultural Values: An Indigenous Perspective

Ensuring that indigenous cultural values are defined from an indigenous perspective has been historically challenging in previous World Heritage nomination processes, where these are largely overseen and managed by the State Party and where the role of indigenous people can be easily marginalised (United Nations General Assembly 2012). This is evident across World Heritage properties in Australia, where properties with significant cultural value have been nominated as natural properties (Francis 2017; Pocock and Lilley 2017); and where the Outstanding Universal Values of Aboriginal cultural properties values have been largely presented as significance associated with archaeological evidence, often subsequently to the Inscription on the WHL for the natural values (Logan 2013; Taçon et al. 2007).

It was important for Ngarda-Ngarli that the proposed Outstanding Universal Value of the Murujuga Cultural Landscape includes a recognition of the intangible values associated with the spiritual significance of the Murujuga Cultural Landscape. This includes the unique manifestation of creation beliefs inherent in the property that connect Murujuga to a shared Law network. It also involves the system of land and sea management that is dictated by cultural Law and protocols, as well as the inextricable link between natural attributes, cultural inscription of the property and a living cultural tradition.

The WH operational guidelines clearly allow for a diversity of interactions between humankind and the natural environment (Guidelines paragraph 8) and the categories of cultural landscape similarly allow for significant variation in the material evidence that may be presented to demonstrate a cultural landscape (Guidelines paragraph 10).

According to Aboriginal cosmology, the formation of the world and its long-term management is the fundamental basis of culture and Aboriginal Law. The landscape and the natural world were created by the movement of Ancestral creation spirits and their interactions as they journeyed through the newly created landscape. Aboriginal people today recreate those movements and interactions as a way of passing on the Law that governs people's responsibility for maintaining Country and the natural world today.

In this way, the natural world itself is a significant part of the cultural landscape and Caring for Country is a culturally understood 'modification' of the landscape that is not manifest in any physical inscription, but in (for example) diversity of ecological communities and sustained occupation through challenging climatic periods – recognised early by Rhys Jones (1969), and more recently by Bill Gammage (2011), Bruce Pascoe (2018) and Michael-Shawn Fletcher et al. (2021).

This has been acknowledged for decades through deep discussion regarding cultural landscapes and the appropriate criteria that would allow for recognition of this balance (see the proposed amendments to inscription criteria from the 1991 WHC meeting), and the inclusion of criterion (v) to reflect the potential range of landscapes managed by traditional methods.

Murujuga is an example of a cultural landscape where the impact of human activity on *ngurra* is the result of careful management through traditional Aboriginal Law, evidenced in the extraordinary biodiversity that has been maintained over 50,000 years of human occupation as seen in the changing rock art repertoire (Booth et al. 2022). The demonstration of the cultural knowledge and practices that have managed this country is challenging to document, where secret and sacred knowledge is passed down according to strict protocols in an entirely oral tradition.

Similarly, the distinction between tangible and intangible attributes that contribute to Outstanding Universal Value required by the nomination process is fundamentally a Eurocentric conceptualisation of landscapes which is at odds with many Indigenous world views. The Ngarda-Ngarli conceive of their world as an inextricable combination of natural, spiritual and cultural elements that are interconnected and have indivisible reciprocal effects.

The very concept of identifying individual attributes that contribute to Outstanding Universal Value is a difficult one to manage when attempting to prioritise indigenous perspectives. The extensive range of attributes that have been identified as contributing to potential Outstanding Universal Value in the Murujuga Cultural Landscape reflects the holistic perspective that Ngarda-Ngarli hold for their *ngurra*. Their view is that a successful inscription of the property will allow them to meaningfully protect the interconnected natural and cultural, tangible and intangible elements of the very characteristics that gives the Murujuga cultural landscape its significance.

Further cross-cultural dissonance is encountered where the World Heritage process demands an assessment of comparative exceptionality. The capacity of a site/place to reflect the specific works and actions of ancestral beings and creation spirits, as well as representing a shared system of Law networks that extends across the Pilbara and even further—into the arid Australian interior—means that a comparative analysis overlooks the importance of those shared networks. It is the cultural knowledges of the broader sphere which contribute to the potency of the place, which is at the centre of this comparison. The Ngarda-Ngarli would not suggest that their cultural tradition is inherently exceptional in comparison to their neighbours. But they do argue that Murujuga is an exceptional example representing the works of creation and the place where Law was first written into the Country itself.

Some cultural and technical complexity for the Murujuga nomination process was encountered in demonstrating comparative significance for one part of a region with shared cultural traditions and a linked network of Law systems. While it is explicit within creation Lore that each cultural system (defined based on language and connection to country) has its own system of Law and land/sea management precisely because of the differing needs of country, the detail of that difference is often determined by the natural attributes, and the opportunities and obligations that *ngurra* conveys to its custodians—further highlighting the necessity of overcoming the cultural/natural divide in demonstrating how an association between cultural tradition and country can be 'exceptional' in the context of a shared cultural perspective that is made unique by its adaptation to a particular landscape.

Murujuga's hard volcanic geology preserves every mark made on it (Pillans and Keith Fifield 2013), its permanent water features and high biodiversity at the interface between significant landforms archives people's deep time attachment to this landscape in a way that is unrivalled in the broader region. However, Ngarda-Ngarli are adamant that the archaeological record at Murujuga (including the rock art) not be viewed as an independent or externalised explanation of Ngarda-Ngarli culture. The continuation of a living culture of Lore, Law and Land and Sea management is the lens through which the inscribed landscape is given meaning and significance.

15.4.2 The Protection and Management of Tangible and Intangible Values

It is not without cause that Ngarda-Ngarli have concerns about a focus on the rock art as an independent attribute that makes Murujuga significant. The rock art at Murujuga undoubtedly has extraordinary significance from a Western, scientific perspective. From an indigenous perspective, the rock art at Murujuga is significant primarily as a record of the Law that Marrga inscribed into the *ngurra* (Palmer 1977a, b) during '*the Time When the World was Soft'* and a record of the longevity and adaptability of Law that has allowed their ancestors to manage Murujuga since Creation.

The protection of the tangible properties of this landscape as attributes with greater significance than intangible attributes (including Aboriginal management and decision-making for *ngurra*) fails to acknowledge what makes this Cultural Landscape a truly exceptional one.

This is a significant shortcoming of the National Heritage Listing, which has privileged the protection for rock art and stone structures based on specific scientific criteria defined by heritage legislation, industry and non-indigenous peak bodies over those values identified by custodians whose ancestors have managed this landscape for over 50,000 years. It also means that impact is measured according to the criteria set by those protections, which ultimately means that decision making regarding the management of heritage (and country) is taken from Ngarda-Ngarli and vested in those same non-indigenous bodies.

15.4.3 Continuity of Law Rather than a Static Snapshot of Traditional Practices

A particular challenge for managing intangible cultural values, which are defined as "part of a living cultural tradition", is in defining the ways in which those traditions may develop or change in response to circumstances and still be considered an 'authentic' demonstration of a cultural tradition. Australian custodians similarly face this problem in their assertion of native title rights (Glaskin 2003; Weir 2012).

According to Ngarda-Ngarli beliefs, Law has been practiced since creation and amended as required by a dynamically changing landscape. The management of an evolving landscape has always been a part of Law and cultural practice. Throughout the early occupation of the Murujuga Cultural Landscape change has included climatic and environmental variability, massive shifts in occupation of territory because of sea level change, changing language and territorial boundaries and social structures. Today, Ngarda-Ngarli understand that it is their responsibility to continue to adapt their management strategies to include the changes wrought by colonisation and industrialisation of the Murujuga Cultural Landscape.

This becomes extraordinarily complicated with the imposition of governance structures, approvals processes and assessments of significance and impact according to external subject matter experts and regulators with no requirement Aboriginal engagement (see, for example, Commonwealth of Australia 2013). In practice, this will often undermine the traditional cultural authority of people who should have far greater power and rights over decision-making for their own *ngurra*.

The documentation and presentation of attributes that have significant value to Ngarda-Ngarli has been a careful process of ensuring that the knowledge and management of *ngurra* itself, as well as the traditional decision-making structures for managing Law and *ngurra* is held with equal regard to the physical attributes that make the property a significant place for non-Indigenous visitors.

For MAC, this has included the development of Management Agreements and Management Plans that formalise a role for Ngarda-Ngarli in the management of different tenures within the Murujuga Cultural Landscape, building capacity within MAC to manage heritage, cultural information and *ngurra*, and the development of a complex database that supports the monitoring and management of potential Outstanding Universal Values (MAC 2015). These management mechanisms have had to support:

- The documentation of archaeologically and culturally significant places in such a way that information is comprehensively recorded but access is restricted to those with the necessary cultural authority;
- The ongoing monitoring of sites by Ngarda-Ngarli and other indigenous rangers (see Fig. 15.4) in such a way that sites can be managed without compromising the cultural safety of the rangers;
- The succession of songs, rituals, cultural practices and cultural knowledge in a digital age without compromising on the cultural protocols that determine the traditional nature of knowledge transfer;
- The continuous monitoring of ecological and natural attributes to ensure the currency of a seasonal calendar that safeguards both the continuation of cultural management traditions and the development of new strategies that support cultural management of an evolving landscape.

Fig. 15.4 MAC Ranger Manager and Mardudunhera man Peter Cooper, surveys the Murujuga cultural landscape. Dolphin Island

15.4.4 Resourcing

This WH process has required resourcing of internal expertise to support an Indigenous-led World Heritage nomination for the Murujuga Cultural Landscape. MAC is in a relatively unique position to assert their agency and self-determination over the World Heritage nomination process through having free-hold title over part of the property, Joint Management Agreements over part of the property, funding support from the State and Commonwealth Governments, relationships with government and industry stakeholders, access to independent advisors and adequate organisational and governance systems to engage their own World Heritage project manager and author.

Developing the dossier to document the Murujuga Cultural landscape, involved the resourcing of an Indigenous author (AS) to oversee the collection and curation of the property's cultural values working directly with Ngarda-Ngarli. This has had a significant impact in fore-fronting the inextricability of natural and cultural attributes that are required for any meaningful discussion of significance related to a cultural landscape. Other sections of the nomination dossier were written by other management and technical specialists (including JM), which has made the dossier a multidisciplinary effort, overseen throughout the whole process by the oversight of Ngarda-ngarli elders.

This detailed development of the Ngarda-Ngarli narrative for Murujuga fundamentally focused the criteria for which World Heritage Listing was sought. A full consideration of how people have lived on and protected this ngurra for generations could only be demonstrated through a combined consideration of OUV criterion (iii) and (v). Together, these criteria contextualise intangible values; land- and sea-use; and the adaptation of Law and culture to a changing landscape in a way that more authentically encapsulates the Ngarda-Ngarli perspective.

The holistic representation of natural and cultural values and the inextricability of tangible and intangible heritage at Murujuga arguably makes the property a critical addition to the World Heritage List—not because it is unique in its consideration of a cultural landscape in this manner but because such places are so far not well-represented on the World Heritage List.

15.5 Conclusion

These conversations about *ngurra* and culture and cultural values are continuing, as they have been for a long time. What we need now is a shift in the way we consider the interconnectedness of the attributes and management of Outstanding Universal Values. Although this is the basis of

Aboriginal land and sea management in Australia, it requires an ontological shift in the way Property managers perceive the divide between natural and cultural and tangible and intangible values for the purposes of ascribing value and management of those values.

Thus, in colonised countries, there needs to be a shift in UNESCO's gaze so it can reflect a better understanding of Indigenous people's perceptions of country and their management of land and sea based on a complex understanding of those connections. However, at a local and national level, settler nations also need to shift the way we perceive—and legislate—for management of cultural landscapes to reflect a more holistic understanding of natural and cultural interdependence of heritage places (Environmental Protection Authority 2016). There remain significant legislative /institutional barriers for site management in western hegemony that assumes a regulatory agency has expertise in only one of either natural or cultural heritage—and in Western Australia, even distinguishes legislatively between historic and Indigenous heritage (https://www.dcceew.gov.au/parks-heritage/heritage/organisations/wa). This siloing of significance values and the separation in legislative/regulatory management contributes to ongoing challenges in recognising the existing mechanisms for the holistic monitoring, management, and protection of an entire cultural landscape.

This is not impossible to address within the current system, but it puts the onus on Aboriginal people to negotiate effective legal agreements to formalise their role in the management of land and sea country and the cultural values that are inherent within these. The nomination of the Murujuga Cultural Landscape has highlighted the need to meaningfully embed Aboriginal decision making and involvement in managing country within existing legislative structures as a critical part of the nomination process.

We find ourselves at a point – locally, nationally and globally – where State, Commonwealth and International instruments focus on identifying a direct link between knowledge and specific places within a landscape; where there is an onus on Aboriginal people to document the sum-total of traditional ecological knowledge and Indigenous cultural knowledge for a place so that the management responsibility for a property can be placed within colonial management structures, perpetuating the disempowerment of Indigenous governance. This result is problematic from a rights-based perspective but is also contradictory to protection when significance is directly related to the living culture that is managing a cultural landscape. We cannot continue to focus on the management of tangible values alone, as if we can separate aspects of a cultural landscape from that living culture's decision-making and governance realities.

Australia needs to find a way to elevate the voices, knowledge, and decision-making of Aboriginal people when it comes to management of a cultural landscape or we perpetuate the systemic privileging of white knowledge systems and antiquated regulatory regimes over indigenous knowledge. To meaningfully engage with the most extraordinary values of these places, and to truly celebrate the international patrimony of its Charter, UNESCO needs to move on from a system that inherently privileges peak scientific bodies as subject matter experts over Indigenous knowledge in relation to the values of complex cultural landscapes (and see Gupta et al. 2023).

The worst-case scenario for Murujuga is that WHL protection continues to identify only the physical attributes of the place over the intangible values of traditional ecological knowledge, traditional cultural knowledge, and the connection between country, culture, Law and Business. This protection is already afforded by the National heritage listing made over a decade ago—which signifies the rock art and stone structures—but lacks reference to the extensive cultural connections and values now documented. The current World Heritage nomination for Murujuga, with its extensive documentation of contemporary values and the interconnectedness of the cultural landscape will expand the protection of this Property's values by recognising the continuity of cultural management and connections between country and Ngarda-Ngarli.

We have an opportunity with the Murujuga nomination to avoid the systemic inequality that exists within many UNESCO coda and legislative mechanisms that privilege white/western/global north perspectives over a multitude of indigenous perspectives: thus, artificially constraining Indigenous knowledge and categorising and constraining archaeological sites or specific cultural places rather than recognising the much more complex perceptions of cultural landscapes. The Murujuga *ngurra* is an inscribed cultural landscape where the significant rock art and stone structures are a component part of the stories and practice of Law associated with a cultural landscape that has been managed by successive generation for the last 50,000 years.

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Out of Place: Postcolonial Legacy and Indigenous Heritage in South Africa

16

Silvia Tomášková

Abstract

Indigenous peoples the world over are speaking out for their rights in former colonial societies. The term Indigenous, derived from Latin, means within, originating where it is found, or belonging to a particular place by birth or origin, a temporal claim to a place. In an archaeological sense, the San can claim to be the true Indigenous people in all of southern Africa, having lived in the region for thousands of years, before any migrations, and well before any colonial onslaught. Yet in the Northern Cape, South Africa, well-known for a significant concentration of rock engravings and archaeological sites, the current San inhabitants are the most recent arrivals, with no record of an Indigenous population since at least the mid-nineteenth century. In 1999 the South African government resettled some 400 formerly military !Xu and Khwe families of different origins, language backgrounds, and histories in Platfontein without any deliberations about their relation to local boundaries, history or heritage. Indigeneity here is far more complicated and vexing. In this chapter I probe the quest for an authentic Indigenous past of ancient images, to show that the complex history of postcolonial locales demands that archaeologists attend to the dislocations and violence of global forces of the past hundreds of years. The insistence on ancient roots of Indigenous people in a place can effectively deprive them of a role in global history, and of agency in political events. Contested spaces, centuries of conflict, truce, and temporary agreements that fester and erupt with unsurprising regularity are all a part of the context that frames ancient images. We should account for this context when studying them, in order to avoid one-dimensional, simplistic notions of Indigenous heritage.

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Keywords

African history · Indigenous heritage · Liberation struggle · Platfontein · Postcolonial conflict · Rock engravings · San people · South Africa · Wildebeest Kuil

> Six thousand people were brought here in 1999, now there are nine thousand of them, and they come to *my* land to hunt *my* antelopes (Interview with a landowner near Nooitgedacht, Northern Cape, South Africa. July 2017.) Despite the specificity of the claim by the white landowner, the resettlement happened in 2003 and it was much smaller than six thousand people.
>
> The San, who are famed for their tracking abilities, fought fiercely against encroachment by white settlers in the 18th and 19th centuries but were defeated. Culturally rich but technologically primitive and declining in numbers, they are estimated to total 50,000. "If they weren't in the army, there'd be nothing else for them to do," a South African lieutenant, Ben Wolff, said. (The New York Times, Feb. 24, 1981).

16.1 Introduction: Degrees of Separation

Historical injustices towards indigenous peoples are in most parts of the world finally acknowledged without much dispute, although resistance to the discussion of the extent of the harm, complicity of settlers, and rights to restitution continue to be seriously contentious (see e.g. Wolf 1982; Robins 2001; Kuper 2003; Niezen 2003; Barnard 2007; Clifford 2013; Hitchcock 2017). Many native groups found their voice, or a way to be heard in public spaces, through indigenous rights movements (see e.g. Warren 1998). Besides human rights NGOs, anthropologists, and more recently archaeologists, have been participating in collaborations with local people through community engagement projects, in the service of native communities, assist with conflict resolution, bridge the power differential between governments and disenfranchised marginal groups, and provide expert witness testimonies and knowledge (Warren 1998; Starn

O. Moro Abadía et al. (eds.), *Deep-Time Images in the Age of Globalization*, Interdisciplinary Contributions to Archaeology,
https://doi.org/10.1007/978-3-031-54638-9_16

1999; Robins 2001; Niezen 2003; Waldman 2007; Hamilakis 2016). Nevertheless, as Adam Kuper pointed out, again (see Kuper 1988 for the original argument), an uncritical "return of the native" risks "fostering essentialists ideologies of culture and identity, [they] may have dangerous political consequences' (Kuper 2003:395, see also Gordon 1992, 2000). Kuper's questioning of the relationship between the rights of indigenous people that evokes and relies on an essentialized "primitive", no matter the political gains, did not go unchallenged (e.g. Robins 2003, Barnard 2019,). Similarly in archaeology, a vigorous discussion of Indigenous archaeology engaged some of the same themes and mainly disagreements (McGhee 2008; Croes 2010; Colwell-Chanthaphonh et al. 2010; Silliman 2010; Wilcox 2010). McGhee (2008: 583) outlined his concern over "aboriginality":

> Identification with local lands, a profound understanding and commitment to stewardship of local environments, and the creation and transmission of deep historical and cultural knowledge, are generally understood as arising from countless generations of persistent occupation in a specific region. The projection of current ethnic definitions and identities into the past, as well as the assumption that local societies have been historically stable and enduring over great periods of time, may be psychologically rewarding to contemporary communities. It has also proved legally useful in negotiations regarding land use and ownership.

McGhee argues that "The Aboriginal" is a construct, invented by anthropologists, and cognate disciplines, over the past two centuries. He offers a detailed history of the encounters with difference, and the desire to see such patterns in a particular light, depending on the intellectual and philosophical foundations of the day (McGhee 2008: 586–88). My own research on encounters with Indigenous peoples in Siberia by the various cast of explorers from the seventeenth century on aligns with this history of exploration, colonialism, and anthropology (Tomášková 2013). Even more important is McGhee's point that there is a vast variety and diversity of thinking, concepts, and histories within "traditional" or Indigenous peoples the world over (McGhee 2008:590). However, where I entirely part ways with that author, and concur with the responses to his piece (Colwell-Chanthaphonh et al. 2010; McGhee 2010; Silliman 2010; Wilcox 2010), is in his assertion that scientific archaeology is the harbinger of truth and facts, the objective guardian of heritage and the past. McGhee's dismissal of Indigenous archaeology as if a processual version of archaeology offered the only path towards understanding the past is based on a simplistic binary opposition of western/non-western, or science and religion, that he seems to denounce as ahistorical. I argue that the social construction of the "essential San" is made out of the same cloth as the "essential scientific fact", shown by many historians and anthropologists to be an enduring phenomenon, while it lasts (see e.g. Latour 1993, 1999). In this chapter I therefore contribute to the debate by illustrating the complexity of the clash of indigenous identities and political realities with the case of two distinct groups of San[1] people who live in close proximity to an archaeological site, Wildebeest Kuil, in the Northern Cape of South Africa. On one hand, I offer this case as an interesting, unique, and potentially extreme case that defies the notion of ancestral inhabitants. On the other hand, I suggest that its exceptional nature is an invitation to archaeologists in other locales to engage with present day politics, to avoid generalizations, and to consider the particulars of every place, the communities that live there, and those that may have occupied the space for centuries before. I offer the case of Wildebeest Kuil to reflect on the complexity of the term "deep time", the theme of this volume, and suggest that multivocality, complicated, political and slow as it may be, is the path forward.

An archaeological site of international renown, Wildbeest Kuil is a location of a large number of spectacular prehistoric engravings, claimed to have been made by ancestral San (see Fig. 16.1). Having worked on a research project at the site since 2014, I offer a perspective on both, the archaeological site, and a place where social facts, history, politics, and science all reside in permanent tension in the same terrain. Wildebeest Kuil is almost a textbook example of history and the present in conflict, one that archaeologists in other parts of the world might consider as instructive. Furthermore, this particular case nudges prehistorians towards a recognition that indeed science, including archaeology, is inevitably political, as it simultaneously shapes, and is shaped by, soci-

Fig. 16.1 Wildebeest Kuil, Northern Cape, South Africa, archaeological site and rock art center. (Photo by author)

[1]For a discussion of the use of the term San, Bushmen, or Khoikhoi see Barnard 2019.

ety in which it fulfils a particular role. I suggest that a conversation about archaeology and its role in society is not new historically. Moreover, many authors convincingly argue that having such discussion is essential for a thriving discipline (see e.g. Bernbeck and McGuire 2011; Gero 2015; Meskell 1998, 2018). Understanding deep-time imagery and rock art in the global context must include discussions of the politics of the past and the present as part of the interpretive process.

However, I also wish to stress that I probe the quest for an authentic indigenous past, not to equivocate, or to contribute to a denial of land claims in places like South Africa. To the contrary, I show that the complex history of postcolonial locales demands that archaeologists account for the dislocations and violence of global forces against indigenous people the world over. By keeping indigenous people "in a place", as if they never moved or migrated only in a circumscribed radius, essentializes them to their own detriment and places them outside history. In Kuper's words, the "return of the native" deprives them of a role in global history and of active agency in political events, past and present. Their role in many of these historical events is complicated, messy, and not that different from the lives of many groups of people who faced existential dilemmas. A continued insistence on San ancient past as their most salient, or even only, distinguishable characteristic, frozen in time, relegates their role to serve as illustrations of anthropological or archaeological imaginaries of collective human past (Gordon 1992; Kuper 1988, 2003; Wessels 2010). I also wish to argue that delegation of indigenous groups to the corner of human past, no matter how ancient, perpetuates their marginalization in modern society, such as South Africa, and thereby avoids any current structural solutions of their poverty. This chapter is written in that spirit, having spent the past decade working in the Northern Cape, with respect to the resilience and creativity of the people, and seriously troubled by the continuing economic disparities that one cannot, and should not, look away from.

16.2 The Land, the People, the Past

The Northern Cape of South Africa, perceived for centuries, or even today, as a vast, mostly empty space, is not a neutral territory. On the one hand, the region appears to have been occupied by some of the earliest humans in prehistory, as evidenced by archaeological materials from 1.8 million years ago in Wonderwerk cave near Kuruman (Chazan et al. 2020). On the other hand, Kimberley, the current capital, came into being in haste quite recently, with the discovery of diamonds, and the rush of many to get rich in the 1870's. Cecil Rhodes got his start here, and some of the first sums that made the foundation of the University of Cape Town possible, came directly from the diamond wealth of Kimberley (Weiss 2007, 2012; Morris 2014; Tomášková 2015, 2020). While De Beers continues to have its headquarters in town, the central diamond mine, the Big Hole, now a major tourist attraction, closed any activity in 1914. The last mine with any diamond extraction closed in 2005. The province struggles economically, with high unemployment rates and very few employment opportunities, which leads to periodic flashes of public imagination of diamond prospects, and outbursts of conflict over land claims. The contentious arguments surrounding archaeological sites are very much part of this conversation, as something is imagined to be hidden in the ground, be that diamonds or prehistoric sites, waiting to be discovered by geologists, prospectors, and archaeologists.

The Northern Cape is the largest province in South Africa (372,889 km^2), with the smallest, and thereby highly dispersed, population (1.2 million), and sufficient economic hardship (close to 40% unemployment rate) to compete with the Eastern Cape for the position of the country's poorest province (SA Census 2011).[2] The late nineteenth century accumulation of wealth from the extraction of minerals is a part of a much longer history of colonial extraction of any and all resources from the region, southern Africa, and from the continent in general. As Terreblanche noted, the region has been a subject of exploitation by every wave of colonial settlers since the seventeenth century. Whether the desired resource took the form of minerals, plants, animals, or people, it all served as raw material available for the taking, turned into a profitable commodity elsewhere (Terreblanche 2002). An additional compounding factor is its geographic location. The Northern Cape represents a special "frontier zone" in settler colonialism. It was an area of repeatedly contested territory from the early eighteenth century on; a frontier that was movable and often moved, not necessarily a destination but a way towards somewhere else, or a refuge from somewhere else, from the perspective of those pushed to marginal lands (for a detailed history of the region see Penn 2006, Wessels 2010). This history is reflected in the fact that at present 53.8% of the population of the province considers Afrikaans as their primary language, followed by 33.1% Setswana speakers, while English is the "mother tongue" of only 3.4% inhabitants (SA Census 2011). Yet in the classification by race, however fraught that may be in South Africa, half (50.4%) of the population identifies as "Black Africans", followed by "Coloured" (40.3%). In all other provinces IsiZulu and IsiXhosa are the most common languages of black people. Afrikaans has been traditionally

[2]The Covid pandemic affected the Northern Cape the least of all South African provinces precisely because of the low density of population and the low number of migrant workers. Tuberculosis and HIV, unfortunately, continue to be far greater causes of mortality than the corona virus. https://www.statssa.gov.za/publications/Report%2000-80-05/Report%2000-80-052020.pdf

the language of former Dutch settlers, later adopted by those labeled, or self-identified, as "coloured". This linguistic identification in the Northern Cape reflects a recent history, the result of migrations into the province for employment, mainly in the mining industry. Yet at the same time, the census, and particularly the category "coloured", masks the complexity of intermixed and layered identities of many "traditional" people of the Northern Cape who can be the descendants of any combination of indigenous Khoi, and San peoples, escaped slaves of African descent, Boer frontiers people, Africans of Tswana heritage, and fairly recent European settlers. Unsurprisingly then, the imposition of Afrikaans as the language of instruction in primary schools continues to be deeply resented by the resettled San communities near Wildbeest Kuil. They perceive the official use of the language as an example of the ongoing cultural injury, exploitation, and willful lack of recognition of their history, despite, or possibly because, of their very recent arrival onto this cultural landscape (interviews of local leaders by the author, 2017). Both the !Xun and the Khwe in Platfontein refer to the white people and blacks in their vicinity as "they", seeing them as other, which only further strains their relationships with the local communities, and contributes to their marginal status. The relationship with the black neighbors is particularly complicated by the recent history of the road the San took to come to the Northern Cape. There is no solidarity between them on any level, as I experienced during an interview when both the councilwoman from Galeshwe, N., and my assistant M., black South Africans, became so upset with the responses of the !Xun representative that a shouting match ensued. As Bahta noted,

> The San at Platfontein do not have a clear-cut view of their own racial identity. In their responses to interview questions, all members of the community referred to other people as "white" or "black", distancing themselves from both (Bahta 2014:45).

The physical and cultural geography of the region, economics, and recent history of the Northern Cape are all especially poignant here, as they were the main reason why the San communities were resettled in Platfontien, some five kilometers away from Wildebeest Kuil. Deemed by politicians, and the South African Defense Force, as an empty and available land, some 400 formerly military !Xun and Khwe families of distinct origins, language backgrounds, and histories were brought to Platfontein in 2003 (Robbins 2006). The decision was rooted in political and expedient justifications, central among them the imagined sparseness of the land. Very little consideration or deliberations were given to local boundaries, history, ancestral ties, or heritage. It was deemed a fortuitous coincidence that they were "reunited with their ancestral heritage", the ancient engravings at Wildebeest Kuil, as close as an indigenous population ever lived to an archaeological site in the area (Weiss 2007, 2012).

The Indigenous, derived from Latin, means within, originating where it is found, or belonging to a particular place by birth or origin, a temporal claim to a place (Niezen 2003). Indigenous identity is then inextricably tied to a specific geographic place, land where the people are rooted or where they originated, where they belong. Yet in the case of Wildebeest Kuil and the San people in its vicinity, ancient prehistory and very recent twentieth century history collide in a most spectacular and instructive fashion. The claim of ancestral land and the present-day indigenous groups here do not align neatly, challenging the very definition of "indigenous", native, or local. The South African San are, in an archaeological sense, the true indigenous people in all southern Africa, who lived throughout the continent for thousands of years, before any migrations, and well before any colonial onslaught (for a detailed account of the history of "bushmen", and their entanglement with anthropologists see Barnard 2019, also Wessels 2010, Barbash 2016). Yet in the Northern Cape the San settled in Platfontein are the most recent arrivals, with no record of indigenous people living in the region since at least the mid-nineteenth century; these particular people from Angola and Namibia are strangers in a new land. An origin story in a place such as South Africa may be motivated by a desire for a territorial emplacement, a "cradle of humanity" for dispersed, dislocated, and marginalized groups. Nevertheless, contested spaces, centuries of conflict, truce, and temporary agreements that fester and erupt with unsurprising regularity are all a part of the context which frames the study of human past in Africa, including the study of ancient images (for a particularly insightful account of land and belonging in a different part of South Africa see Steinberg 2002). How to disentangle recent conflicts of modern liberatory struggles and ancient prehistory of the "ancestral San"? This is the issue I wish to address while also offer a word of caution shared by many anthropologists who work in this area, there is no simple solution.[3]

16.3 Prehistoric Images

Wildebeest Kuil is currently an archaeological site, a rock art tourist center, and a popular destination for day trips from the capital Kimberley (see Fig. 16.1). Located some 15 km away from the city, the site consists of two smaller, natural

[3]A suggestion that the San and/or Khoisan are the "most likely descendants" for Later Stone Age sites (at least), in all of southern Africa, and therefore could be declared the rightful owners of all archaeological sites, including those in the Karoo, may offer a parsimonious solution. Yet, history and politics strongly indicate otherwise. The acrimonious divide between the two San groups currently residing in the area poses one of the many challenges. Many well intentioned have tried, so far in vain.

mounds that are literally covered with boulders, the majority engraved with images, abstract as well as representational, animal and human figurines. The long-term research project involves mapping and recording the engravings, using photogrammetry and 3D computer-generated models to allow multiple angles and close ups to uncover traces of manufacture (for a detailed discussion of methods see Tomášková 2020). Although the two mounds are adjacent, there is a stark distinction and contrast between them. The first mound, site 1 in our study (see Fig. 16.2), contains 245 engravings, where 80% are representational images of animals, humans, and some abstract motifs, while 20% comprise just pecking and rubbing (see Fig. 16.3). The engravings were carried out in a wide range of distinct styles, different techniques, some carefully pecked out, some scraped out, and some chiseled into the boulder. These were quite clearly disparate image making events, most certainly not carried out by the same individuals, judging by the techniques alone. An additional interesting feature of site 1 were images that at first glance appeared "unfinished" (see Fig. 16.4). However, this interpretation is easily countered by a suggestion that the image is that of an animal amidst a leap, thus the image is "finished", while the leap is not. Nevertheless, some 25% of engravings carry this feature of "thought in motion."

Site 2 consists of 318 engravings on almost every boulder of the mound (see Fig. 16.5). It contrasts with site 1, as the representational aspect is completely different, with 90% pecking and rubbing, and only 10% are figurative images. Site 2 contains incomplete engravings and multiple images on one rock using different techniques, but there is no overlapping or overwriting of engravings, a common feature at other sites. This particular location is a large area filled with boulders, adjacent, only some 100 meters away, from site 1, yet the two hills are spaces of very different image making events and/or traditions. For now, I settled on two possible interpretations that are still only working hypotheses, not

Fig. 16.3 Wildebeest Kuil, Northern Cape, South Africa, Site 1, engraving of a rhino. (Photo by the author)

Fig. 16.4 Wildebeest Kuil, Northern Cape, South Africa, Site 1, an "unfinished" engraving of an antelope. (Photo by the author)

Fig. 16.2 Wildebeest Kuil, Northern Cape, South Africa, Site 1. (Photo by the author)

Fig. 16.5 Wildebeest Kuil, Northern Cape, South Africa, Site 2. (Photo by the author)

discussed in detail as they are not the purpose of this chapter:

1. site 2 was a place of learning, where practice of technique was the central goal, not image making, while site 1 was the location of complete mastery of image making.
2. site 2 was a space that was never intended for images, rather the sound of stones hitting or scraping the boulders was the main purpose, a soundscape of sorts.

At this stage of the project, these two hypotheses will have to be tested and supported by more evidence, it is very much work in progress. However, the engagement with stones on each mound was distinct and visually different. While temporal scales certainly need to be considered, time difference alone cannot explain the dramatic contrast. The separation of activities in the two areas is quite clear. The next step in this project is assessment of the level of skill and duration of each activity. In this chapter I only sketch an outline of the material presence of the prehistoric engravings at Wildebeest Kuil, so as to provide a sense of the heritage that is at stake here. My attention therefore turns to the San people who live in the nearby community of Platfontein, the supposed ancestral people of the region, with deep connections to these engraved images.

16.4 The Ancient Past and Postcolonial Liberation Struggles

If archaeologists take the ethical turn seriously and afford indigenous people a say in discussions of heritage, we must pay attention to the contexts of global, regional, and local interactions, their disruptions, and account for them in our work. The Northern Cape, particularly the San people who currently live near multiple archaeological sites in the Kimberley area are an excellent illustration of the dilemma that heritage as an identity practice poses to both indigenous people and archaeologists (besides Wildebeest Kuil, also Nooitgedacht, Driekopsland and many individual dispersed engravings on farms in the vicinity). Robert Hitchcock based on decades of lived experience in the region, and extensive work with multiple Kalahari San communities in Botswana and Namibia, convincingly argues that historical discontinuities are as common among "traditional peoples", and crucial to examine, as pauses in the archaeological record,

> The Ju/'hoansi and !Xóõ case studies demonstrate the complexities in the ways that societies behave and adapt to variability in their natural and social environments, and they also show some of the kinds of pressures that people are and were operating under over time which affected the kinds of strategies they pursued. (Hitchcock 2012: 12)

While working at Wildebeest Kuil over the years, my assistant and I got to know the people in nearby townships and settlements, developed local relationships, engaged in extended conversations, and acquired a deeper understanding of the complicated history of the place where we worked. Galeshewe is the closest township, with an interesting architectural style of houses, some of them dating back to the early twentieth century and mining history, others are rows of brick "RDP houses",[4] as well as very recent, and increasingly most numerous, metal shacks made by individuals and families desperate for any housing.[5] Built originally in the nineteenth century for diamond miners, Galeshewe is now a township nestled right against the architecturally striking Northern Cape parliament building, symbol of the "new democratic South Africa". It was also the very first Black controlled municipality in South Africa (1983). Early into our fieldwork we were invited to Galeshewe, and that was where we heard the first time about Platfontein and the San people, the recent newcomers to the area. The context in which they were mentioned was inevitably complaints about housing, a commodity in high demand, serious shortage, and urgently needed by multigenerational families. The Platfontein settlement was built at an impressive speed by the South African government in 2002 and the San community took occupancy the following year. "You must speak with them", the councilwoman N., who became a friend, told me insistently and offered to be an interpreter. We scheduled a visit, only to find out that we needed entirely separate visits for the two different groups, the !Xun and the Khwe, as while they live in one village, they are not only not related, but even more, they are neither neighbors, nor one community. My education just begun.

In order to describe the history of the San people and how they ended up in Platfontein, I need to offer the reader at least an outline of the military conflicts and proxy wars in the greater southern Africa in the second half of the twentieth century, starting first further north in Angola. James (2018) summarizes the history of Angola in seemingly stark but unfortunately accurate terms,

> Dominated and exploited by Portugal for almost five centuries, Angola achieved independence in 1975 after a bitter struggle. This was followed by an even nastier civil war, which lasted for 26 years. The situation was further complicated by the Cold War, and conflict continued even after that was over, ending only in 2002. (James 2018: 1)

When Portugal refused calls for independence, a bloody suppression of the Angolan liberation struggle begun in the early 1960's. The Portuguese military hired the!Xun, a San ethnic group, as trackers, so called "Flechas" (arrows), to assist

[4]Reconstruction and Development Programme, modest, government paid family houses that are much coveted and highly political due to their shortage. In many parts of South Africa, RDP houses have become a reward system of the political party in power.

[5]https://www.diva-portal.org/smash/get/diva2:829647/FULLTEXT02.pdf

them with the counterinsurgency. The!Xun, a linguistically distinct group of Khoisan speakers, were originally from the Monengue area in southern Angola (Barnard 2019; Robbins 2007). They were willing to work for the Portuguese army for complex historical and present-day reasons that are not all too surprising in any post-colonial setting. The Khoisan people were the original groups that inhabited the region for thousands of years but with the southward movement of the Bantu speakers, ethnic conflicts arose, and the Bushmen were on the losing end much of the time (for a recent in-depth history of the Bushman see Barnard 2007, 2019). The settled farmers captured many San, sold them as slaves or exploited their labor. By the twentieth century, the hunting and gathering groups, pushed out of traditional hunting grounds to the margins, experienced severe economic impoverishment, and their persistent marginalization afforded very few sustainable employment opportunities. As Barnard pointed out,

> It should go without saying that Bushmen have lived in the environments they have for a very long time. Contrary to what is often said, they are not constantly migrating. They are transhumant, but they do not generally leave their territories to move to other ones. As Hugh Brody (2001: 7, 86–90) once put it, it is farmers who throughout prehistory and history have been the migrants. They move about every five generations in search of new pastures and planting grounds, whereas hunter-gatherers tend to retain an attachment to land. This is for its local resources, but it is also for its symbolic value. (Barnard 2019: 44)

In their stories the!Xun, much later on, far away from their Angolan homeland, in South Africa, explained their involvement in the Angola conflict as the hand they were dealt, they joined the Portuguese army for the meager pay given, coerced by both the military and by poverty (see Robbins 2006, interviews in Platfontein by the author 2017, James 2018, for a different view see Douglas 1997). Prolonged fighting paused only when Portugal went through a political change after the coup in 1974 and finally withdrew from Angola. In fear of retaliation and reprisal, the!Xun retreated south to, what was then, Southwest Africa, present-day Namibia. Their tracking skills, recommended by the Portuguese military, were already on the radar of the South African Defense Force, namely Commandant Delville Linford who re-trained them for the purposes of a range of conflicts the military was involved in (Robbins 2007; Van Wyk 2014; Linford 2015). The SADF was active in the region in, what was then called "the border war", a wider regional conflict and a proxy of the Cold War, fueled by both the former Soviet Union and the US (Robbins 2007, Truth and Reconciliation Commission Report 1998).

The Khwe, the second Platfontein community, came from the Caprivi region, a thin sliver of land in the northeastern corner of Namibia, geography that only colonial history could have created. However, such statement seriously simplifies the far more complicated history (for an account of the San Namibia history and present see Hitchcock 2012, for an exceptional Caprivi account see Taylor 2012). West Caprivi strip was declared an exclusive military zone in 1970 and served the South African military as a launching pad for excursions into Angola. Commandant Linford, a South African professional soldier at the time, set up a training camp in the zone and recruited San residents of the area to join his battalion, adding the!Xun to the mix when they were relocated out of Angola. Linguistically, culturally, and historically, the two groups, the Khwe and the!Xun, had nothing in common, sharing only their former economic subsistence, present day hardship, and social marginalization in both Angola and Namibia. The "bush-war" originally took place in southern Angola and northern Namibia, but it eventually metastasized into a much broader area, with regular insurgency against the South African Defense Force in adjacent Zambia, Botswana, Mozambique, even Lesotho and Swaziland (Truth and Reconciliation Commission Report 1998). The tracker unit was essential to all the battles, as a telegram from one of the commanders to other units spells out quite clearly,

> Commander do not underestimate tactical effectiveness of Bushmen unit in Boer Orbit – 31 Battalion. Lethal to anybody moving beyond trenched positions. They have the best field tactical skills on the planet in this theater. Most of them are of Angolan origin: have excellent personal knowledge of 5 & 6 military regions; Cmdrs 66, 59 and 25 Brigades ignore their deployment at own cost by following the superstitions of Fapla colleagues – they will pay the price of many volunteers lost. End Trans (Wildebeest Kuil exhibit, SADF archives)

However, as Hitchcock noted, many such statements were based on the confluence of entirely stereotypical notions of who the Bushmen were prior to joining the SADF, their imagined primitive lifestyles, as well as the San self-promotion to gain employment (Hitchcock 2012). The persistent skirmishes and back-and-forth armed conflict without any clear goal continued for long twenty-three years (!). It came to an end only as a result of a mix of political pressures throughout southern Africa and in Eastern Europe, and unsurprising historical coincidence, considering the heavy involvement of former colonial powers and the Soviet Union. Before the actual fall of the Berlin Wall and the final collapse of the communist regimes throughout Eastern Europe, the leadership of the Soviet Union begun to gradually decrease their financial support of liberation struggles in developing countries, including those in Africa. Due to serious economic issues at home, the Soviet government cut back on arms shipments and financial support of Cuba, which acted on their behalf in Angola (George 2005; Liebenberg et al. 2015; Schubert 2017). By 1989 political instability in multiple regions of the world simultaneously, and a serious push for liberation and independence in South-West Africa forced the SADF to pull back even further south and retreat into South

Africa proper itself. Namibia, with the assistance of the UN, conducted almost immediately impressive democratic elections and without much violence declared a birth of a new independent country in 1990,

> No elections in Africa have been so thoroughly prepared, so meticulously covered and carefully monitored as these. Despite the large territory, Namibia was sparsely populated and apart from the liberation struggles fought against colonial/occupying forces, Namibians themselves, though culturally different, for the most part were not a deeply divided society, which probably assisted in the process once the occupier and common enemy had left. The elections took place in November 1989, the constitution was drafted within two months and Namibians became independent with festivities held in Windhoek on the 31st of March, attended by Western and non-aligned glitterati alike. A war that could have been prevented as early as 1946 came to an end after much blood had been spilt. (Liebenberg et al. 2015: 39–40).

This is an overly rosy picture of an undivided country, as Hitchcock documented in discussions of land ownership and poverty (Hitchcock 2012). Nevertheless, it remains a fact that the transition was far more peaceful and far less plagued by subsequent outbursts of violence than most countries in Africa that emerged from similar processes at this time. The new democratic Namibian government, with the assistance of the United Nations Transition Assistance Group (UNTAG), offered the San fighters of the 31st Battalion the option to remain in the newly founded country. Only about a half of the military regiment trusted the offer, and 500 veterans and their dependents (some 3500 additional people) followed the South African Defense Force to an army camp in Schmidtsdrift, Northern Cape in March 1990 (Douglas 1997; Hitchcock 2012; Beyene 2014; Van Wyk 2014). The purpose of this move was unclear to the former trackers, except that their presence *as soldiers* in Namibia was not only not needed, but even more not welcomed. Moreover, most newly formed countries in the region, with success in the anti-colonial liberation struggle took the opportunity to build new societies by re-defining identities along ethnic lines that differed from colonial era categories and crosscut in strange ways former racial classifications (Battistoni and Taylor 2009; Taylor 2012). The San did not fit any such groupings in Namibia (or anywhere else), and rightfully weary of government authorities, despite their democratic nature, reluctantly opted to move, again. The South African military, for their part, tried to convince the trackers to remain in Namibia, even when any economic support, livelihoods, or integration into society were far from clear. The next stage of the precarious existence of the !Xun and the Khwe begun in yet another military camp, on the payroll of the South African Defense Force, with newly acquired South African citizenship, just as the anti-apartheid struggle was finally reaching a resolution, and a democratic transition to a new society in South Africa was becoming a reality (Douglas 1997). The 31st Battalion was disbanded by president W. De Klerk in March 1993 at a public ceremony under the most ironic justification—to cut down on violence in the country, on the eve of the 1994 elections. Shortly after moving them to the territory in 1990, the South African military tried various ways to stop paying the San as soldiers, even though they continued to live in a tent city on a military base in Schmidtsdrift. The first attempt was a !Xun and Khwe Trust, created in 1993, an effort to shift at least some responsibility to the outgoing apartheid government of the National Party of W. De Klerk. This received absolutely no commitment as the Government of National Unity, led by the ANC (African National Congress) was the obvious winner of the first free elections in 1994. Once the ANC came to power, their reluctance to take on any responsibility for the former soldiers of the apartheid era South African Defense Force, who actively assisted in military actions against liberation efforts in both Angola and Namibia, became apparent (Truth and Reconciliation Commission Report 1998). To complicate matters further, the new government in an effort to address land ownership and access, as one of the most vexing roots of inequality in all post-colonial countries, opened doors to claims from previously displaced communities. The first group to make a claim for return of their land in Schmidtsdrift were the original owners, a Thlaping (Tswana-speaking) group that had been forcibly evicted in the late 1960s to make way for the SADF military base (Douglas 1997: 47). While the return of the land was approved, what to do with the !Xun and the Khwe families was not addressed until 1995 when the Department of Land Reform established a commission to study the issue and come up with a solution for the "Schmidtsdrift bushmen", their need to move again undisputed (Robbins 2006, 2007). The decades of being part of a conflict, participating in a conflict, moved and moving but unrelated to even traces of their ancestral lifestyle, economic subsistence or heritage relentlessly continued,

> By the time they got to Schmidtsdrift, their obedience to the army was complete. Then the army was taken from them. People were negative, defeatist, or at most sad, bitterly unhappy, but often too polite to express any real anger about their situation. In any event, military training represses individuality. This passive tendency washed over into all the families. They knew they were unhappy, but they were essentially fatalistic. They didn't even realise they had human rights. If there were 'angry young men', they didn't show their anger. (Robbins 2007: 39)

16.5 The Heritage Conundrum: Ancestral Links and Stewardship

The purchase of several farms in Platfontein and the construction of permanent brick houses was in the end paid by the ANC government, and it is now owned by the San community, the !Xun and the Khwe who met for the first time

some 30 years earlier in a military zone on the Caprivi strip in northeastern Namibia. Their proximity to the archaeological site at Wildebeest Kuil may be at least a metaphorical return to some ancestral past, thousands of years old, as distant as the unfinished engravings of an eland in mid-leap. But that is obviously an unsatisfying response for an archaeologist trained in methods, analysis of material remains with scientific methods using highly sophisticated, and expensive equipment. As David Morris, in discussion of the site Biesje Poort remarked,

> …connecting the dots (as happened at Biesje Poort) from rock art to stone artefacts and pottery, to colonial era objects, to histories of conquest and on to contemporary indigenous knowledge systems (IKS) and community rock art and landscape interpretation, comes rather more easily and coherently than it would for an archaeologist cautious about evidence and causality (Morris 2014: 649)

The simple answer in this case would be that neither the !Xun, nor the Khwe from Platfontein have any direct ancestral connection to the engravings at Wildbeest Kuil. They moved to the area only two decades ago, the result of violent conflicts in which they were enmeshed, but also participated. Morris further notes, that judging by all historical evidence, most likely the remaining San of the Karoo of the Northern Cape who survived disease and conquest were absorbed into surrounding societies as underclass, part of the "coloured" population (Morris 2014: 656).

Following Kuper's argument with which I started this essay, questioning or a denial of the accuracy of a claim of the San groups as unchanging, traditional hunter gatherers has political implications. Central among them is a denial of a direct line from the past to the present, and consequently any title to heritage in the form of archaeological sites, such as Wildebeest Kuil. This principled stand positions western science, in the form of archaeology, on one side and communities, indigenous or otherwise, as their opponents. McGhee argues that "the advantages of accommodating a scientific discipline to the desires of a specific nonscientific community are not at all clear." (2008: 590). In his view, the choice is unequivocal, and oppositional; scientific truth and nonscientific beliefs, the well-known contrast of science and religion/myth, the soul food of anthropology for well over a century. While I suggest that the opposition of a "scientific discipline" and a "nonscientific community" is a red herring, and an unproductive one at that, I will also argue that the contrast is a political move aimed to disempower certain groups. Archaeology as a scientific practice is, and has always been, embedded in power structures of education, resources, methods, and equipment (Tomášková 2015). This insight from Wildebeest Kuil, and its San neighbors, is applicable in global conversations of rock art. If multivocality is to gain any ground in archaeological interpretations, a model of science versus indigenous knowledge is unsustainable. Western forms of knowing the world cannot claim to be open to alternatives when the only goal is to translate indigenous knowledge into another, different version of a single narrative. Discontinuity, ambiguity and at times incommensurable story lines may travel on parallel tracks, not necessarily embroiled in a struggle over their truth value (Gero 2015). Yet in the case of Wildebeest Kuil, and many other archaeological sites throughout South Africa and elsewhere, the material outcome of these claims is land ownership and heritage, ancestry being the recognized chain links. As Robins convincingly argues, strategic essentialism, deployed by the San in several instances, resulted in successful acquisition of land rights, as that was the only strategy that the governmental Department of Land Reform or NGOs working for indigenous communities recognized, understood, and connected with on an emotional level (Robins 2001, 2003). I am aware of the profound, ongoing stark inequality in the Northern Cape, and South Africa in general. Nevertheless, I would still like to argue against land ownership as the only legitimate criterium by which to judge archaeological sites. As Morris suggested in the case of Biesje Poort, stewardship and landscape rather than site may open more opportunities to a conversation that would involve multiple partners, not just archaeologists and their immediate neighbors, in this case the !Xun and the Khwe (Morris 2014). The young generation in Platfontein is bringing back their native languages through hip-hop as their own cultural form, as I witnessed while interviewing the elders. The new and ancient merge in a hybrid form and give all an opportunity to turn the page on understanding of heritage. Rather than genetic links, we should invite multiple voices to consider landscape, art forms, images and sounds at Wildebeest Kuil. People from Galeshewe and from Platfontein should be invited to participate in the work of exploring and questioning the past at Wildebeest Kuil. If we are to take our archaeological research of the traces of the past seriously, and not as just another in a long history of extractive industries, we must begin by trying to engage surrounding communities.

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Graffiti, Vandalism and Destruction: Preserving Rock Art in a Globalized World

17

Paul S. C. Taçon

Abstract

In our globalized world access to rock art sites is unprecedented. But despite awareness campaigns, education about the universal value of rock art, global media attention and the efforts of those who manage rock art sites, purposeful damage to rock art imagery and the landscapes it is a part of continues at an alarming rate. There are many reasons for this, including ignorance, indifference, iconoclasm, racism, political motivations, and economic priorities. It also has been observed that 'marks attract marks' so for some people there is a compulsion to leave one's own mark at rock art sites because previous people have done so. Indeed, new graffiti at rock art sites, unless quickly removed, can soon lead to a growing number of incidents. To further complicate things, Indigenous interactions with rock art sites can sometimes lead to new mark making construed by others as a form of vandalism. After summarizing why rock art is important in today's globalized digital world, the history of purposeful damage to rock art sites is briefly reviewed before recent case studies from Australia and elsewhere are discussed. New strategies for preventing graffiti and vandalism at rock art sites, are then outlined. It is concluded that our global rock art heritage needs to be valued as a part of living culture rather than archaeological artefact in order to best conserve it for future generations.

Keywords

Graffiti · Vandalism · Australia · Superimposition · Living heritage · Management · Conservation

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17.1 Introduction

Rock art, consisting of paintings, drawings, stencils, prints, engravings, bas relief and, in northern Australia, figures made of beeswax, is found on every continent except Antarctica. Rock art was made at least 45,500 years ago in Sulawesi, Indonesia (e.g. a painting of a pig; Brumm et al. 2021) and up until the late twentieth century in some parts of the world, including at many locations across Australia (e.g. May et al. 2019; Taçon et al. 2012, 2021). The oldest hunting scene globally has been dated to at least 43,900 years ago (Aubert et al. 2019), while some hand stencils and further figurative paintings from Sulawesi and Kalimantan have a minimum age of 40,000 years (Aubert et al. 2014, 2018b). Paintings and stencils in Europe, at places such as Chauvet and Cosquer, France, are up to 35,000 years old (Quiles et al. 2016; Valladas et al. 2017) and some cave paintings in Spain have been argued to be about 65,000 years of age (Hoffmann et al. 2018) but there is debate about both reliability and significance (e.g., Aubert et al. 2018a; Slimak et al. 2018; White et al. 2020). The oldest reliable evidence of Pleistocene rock art in Australia is a painting of kangaroo in the Kimberley region of Western Australia dated to between 17,100 and 17,500 years ago (Finch et al. 2021) but there is likely much older surviving rock art within and beyond the Kimberley.

Across Australia, rock art remains a fundamental part of Indigenous living culture (Taçon 2019) and across the world has contemporary relevance (Brady and Taçon 2016). This is encapsulated in the mission statement of the Rock Art Network, an international group of 40 rock art experts from 18 countries raising awareness about why rock art is important and relevant today. They conclude that 'This fragile and irreplaceable visual heritage has worldwide significance, contemporary relevance and for many indigenous peoples is still part of their living culture. If we neglect, destroy, or disrespect rock art we devalue our future' (Agnew and Deacon 2022, viii).

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Despite this, world rock art is under threat from a range of natural and human forces (Agnew et al. 2015; Darvill and Fernandes 2014; Marshall 2020; Marshall and Taçon 2014; Rosenfeld 1985; Taçon and Marshall 2014; Thorn and Brunet 1995), with cultural impacts having the most devastating affects but also possibly easier to manage. Even the ancient rock art of Sulawesi is being impacted by graffiti and industrial development (Taçon et al. 2018) but graffiti is one of the biggest growing problems worldwide as access to rock art sites for tourism and industrial and urban development accelerates. And as Jannie Loubser states 'Unchecked, graffiti can cover in a short period entire rock art panels that have survived millenia of destructive natural agents' (Loubser 2019, 1).

Keegan (2014, 4–5) provides a useful definition of graffiti as 'markings done on private or government property without formal or tacit consent and, hence, not endorsed by the broader society' and discusses its long history. David and Wilson (2002, 43) argue that 'graffiti is imbued with a polluting and vandalistic quality irrespective of its decorative potential. It threatens the status quo not just because of the words or images written, but by the fact that its execution in public spaces lies outside the control of existing social forces'. But Frederick (2009, 212) provides one of the most comprehensive yet succinct definitions of graffiti:

> Graffiti in the broader contemporary context is a complex mark-making phenomenon, that may be seen as a kind of drawing or painting and, because it commonly employs language text, also as a kind of writing. Its sculptural forms and intervention in the surface textures and appearance of buildings make it an element in the liquid architecture of a mutating metropolis. However, the term 'graffiti' is most often applied to any form of unsolicited marking. Graffiti is generally understood as text and/or images that is made in shared spaces where it is generated and viewed publicly, be that a privately owned building, public transport or an alleyway. It is otherwise difficult to characterise graffiti because it is a mode of expression and communication which comprises a vast array of media, technique, subject matter, form, and meanings. Yet despite the fact that people 'do graffiti' in different ways for different ends, it is most often typified as an act of vandalism or anti-social behaviour.

Some of the oldest graffiti at rock art sites is in France and dates to the 1600s at sites such as Niaux Cave (Fig. 17.1), while in Australia a large number of rock art sites have graffiti from the late 1800s and early 1900s associated with early explorers and settlers of European descent. Graffiti at rock art sites usually consists of names, dates, scratches, expressions of love or hate and occasionally pseudo/imitation Indigenous rock art (see Gray Rock example below), deliberately placed alongside or over traditional rock art, as well as elsewhere within a site. Intersections between rock art and graffiti have begun to be explored in various ways (e.g. Frederick 2018; Frederick and O'Connor 2009) but graffiti at rock art sites, and the motivations behind it, has rarely been explored in detail.

Fig. 17.1 Graffiti from the mid-1600s to the early 1800s in the passageway that leads to the rock paintings of the Salon Noir, Niaux cave, France. (Photograph: P. Taçon)

17.2 Why Rock Art Is Important for Indigenous Australians

Across Australia, First Nations people explain that their rock art continues to be an integral part of contemporary culture rather than an archaeological artefact. Their views often differ from those of archaeologists and heritage managers, although there is some overlap (Taçon 2019, 10–12).

> Rock art sites, sacred sites and other places of significance anchor Indigenous people in landscapes created by powerful Ancestral Beings that are at the same time cultural, natural and spiritual. These places are fundamental for contemporary Indigenous culture and the well-being of both individuals and communities… for Indigenous Australians they are more than heritage places and places of history because they are charged with old and new stories, ancestral connections and meaning. They reinforce notions of cultural survival and are proof of Indigenous ownership of land. They are places of knowledge, spirituality and experience that shape Indigenous identity. Rock art sites are important places for teaching tradition, law and lore. They are about story, song and dance; ritual and ceremony. … They are priceless inheritance but also cornerstones of contemporary culture (Taçon 2019, 12).

Rock art sites are places where Indigenous people connect with their ancestors, recent and ancient. Because of this they have to be cared for in both traditional and Western scientific ways so they are safeguarded for future generations (Williams et al. 2019). If sites are vandalized with graffiti, or in any other way, Indigenous Australians can feel not only great sadness, anger and disgust but also be physically ill (see various examples in Taçon 2019, 2021).

17.3 Is There Indigenous 'Graffiti'?

Indigenous graffiti is extremely rare at rock art sites although some people have argued very contemporary rock art production over earlier images is a form of vandalism (e.g. see Chaloupka 1992; Clarke and Randolf 1992; Ward 1992). Indigenous graffiti occurs in other contexts, including on road signs (e.g. Ralph and Smith 2014) or other surfaces (Frederick 2018), often as a form of protest. One morning in April 1992, while recording petroglyphs in Roma Gorge, central Australia, I came across a boulder with names, numbers and a date pecked into the rock. 'Oh, what a shame' I thought to myself—but at least this was the only instance of 'graffiti' amongst thousands of traditional designs such as bird and animal tracks, circles with pits, concentric circles, other non-figurative designs, hooked boomerang designs and other motifs typical of the region on 112 engraved faces spread over a distance of 434 metres (Taçon 1993, 119). Roma Gorge is associated with two family groups and during a few days of recording senior Traditional Owners of each family, Herman Malbunka from Ipolera Outstation and Max Inkamala from Hermannsburg, would join me for part of each day to interpret the art and to summarise their association with it. 'Herman Malbunka's family is associated with the south side of the gorge while Max Inkamala's family has always maintained the north side. In the past the two families would share food, ceremonies and access to each other's land on a permission basis with the un-engraved section understood to mark their common border' (Taçon 1993, 120).

When Herman and Max arrived later in the day I showed them the boulder with what I thought was graffiti, three names associated with numbers—Bertram 27, Kenneth 25, Donald 33—and a date, 1948 (Fig. 17.2). I told them how disappointing it was that someone had done this but they chuckled and said it was not done by non-Aboriginal vandals. Bertram Enata, Kenneth Enata and Donald Lambarba were from the Hermannsburg Mission and the numbers next to their names were given to them by the missionaries. These numbers were put on all their school clothes, books and other belongings, part of an imposed new identity, along with European names. Herman told me he was number 8, while Max said he was 22. They were friends with Bertram, Kenneth and Donald and said they must have visited in 1948 and used a traditional pecking technique for their inscriptions. In the past, people from the surrounding area would visit Roma Gorge for various reasons, including for food and water but also for ceremonies. They would leave marks of their identity behind in the process, including tracks of their totem animals. Thus, for Herman and Max the boulder did not have graffiti but instead reflected the new identities their people had been given at the mission.

Fig. 17.2 Roma Gorge boulder, central Australia, with what was presumed to be graffiti. (Photograph: P. Taçon)

Aboriginal people have incised, written or painted their names at various sites across Australia, including at one site in Kakadu National Park where the artist, Narlim, painted his name inside the hull of a ship he had painted (May et al. 2021). In North America there are also instances of First Nations people adding names to rock art sites. Jannie Loubser, while undertaking rock art conservation, found that 'At Writing-on-Stone, Alberta, Canada, for example, Blackfoot medicine people incised their names next-to earlier biographic incised drawings. Had it not been for consultation with Blackfoot elders, the names of their predecessors might have been removed in error' (Loubser Pers. Comm. 3rd March 2020 via email).

These examples indicate that Indigenous people made text-based inscriptions at rock art sites that could be interpreted by etic observers as graffiti/vandalism. However, David and Wilson (2002, 42–43) suggest inscriptions 'are an assertion of a right to be-in-place, inscriptions represent a resistance to sociographical exclusion'. The colonisation of Australia and North America meant increasing exclusion from traditional places for Indigenous people as well as shifting identity and the adoption of script-based marking, especially post-missionisation with children taught to write English. When people were able to return to important rock art sites often new rock art imagery was added that reflected traditional or new experience and identity, often 'to combat European colonialism' (McNiven and Russell 2002, 36). Sometimes this included new ways of marking places via text and numbers. In other words, 'Aboriginal people across Australia were active participants in change, mediating their interactions with outsiders in innovative ways, as well as continuing traditional practices while reaffirming connections to place' (Taçon et al. 2012, 433).

However, whether additions, alterations or obliterations of rock art are instances of vandalism/graffiti on the one hand or tradition, ritual and contemporary engagement by

Indigenous people on the other can be a complex problem to resolve (e.g. see Rogers 2007). More recently, new graffiti at a rock art site near Gunbalanya, Arnhem Land, Australia was found to have been made by bored Aboriginal teenagers from the Gunbalanya community. The graffiti was interpreted as vandalism by elders and was in no way sanctioned by them.

17.3.1 Rock Art Superimpositions

Some rock art researchers have argued that superimpositioning of rock art imagery, including contact subject matter, something common in Australia and around the world, is a form of vandalism. Grahame Walsh (2000), in particular, went to great lengths to analyse superimpositions at Kimberley, Western Australia rock art sites and classified them into 'casual – unintentional', 'deliberate – positive' and 'deliberate – negative' (2000, 214). He then asked the question as to why 'prehistoric artists frequently seem to 'wilfully deface' earlier masterpieces by superimposing them with their arguably less technologically advanced images?' (Walsh 2000, 214). Walsh suggested that superimposition could be considered 'vandalism' but sometimes may have resulted from a lack of space for new art. He concluded that in some areas of the Kimberley up to 20% of rock art images were deliberately superimposed for a specific purpose and that 'In more recent Kimberley art periods, incidents of negative purpose become more apparent, when earlier themes not pertinent to contemporary cultures are effectively obliterated by the consciously and deliberately positioned replacements' (Walsh 2000, 215). Walsh also discussed instances where ochre was used to cover earlier art and that some old paintings were 'deliberately defaced' 'through pounding, pecking or less commonly scratching' (Walsh 2000, 215). For various reasons he presumed that recent Kimberley Aboriginal people did this rather than those from the time period of the original artists. Walsh concluded that given many Kimberley defacements and superimpositions occur in what can be considered 'secretive' locations they were deliberate and associated with certain types of engagement with older rock art:

> Whether these purposes or activities were concerned with magical, ritual or historical purpose remains a mystery, but such forms of superimposition cannot be considered either casual or unintentional.
> Superimposition examples involving Bradshaw Figures deliberately covered by the most recent art forms frequently make clear statements of cultural dominance (Walsh 2000, 224).

In contrast, Ana Motta proposed that Kimberley superimpositions 'were (and still are) a mechanism that allowed past and present inhabitants to (re)create and (re)appropriate the inherited landscape' (Motta 2019, 482). This is consistent with observations at rock art sites in Western Arnhem land where up to 20 layers of superimposition can be found on some rock art panels (e.g. see May et al. 2010, 60–61). This is partly because 'The very act of painting also reaffirmed ideas about the past, the Dreamtime and Aboriginal cultural traditions' (Taçon 1989, 328–329). But not only were old fading paintings renewed or covered over by new paintings but also relatively recent images with contact subject matter, such as ships, firearms or introduced animals, were superimposed or completely covered by traditional subjects such as large X-ray kangaroos, emus or fish:

> By producing detailed and aesthetically powerful paintings of native animals with X-ray, solid, hatched, and cross-hatched infill over and/or next to introduced subject matter, artists, who often were initiated and highly knowledgeable ceremonial leaders, made authoritative declarations about the importance of maintaining Aboriginal tradition in the face of cultural change brought about by outsiders in visually compelling manners. They also left messages about connections to sites and traditional clan estates (Taçon et al. 2021, 128).

In both Arnhem Land and the Kimberley some panels or sites were added to, covered over, superimposed and embellished much more than others. Motta et al. (2020) concluded that for the Kimberley 'analytically and conceptually, artists draw upon the repertoire of earlier images or artists, contributing to the continuity (and variance) of artistic forms and traditions. The exact characteristics of these continuities allow insights into the interplay between motives, places, Country and individual as well as interpersonal and socially constructed agency. Rock art thus becomes the product of a dialogue between places and different generations of artists' (Motta et al. 2020, 146). This is certainly also true for Arnhem Land and probably much of Australia, if not globally. For instance, Re (2016) arrived at similar conclusions for superimposed rock art of the Strobel plateau, southern Patagonia, Argentina.

17.4 Motivations for Non-indigenous Rock Art Vandalism and Graffiti at Sites

There appear to be many reasons why rock art sites have been vandalised or graffiti was added to them by non-Indigenous people. As Loubser (2019, 1) notes 'Reasons why visitors decide to apply graffiti at a site are variable and hard to pin down with certainty, but probably have something to do with "domesticating" untamed spaces, such as by writing down their own names or initials, the names or initials of loved ones, faces, symbols, towns of origin, and dates of visits'. Franklin (2011) refers to this as expressing 'personal presence'. Loubser also notes that 'The recognition of highly visible pictographs and petroglyphs can also be impe-

tus for visitors to leave their own mark with the likely assumption that they have the same right as Indigenous peoples to do so' (Loubser 2019, 1).

Imitation, whereby people seeing graffiti are inspired to add their own, is another reason some rock art sites are repeatedly vandalised: 'once graffiti is on the rock, it takes less impetus for other people to add their own marks' Loubser (2019, 1). Ignorance, in terms of lack of education or awareness of the importance and cultural significance of rock art, can also play a role. Another factor is indifference, whereby it is known that rock art is important but there is a lack of care or concern due to a narcissistic urge to add one's own marks or so as not to be prevented from accessing the site. An example of this is rock climbers who deliberately place graffiti over rock art so as to not be prohibited from climbing at locations with rock art (e.g. Gunn et al. 2020, 90).

Iconoclasm, whereby rock art is destroyed or damaged to hurt an individual or community, usually for religious or political reasons is a major motivation in various parts of the world (see also Zaradona 2011, 2020 for rock art landscape iconoclasm). Racism can also be a factor in all of the above and may have been a key motivation behind a 2020 incident at Uluru, central Australia when vegetable oil was thrown on paintings (Jonscher 2020). A recent overt political act of iconoclasm also occurred in Kashmir in 2020 in that Buddhist rock carvings dated to 800 AD were vandalised with slogans and a large painting of Pakistan's flag (Nagpal 2020, 1). More generally, 'vandalism can be perceived as a lack of value regarding Indigenous knowledge whilst also diminishing its continued connection to living Indigenous cultures. In short, acts of rock art vandalism are manifestations of ongoing cultural violence against Indigenous communities' (Giorgi and Taçon 2019, 190). Another example of this is bullet holes found at sites in many parts of the world that were made either with the intent to purposely damage rock art or as a disrespectful result of target practice.

Revenge can also be a motivation, as it was for a tourist driver/guide at Tadrat Acacus, southwest Libya in April 2009. After he was fired by a Libyan-Italian tourist company, he heavily vandalised several panels of engraved and painted rock art by spraying red, black and white paint over the images and writing insults against Italians and the Libyan government (Di Lernia et al. 2010). An international investigation into the incident concluded that 'The damage is extremely severe, and it is unlikely that the paintings can be successfully restored, whereas it is hoped that some engravings can be cleaned' (Di Lernia et al. 2010, 59).

Economic priorities, such as mining and other forms of development, can lead to both rock art landscapes and sites being destroyed or vandalisised. For instance, in Sulawesi, Indonesia, 'cement processing, marble quarrying and resulting new dusty roads is another growing risk for rock art' (Taçon et al. 2018, 38). Opportunistic stone quarrying has impacted rock art in India and elsewhere while large scale mining, urban development, agriculture and tourism has led to rock art damage world-wide, with Murujuga in the Pilbara Australia's most famous example because of a range of industrial development and associated town and port infrastructure since the 1960s that has impacted petroglyphs in various ways (Bednarik 2006; Zaradona 2011, 2020). Of course, this is different from graffiti left by individuals as it is much more widespread and results from industrialiastion permitted by governments within the bounds of heritage legislation that is not always effective.

Anecdotal evidence suggests that graffiti and other forms of vandalism at rock art sites has increased in many parts of the world during the Covid-19 pandemic, from Mexico and Chile to Turkey, India and Australia, but especially in the United States of America (e.g. Boster 2021, 5). Some seems politically motivated given the nature of the text and imagery, for instance at a highly significant rock art site near Moab, Utah called the 'Birthing Scene Petroglyph', named for the depiction of a woman giving birth amongst other engravings of anthropmorphs, big horn sheep, bear tracks and other subjects. The petroglyphs are thought to have been there for millennia, but in April 2021, 'White power' was scratched over some of the anthropomorphs and an ejaculating penis over other figures. Other sexually explicit vulgarities were also enscribed over rock art (e.g. see Thulin 2021). In other cases, such damage is wrought through ignorance, For example, also in Utah in April 2021 a rock climber put a line of climbing bolts through a panel of petroglyphs believed to be over 1000 years old and even advertised the route he created online, dismissing the ancient but still spiritually significant rock art as modern graffiti (Boster 2021, 4).

As can be seen, there are many motivations behind why rock art sites have been vandalised, damaged or destroyed but as Giorgi and Taçon (2019, 190) note 'the underlying psychological reasons for desecrating a site, the perpetrators and the audience at whom it is aimed are very different'.

17.4.1 Gray Rock

Located in central Australia near Barcaldine, the Gray Rock Historical Reserve is well known for being the site of the historic Greyrock Hotel established in 1877 and its associated historic graffiti (Fig. 17.3). But it also has very important rock art. For instance, up high amongst the engraved names and dates of various ages at the southern end of the sandstone wall at the base of the rock formation there are three engraved human figures which are very similar in style to one at the southern end of the largest rock art site in the region, Marra Wonga, on the nearby former Gracevale property now known as Turraburra (Taçon et al. 2022). They are said to be depictions of a key Ancestral Being called

Fig. 17.3 Gray Rock historic graffiti, including 'JW Watson 1884'. (Photograph: P. Taçon)

Wattanuri, as is the very similar human figure at Marra Wonga. On the southern wall there also are two engraved human feet and an engraved possum-like clawed hand. There is a fourth engraved Wattanuri type of human figure on a small rock platform below the eastern side of the rock complex. Further north on the eastern side of the reserve is a long rock shelter with several old white and yellow hand stencils.

The Greyrock Hotel was built as a changing station and overnight resting place for people travelling between Aramac and Clermont by coach with Cobb & Co. Graffiti was added on the wall behind the hotel where the rock engravings are located and on the rock pavement below soon after the hotel was built in front. Visitors added their names and dates and this continued after the hotel was abandoned in 1885, when a rail line replaced the coach route. There is now a continuing tradition of engraving or painting names and dates that threatens to obliterate not only the Aboriginal petroglyphs but also the early historic graffiti considered important because of its historic value related to some of the people who left their names there. Infrastructure, including pathways, barriers and signage, installed in the early 2000s did little to slow down instances of more graffiti. Ironically, the local council, in the interest of promoting tourism and active engagement with the site, almost encourages contemporary visitors to add their names to what is now an almost obscene proliferation of graffiti with a sign in front that reads: 'Gray Rock. The names engraved on the sandstone rock could have been coach passengers prior to the turn of the century, together with more recently added. A who's who treasure!'.

Fig. 17.4 Gray Rock miniature stencils made sometime in the 1990s. (Photograph: P. Taçon)

There are other smaller panels of graffiti in the Gray Rock complex and amongst the panels of Aboriginal white and yellow hand stencils towards the northeast of the rock are miniature hand and animal stencils (Fig. 17.4) likely made in the 1990s or earlier as Gunn (2000, 48) includes a photo of one of them, a miniature snake stencil, in his report. These acrylic spray-painted stencils, that imitate Aboriginal rock art but on an extremely small scale and use cut-out images of the subjects, add a truly bizarre form of vandalism to the site not found anywhere else. A lot of effort was undertaken to make the stencil sheets for repeated stenciling and to make the stencils but the motivation is unclear. No one knows who the perpetrators were or exactly what sort of statement was being made. Whether the miniature stencils were made to

creatively bond with the place, to mimic, to mock or to pay homage to traditional rock art we likely will never know. But for contemporary Aboriginal people of the area, such as Iningai elder Suzanne Thompson (Pers. Comm. 13th September 2020), the miniature stencils are a desecration that, being made with acrylic paint, is hard to remove.

17.5 Discussion and Ways Forward

In many parts of Australia and the world in general signage is sometimes used at rock art sites to dissuade people from adding graffiti (e.g. Fig. 17.5) with varying affect. As graffiti can attract more graffiti often there are attempts to remove it from rock art sites. This is sometimes straightforward, especially paint at petroglyph sites, but as Gunn et al. (2020) note, 'The removal of graffiti over painted rock surfaces requires extreme care to avoid further damage to the painting. In one recorded instance, the removal of overpaints required two conservators (Thorn 1991) and in all cases graffiti removal requires consideration of all losses, including cultural and archaeological values' (Gunn et al. 2020, 90).

According to Jannie Loubser, 'Perhaps the single most prevalent factor that promotes graffiti and other forms of vandalism in the American West is easy accessibility to contemporary people; wherever sites are close to well-travelled roads and trails, you are guaranteed to find damage caused by humans and/or their domestic stock. Where roads, parking lots, and trails have been re-routed farther away from surfaces with rock imagery, vandalism drops off significantly or virtually disappears (this trend is substantiated by site steward monitoring and/or by graffiti dates)' (Loubser, Pers. Comm. 30th June 2020 via email). This is also true for Australia which is why many Aboriginal communities are in favour of restricting access to areas with rock art sites as much as possible and is one of the reasons that the publication of exact locations of rock art sites is not encouraged.

Fig. 17.5 Sign at the Pha Phak Wan rock art site, Thailand installed to help prevent graffiti. (Photograph: P. Taçon)

An analysis of dated graffiti in New South Wales from 1870 to 1985 and in the Central Highlands of Queensland from 1890 to 1981 (Morwood and Kaiser-Glass 1991) showed that instances of graffiti peaked between the late 1950s and the late 1970s, with the late 1960s to early 1970s the worst period (see Morwood and Kaiser-Glass 1991, 96–97). They concluded 'that the incidence of dated vandalism at rock art sites reflects the history of European use of specific areas and sites, as well as more general changes in ease of access and community attitudes towards Australian Aboriginal culture' (ibid., 1991, 98). Interestingly, in New South Wales the peak in incidences of graffiti occurred after a National Parks and Wildlife Act that afforded Aboriginal sites some legislative protection was passed in 1967. This led to a 1974 change in the National Parks and Wildlife Act. 'with stricter penalties and provision for restricting access to, and use of, areas containing Aboriginal sites' (ibid., 1991, 98).

Loubser (2020) recently undertook a similar form of analysis for four important heavily impacted North American sites. He concluded that:

> A common thread at all four sites is that graffiti does not necessarily increase with increasing population or increasing visitation numbers. A shared reason for the increase in graffiti rather appears to be increasing access to unmanaged sites, be it through opening them to the public (e.g., Scenic Mountain during Edwards ownership in the early 1900s or Writing-on-Strone becoming a provincial park in 1957) or constructing new roads to within easy walking distance of the sites (e.g., Castle Gardens in 1968). Closure of roads (e.g., Painted Rock since 1989), entrance via guided tours only (e.g., the Archaeological Preserve at Writing-on-Stone since 1977), and increased monitoring by park staff (e.g., since the 1990s at Scenic Mountain) have been accompanied by a rapid drop-off in graffiti incidences (Loubser 2020).

Education/awareness of the importance and contemporary cultural significance of rock art is often said to be important for preventing graffiti and other forms of vandalism. However, this is not always effective. For instance, at the 'Art Gallery' site in Carnarvon Gorge, Queensland a woman called Jana carved her name into rare black hand stencils after having attended an information evening about the art (Giorgi and Taçon 2019, 190). The National Parks authority successfully charged and fined her, something that is rare worldwide, partly because it often is impossible to find vandals or prove who exactly committed an offense.

In mainland Southeast Asia, rock art tourism remains a threat: 'Besides development, unmanaged tourism is the largest threat to rock art sites. Most rock art sites that are open to tourists tend to be remote and unmonitored and, as

such, are susceptible to graffiti and littering. In many of these tourism sites, the rock art is out of reach from human hands, either because of its physical location, or because barriers have been erected to prevent access. In rare cases, rock art is directly damaged by vandalism' Tan (2019, 144).

Some of the issues involving graffiti and vandalism at rock art sites has been identified and discussed above but 'a deeper understanding of the impetus for graffiti at rock art sites needs to be researched and will lead to more effective management strategies' (Giorgi and Taçon 2019, 190). In this regard it is worth noting Ursula Frederick's (2018) observation that:

> An added source of tension in the nexus between graffiti and rock art comes from the area of applied heritage management. Here on the ground, park rangers, Indigenous custodians, council authorities, and heritage professionals are confronted with the day-to-day prospects of graffiti as an act of wilful vandalism and destruction. While damage to rock art is disturbing, the motivations underlying such activities should not be summarily dismissed as 'all the same'. Rather, graffiti over and against rock art, may be undertaken for different reasons; it is often site-specific and prompted by local circumstances. Nor can we assume that it is always intended to be harmful. Indeed, identifying what exactly constitutes vandalism *as* or *against* rock art may be a source of contestation in its own right (Frederick 2018, 638).

Frederick (2018) and many other researchers have argued that graffiti has various forms of historic and cultural significance and that removal can also be a form of site desecration (e.g., Merrill 2011). Morwood and Kaiser-Glass (1991, 98) contend that 'If systematically undertaken, the recording of graffiti to monitor changes in its rate of accumulation at sites can provide information on the long- and short-term effectiveness of legislation, well-publicised punitive action on offenders, specific management procedures at individual sites, and so on'. They conclude that vandalism at sites is 'an artefact with historical significance, research potential and management implications'. Thus, it should be standard practice to record graffiti before removal (1991, 98). Merrill (2011, 72) argues that new theoretical approaches are needed 'to truly grasp the relationship between heritage and vandalism'. He further states that 'these emerging theories may encourage the actual preservation of examples of vandalism or facilitate their preservation by record' (2011, 73). For instance, what has been interpreted as graffiti can have importance when it is associated with certain well-known individuals, historic events or particular places. Examples include the names and dates left by early non-Indigenous explorers across Australia and many other parts of the world, graffiti made by Sex Pistols band members (Graves-Brown and Schofield 2011) and even rock paintings made by recent non-Indigenous artists in rock shelters such as Brett Whitely (Frederick 2016).

There are numerous motivations for modern people to make marks at rock art sites, including ignorance, indifference, iconoclasm, racism, political motivations, the influence of previously made marks, boredom, attention-seeking, signalling 'personal presence' and even revenge against tour operators, as outlined above. It is highly unlikely that new graffiti at rock art sites can be universally prevented. However, better monitoring and management of sites open to the public, Indigenous/local community management of sites in concert with heritage managers and other experts, new educational awareness campaigns, and rock art heritage being valued as a part of living culture rather than just archaeological artefact (Taçon 2019; Taçon and Baker 2019) should help reduce the number of new instances of graffiti where rock art is located.

It is very important to develop flexible conservation and management plans for rock art sites developed for tourism. Plans should be reviewed and updated at regular intervals. Tourism education about the site's history, context and cultural importance, as well as site visitor etiquette, can be accommodated by having visitors first visit a nearby small museum or orientation facility. At these facilities, or in the open close to rock art sites, sometimes visitor books have been found to be an effective way to prevent graffiti by providing an alternative place for visitors to leave their marks (Brown et al. 2003; Buhrich 2002; Dragovich 1993, 1995; Franklin 2011, 2014; Gunn 2001; Sullivan 1984). Visitor books are also useful for other management reasons, such as determining where visitors are coming from and how that has changed over time.

Besides protective infrastructure that facilitates visitation, rock art sites open to the public also need to be monitored for vandalism and natural deterioration on a regular basis (Franklin 2014; Marshall 2020), ideally with the assistance of associated Indigenous people or local communities. Involving relevant Aboriginal Traditional Owners in Australia, or in Southeast Asia culturally embedded custodians from nearby villages (Taçon et al. 2018, 38) or even Buddhist monks (Tan and Taçon 2014), also helps prevent unauthorised access to rock art sites and sometimes provides employment (e.g. Jalandoni and Taçon 2018, 55). It also can instil a sense of ownership and pride, resulting in sites being better managed. Thus, although there are global challenges to managing rock art, it has been demonstrated that the best way forward is with local solutions (Agnew et al. 2022) and via a 'Living Heritage' approach (Taçon and Baker 2019) in which:

> heritage is not considered a monument of the past that has to be protected from the present community, for the sake of future generations; heritage is now seen and protected as an inseparable part of the life of the present community. Thus, past and present-future are not separated (discontinuity), but unified into an ongoing present (continuity). Therefore, a living heritage

> approach attempts to mark the shift in heritage conservation from monuments to people, from the tangible fabric to intangible connections with heritage, and from discontinuity to continuity (Poulios 2014, 139).

This is in keeping with Australian Aboriginal perspectives about rock art sites being part of contemporary culture as much as heritage (Taçon 2019) and with those of many other cultures around the world.

Lastly, in terms of the challenge of defining and managing graffiti, it is important to repeat Ursula Frederick's statement that it is 'difficult to characterise graffiti because it is a mode of expression and communication which comprises a vast array of media, technique, subject matter, form, and meanings. Yet despite the fact that people 'do graffiti' in different ways for different ends, it is most often typified as an act of vandalism or anti-social behaviour' (Frederick 2009, 212). It is possible that some custodial communities in the future may desire to add various forms of what others consider 'graffiti' to sites to maintain their personal and group connections through this aspect of a living heritage approach, potentially horrifying some heritage managers, rock art researchers and others in the process. But, from their perspective, they may argue that they are genuinely adding to the long-term changing complexity of marks left at their rock art sites, continuing a tradition tens of thousands of years old in new ways. The history of global rock art research highlights the nature of changing imagery across time and space but are we ready to accept graffiti as part of this and is graffiti, like beauty, simply in the eye of the beholder?

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Part V

Rock Art and the Challenges of the Global Now

Translation and Transformation: The Materiality of Rock Art in a World of Bytes

18

John Robb

Abstract

Rock art is fundamentally material and local in several ways: its substrate's material qualities affect how humans made it and interact with it (for instance, how visible it is), it is fixed in a specific landscape location, and it participates in local systems of knowledge ranging from what it is ontologically to what specific motifs represent. This article, working from a material culture perspective and using European rock art as an example, explores what happens when we translate rock art into other media, particularly digitised forms. The process of translation liberates rock art from its location and medium, heightens its visibility and representational clarity, passes it through filters prioritising some imagery (particularly narrative pictures) over others, and reinscribes it into new frames of reference. Thus, it often results in losing the fundamental material qualities that made it rock art, in the process refashioning it into an entirely new product that meets the needs of different people living in a different world.

Keywords

Neolithic · Copper age · Bronze age · Iron age · Europe · Materiality · Landscape · Translation

18.1 Introduction: Rock Art in Translation?

Consider two images. Figure 18.1 shows some prehistoric European rock art—in this case, a major group of imagery in Valcamonica, in the Italian Alps. This outcrop is covered with several hundred images, all pecked into the rock sometime in the Iron Age (800 BCE–100 BCE) (Anati 1961). Like much European rock art, this is open-air art, not deep cave art; it is pecked and carved rather than painted; and it dates to the last few millennia of prehistory, not the Ice Ages. It has dozens of small, poorly visible motifs; you can walk over a major site without noticing anything unless you are looking expressly for it. Many of the motifs are cryptic "abstract" iconography that make little immediate sense to a modern viewer. In contrast, Fig. 18.2 shows the top results when you type "rock art prehistoric Europe" into a Google search. It is dominated by a few images—above all, Ice Age paintings from a few sites, notably Lascaux, Chauvet and Altamira—and by a narrow range of images from these sites—large, colourful, eye-catching, self-explanatory animals.

The first image gives a sense of what European prehistoric art mostly offers. The second image shows what happens when this is digested into the Internet, the bloodstream of the modern imagination. Are these the same thing? Clearly not. It is not merely that the popular images are often highly untypical in period, style, theme, location and material qualities. Beyond this, as the Surrealist painter Magritte pointed out in "*Çeci n'est pas une pipe*", the representation is not the thing represented.

Worldwide, there are many ways of encountering rock art. Some communities encounter rock art directly, both in its original locations and contextualised in a living tradition of ontological understandings, interpretive knowledge and engagement. This is especially the case in settings such as Australia, Southern Africa, and the American Southwest, where rock art may form a spiritually, politically and economically important part of life for indigenous stakeholder communities. Here I am discussing a different form of encounter with rock art: how it is communicated to audiences distant from it in time, space, or cultural background. This is common in Europe, for example, where, except perhaps in some Arctic contexts, rock art is distanced from any living traditions by gulfs of time, and most audiences are likely to encounter it indirectly and at a distance via books, museum exhibitions or the Internet rather than directly in place. For such encounters, the necessary first step is to translate rock art into some form in which it is portable and

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Fig. 18.1 Seradina, Valcamonica, Italy: a major rock art site. Rock surface in foreground is densely covered in petroglyphs. (Image: J. Robb)

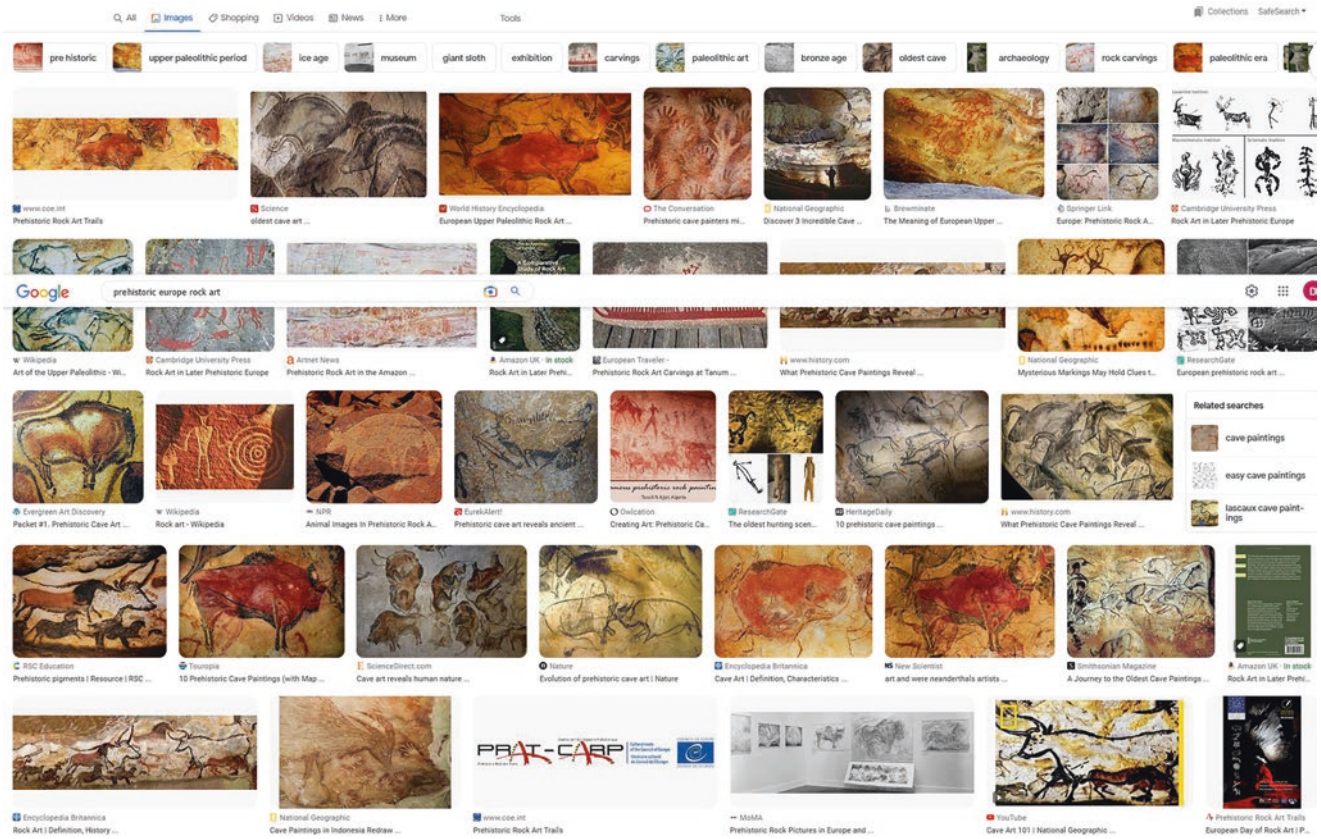

Fig. 18.2 Results of searching "rock art prehistoric Europe" on Google. (Image: J. Robb)

consumable in novel ways. Translation does not necessarily imply commodification and globalization; for example, scholars have been translating rock art into drawings and publications for their own use for over a century. But it is a fundamental first step in the *chaîne opératoire* of commodification and globalization, as it allows rock art to be rein-

scribed in new experiential frameworks, circulated to new audiences and used in new ways.

Many of the chapters in this volume explore the commodification and globalization of rock art, particularly how it negotiates differences between groups encountering it in different ways. In this chapter, I ask a simple, more focused question. What Western audiences understand and consume is typically not rock art but representations of it. What do we accomplish in the act of producing these representations, of translating rock art into a new (im)material medium of transmission?

The simplest, most direct way to investigate this question is to trace the journey a rock art image typically follows between its millennia-long existence on a stone surface and the moment when it can be encountered by new audiences distant from it.

"Materiality" is a vague term, but all theorists agree that the material qualities of substances and objects are important, both for how we perceive and interact with things sensorially and for how they flow through history (Tilley 2004; Ingold 2007; Miller 2005). Material qualities themselves are not absolute but mediated socially by human capabilities and interests; for example, iron oxides can afford ores, colorants or other kinds of substances depending upon a group's capacities and interests. Affordances (sensu Gibson 1979) are possibilities for perception or action which make use of a thing's particular material qualities. As this implies, if you change the material nature of an object, you change its affordances; this may also shift its potential audiences, uses and historical transmission. For example, in the fifteenth century, when books moved from being hand-copied on vellum to being printed on paper, they became much more reproducible and circulatable, something reflected not only in patterns of literacy, authorship and commerce at the time but in library holdings today.

Materiality and affordances underlie why, in the contemporary world, circulation and globalization have a strong digital dimension. Things and ideas circulate and travel. For physical objects, globalization involves huge oil tankers and container ships of consumer goods. For other things, increasingly, anything which is a form of information, or can be reduced to one, is circulated digitally. More and more things are being converted to information expressly for such circulation—correspondence, music, books, games, artwork, and even objects, via circulation of blueprints for automated production or 3D printing. This poses a conceptual paradox which is ground zero for problems of rock art. Even as material culture theorists of all theoretical stripes strive to foreground the agentive materiality of objects, underlying digital circulation is the Platonic assumption that all objects can be ontologically distilled into separate components of pure material substance and the information that structures it—so that, for instance, they can be dematerialised, circulated as pure information, and then rematerialized, rematerialized in a different form, or consumed simply as information such as pixels on a computer screen.

What happens to the materiality of rock art in this process?

18.2 Rock Art Is about Context and Substance: Material Qualities, Placement, and Local Knowledge

Prehistoric European rock art exemplifies how rock art may be transmitted to audiences distant from it. Although the Palaeolithic cave art of France and Spain is the most famous, Holocene rock art is far more widespread. The best-known traditions are the Bronze/Iron Age rock carvings of southern Scandinavia and of the Central Alps; there are also major groups in northern Britain and northern Scandinavia, and several major traditions in Iberia, as well as important sites in France, southern Italy, Sicily, Bulgaria and Greece (Robb 2015; Sandars 1985). The great majority of sites are open-air sites rather than deep caves, and most art consists of rock carvings rather than paintings. Simple geometric or "abstract" motifs are common in all periods, and in some periods, virtually all the art consists of such motifs (Robb 2020). One feature all except perhaps some Alpine art share is a distance from modern audiences. This is not only physical distance, but conceptual distance as well; without continuous traditions of rock art practice for several thousand years or more, modern audiences use European rock art by transporting it to new interpretive frameworks. Sometimes this has to do with the meanings attached to it (for instance, using it as symbols of exclusively modern political identities), sometimes with larger narratives (about, for instance, the development of "art" from "primitive" to modern), and sometimes with ontological definition (for instance, classifying it as "art" and searching for representational meanings).

Like most rock art, European prehistoric rock art shares three fundamental qualities of substance and context: its material qualities, its placement, and its relationship to local knowledge.

18.2.1 Material Qualities of Rock Art

Rock art is carved into rock, or painted on it. What would be lost if it were carved into wood, Styrofoam or cheese, printed on a 3D printer, or reproduced as a two-dimensional line drawing? The materiality of rock art includes several important qualities (cf. Jones 2017; Jones and Cochrane 2018; Back Danielsson 2020).

- Hardness and grain of rock substrate. Rock art can use a wide range of rocks, but hardness and grain affect how it is made and appears (for instance, coarse-grained rock such as granite are often pecked rather than incised, and makers may prefer softer rocks to very hard stones such as basalt). The substrate has implications for the precision and clarity of the image, and the amount of time and effort producing an image takes; an incised image in soft, fine-grained stone such as slate may be the work of a few seconds and allow substantial detail, a pecked design in granite or basalt may require hours. and coarse-grained stone may allow only rough features to be shown. Indeed, workability may be part of how rock art's purpose is understood; Comanche rock carvings, made with a few incisive gestures, provided illustration to story-telling (Fowles and Arterberry 2013), while laboriously pecked Alpine designs may have been part of a pastoralist's pastime.
- Three-dimensionality. Rock art is rarely produced on a completely flat surface, a fact which often causes technical difficulties in producing a definitively accurate two-dimensional transcription. Rather than being a problem, the three-dimensionality of rock art was often recognised and used to advantage by its makers. For instance, bulges and hollows were sometimes used to define animals in Palaeolithic art, and Scandinavian Bronze Age petroglyphs are sometimes placed where water running over their surface would create special visual effects. Moreover, whether images are on a horizontal or vertical surface affects how they interact with incident light and how visible they are to users of varying postures and distances.
- Size. Whether an image is 10 cm, 100 cm or 1000 cm high affects how both the maker and viewers interact with it. Scale is one of the key qualities of rock art often lost in transcription; even including a scale in a picture such as Fig. 18.3b does not help most viewers get an intuitive sense of what it is like to actually encounter the image.
- Visibility. Rock art is often surprisingly hard to see without careful attention, the right light conditions and experience. Motifs may have stood out when freshly made, but they weather into near-invisibility. The modern eye, working from assumptions that rock art is a communicative medium intended to be viewed rather than accomplishing some other purpose, often assumes that visibility should be the norm, and invisibility or ambiguity is simply a defect due to time and erosion. Thus technologies such as painstaking photography, carefully controlled lighting and physical or digital enhancement may be dedicated to rendering rock art completely legible. But prehistoric people could certainly make things visible when they wanted to (by making them larger, framing them architecturally, or highlighting them in other ways). Rather, they often may not have been much concerned with rock art's visibility; perhaps rock art was an intervention which worked whether or not it was visible, or it was appropriate to achieve the ability to see it through accumulated experience rather than being able to see it instantly. Making rock art instantly legible is clearly necessary in translating it for modern use, but it may be a departure from its original intention; its degree of (in)visibility gives us valuable information about what people wanted it to do.

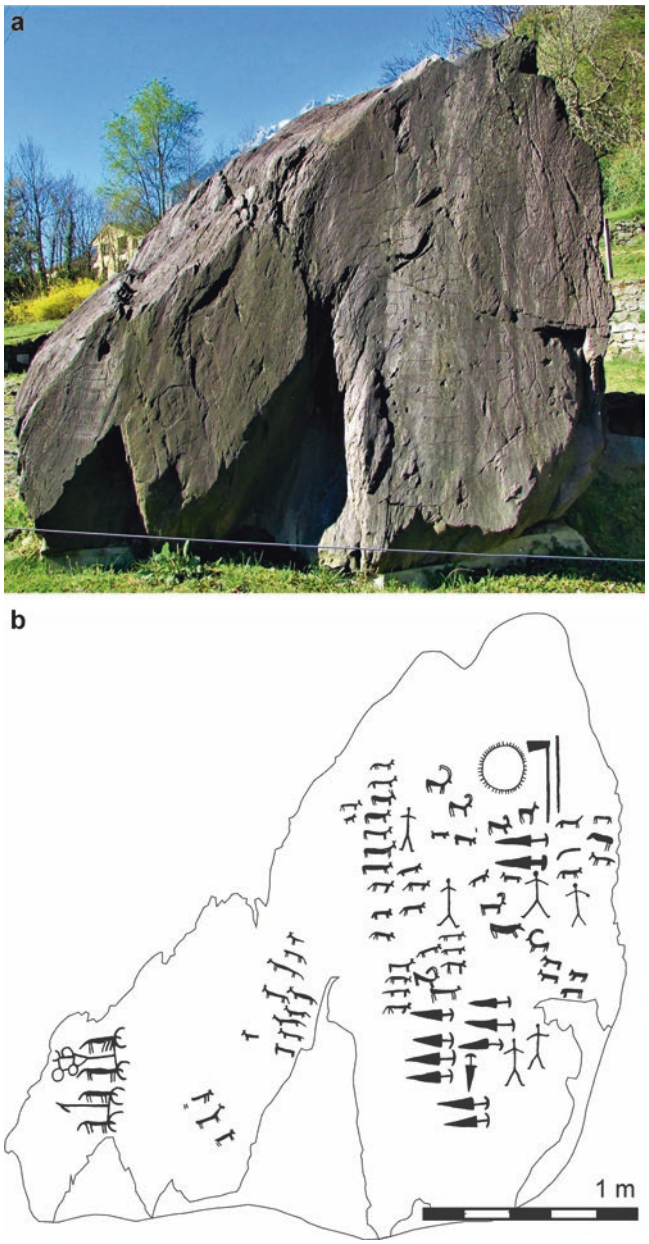

Fig. 18.3 Cemmo, Valcamonica, Italy: Copper Age rock art. (**a**) The rock art. (Image: J. Robb); (**b**) Transcription. (Image: J. Robb, combining information from Anati (1961), Parco Archeologico Nazionale dei Massi di Cemmo: public signboard at site, and own observations)

In losing these various qualities (compare Fig. 18.3a, b), we may gain a sense of rock art as an abstract design and array of information; what we lose is a sense of it as real, working material object.

18.2.2 Place

Rock art is fixed in the landscape. Location is an inherent characteristic of rock art which affects it in several ways (Jones et al. 2011; Bradley 1997, 2009):

- Orientation, light, shadow, and acoustics. Rock art is normally photographed and presented to the public in good light—part of making it ideally visible. But lighting varies and the same motif may be invisible, visible, static or animated depending upon clear light, in poor or flickering light, the time of day or season, and the orientation of the sun. Similarly, it has been argued that some rock art sites were chosen for their acoustic properties (Diaz-Andreu et al. 2019; C. Chippindale, pers. comm. 2013), implying that "art" was important principally as part of performances.
- Cosmological location and views. Art may have been sited in specific locations for their cosmological importance, or for other aspects of location. Neolithic British rock art may have been located according to its viewshed (Jones et al. 2011). Scandinavian boat-themed rock art may have been located near watersides (Ling 2014; Ling and Bertilsson 2016). Indeed, art may have been used to define special places within a landscape.
- Accessibility, relationship to settlements. Some prehistoric rock is located so inaccessibly that the difficulty of accessing it must have been part of its meaning. The Neolithic cave paintings of Porto Badisco, Italy, can be reached only through tortuous galleries of a twisted, winding cave and may have contained secret knowledge (Whitehouse 1992). The Copper Age rock carvings of Mont Bego, France, are located at least a thousand metres above any contemporary settlement, in an area which would have been frequented only by herders, hunters, travellers and perhaps ritualists (de Lumley et al. 1976). In such cases, rock art may have been either intentionally sited inaccessibly (with the journey to it part of the event) or situated in areas principally frequented by selected sub-groups for special purposes. In contrast, other bodies of rock art may have been located in lowland areas relatively close to settlements (e.g. some major Valcamonica sites such as Naquane and Seradina) or transit routes (e.g. Scandinavian Bronze Age petroglyphs) and formed part of a familiar, broadly shared landscape.

Whatever its original location afforded to its original users, rock art is distant from many modern users. Modern population centres are predominantly urban and low-altitude, and translating rock art requires us to overcome distance through tactics such as moving actual rock art panels to museums in cities, circulating images, devising virtual experiences, or even building replicas (such as the reproduction of Altamira cave in the National Archaeological Museum, Madrid). But visiting a site often imparts a much more immediate and intuitive understanding, particularly of its landscape setting; the immediacy of this is lost when it is moved to the city, the page or the screen.

18.2.3 Local Knowledge

Rock art is fixed in systems of knowledge. These are basic understandings which may be supplied seamlessly by the system of knowledge and practices constituting a living tradition of indigenous knowledge, in places where rock art is "informed" by one (Chippindale and Taçon 1998); in regions such as Europe which lack such a tradition, they may be notable by their absence.

- The most basic local knowledge system of rock art is simply recognition of its presence and nature as rock art. For distanced audiences, this usually means putting an archaeological frame around something to be seen, establishing it as ancient rock art, not modern graffiti, the marks of tree roots, etc. For ancient people, this presumably meant recognising it as the residue of specific genres of action.
- Ontological framework. Before interpretation can occur, local knowledge systems include an underlying idea of what kind of thing an image is. This is pre-interpretation based on assumed categories; we might ask what the "meaning" of a picture on the wall of a room is, but we never ask what the "meaning" of an electrical socket in the same wall is.
- Interpretation of designs and motifs. The most obvious aspect of local knowledge systems is interpreting images. This may mean identifying the discursive meaning of a motif or asking why it was made when and where it was. For ancient people, such motifs may have had an explicit discursive meaning; but they may instead have been marks whose function did not require one, or have had meanings which were polysemic, ambiguous, or known to restricted groups of people rather than openly accessible.

To translate rock art for accessibility by people distant from it, we have to supply an informational context for it; this is often done by fitting it into our own interpretive schema and narratives embedded in our disciplinary practices.

18.3 Translating Rock Art: From Ancient Action to Modern Meme

Refashioning rock art for consumption by audiences not encountering it directly within its living tradition requires six steps of transformation: making it visible, transcription, identification, selection, moving it to new venues, and reproducing it in new media (see Fig. 18.11).

18.3.1 Making Rock Art Visible

The first step is to make rock art visible. Beyond discovery, removing soil and turf, and cleaning its surface, its visibility may be enhanced mechanically using tools such as raking light, chalk dust, charcoal or paint, which can dramatically reveal imagery, although not without conservation consequences (Fig. 18.4). Even without such physical interventions, rock art is often made visible by interpretive signboards which provide an on-the-spot finding aid. All of these visibility-enhancing interventions also create a definitive version of it: what we see is not the rock art but the painted or transcribed images. In the process, they correspondingly render invisible elements not highlighted, often misrepresenting its original visibility. They also eliminate ambiguity, promoting and authorising one interpretation of what is actually there and excluding others.

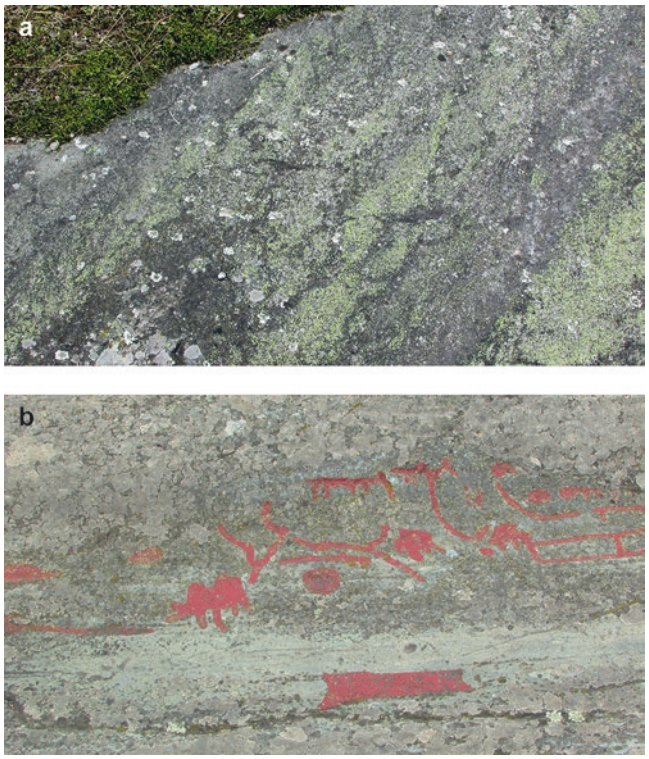

Fig. 18.4 Scandinavian Bronze Age rock art (Himmelstalund, Norrskoping, Sweden; images: J. Robb). (**a**) Rock surface covered with unpainted images. (**b**) Rock surface with modern paint added to identify images for visitors

18.3.2 Transcribing Rock Art

To be studied and communicated, rock art must be transcribed in some form. Rubbing once was common, but requires can damage delicate surfaces, and the results can be difficult to interpret. Rock art is notoriously difficult to photograph effectively. Perceiving it often depends upon subtle gradations of shade and texture, and creating a photograph which shows a motif clearly often requires expertise, apparatus, and fine control of light and shadow. We are in the middle of a digital revolution in how rock art is recorded and represented, with increasing use of photogrammetry, image enhancement software such as D-Stretch, drones and aerial photography, and immersive reproductions. Such methods help convey the experience of encountering rock art, particularly in its landscape setting. However, they remain costly and labour intensive, and demand expertise beyond the resources of many rock art users, and platforms for circulating them in print media are still limited. It is unsurprising, thus, that even with such new methodological richness, the black-and-white line drawing remains the most common practice for basic rock art censuses, for exegetical interpretation and for publication. It can be carried out with simple technology and less expertise, and it creates a clear, interpretible image which looks like a "picture" to many consuming audiences, professional and otherwise (Fig. 18.5). Moreover, for most bodies of rock art, interpretation remains constrained by published corpora; often, a transcription made decades ago remains the only version available for our use.

What normally remains unappreciated is how much information such transcription discards. Drawing rock art converts the complex materiality of rock art into a simple binary decision: black or white? All other information—for instance, about colour, texture, technique, three-dimensionality and features of the underlying surface—is discarded. Moreover, drawing is not a neutral or mechanical transcription. It requires ongoing decisions (is a mark on the rock random "noise", part of a design, or an error by the maker which is informative about process but complicates the final image? Should a natural fissure in the rock be recorded? does an animal have particularly wide legs or has the rock weathered there?). It is also a classic example of "interpretation at the trowel's edge" (Hodder 1997); the recorder normally decides upon an interpretation of a motif early in the process and that guides the micro-decisions of recording in a self-fulfilling way.

Fig. 18.5 Valcamonica, Italy: rock art in the process of transcription on transparent plastic laid over images. Note contrast between traced and untraced images in upper left of image, and decisions about what features of natural rock surface to include in tracing. Also note ambiguity, for example in the leg outline of the figure leading the plow, and a decision about how to interpret the area where the figure's staff overlaps with the leg of the (not yet transcribed) figure above it. (Image: J. Robb)

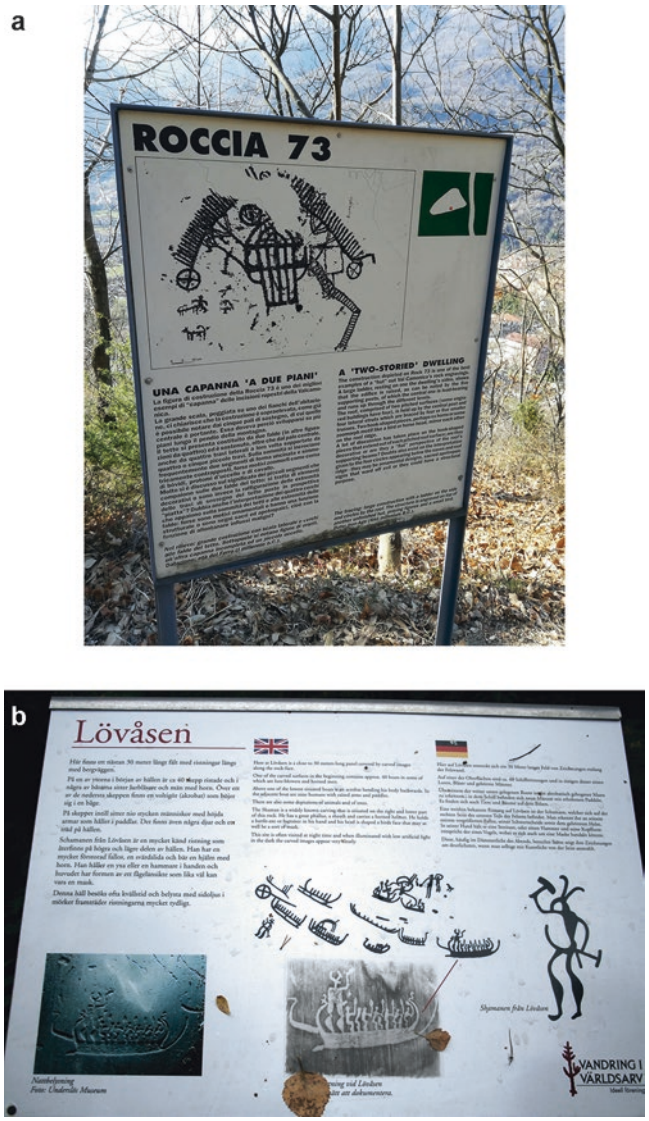

Fig. 18.6 Presenting rock art, combining transcription, identification, contextualisation and exegesis to reframe it into modern discourses: (**a**) Valcamonica, Italy. (**b**) Tanum, Sweden. (Images: J. Robb)

18.3.3 Identifying Rock Art

In a textually-oriented society, it may be hard to look at an image without having been provided a verbal frame defining it. Hence, to make a rock art site visitable, it is standard to provide framing information, either physically (Fig. 18.6) or virtually. For rock art, the obligatory frame needed for a modern viewer to understand it comprehensibly includes a definition of what is being seen ("boats", "a house", "a shaman"), its place in a historical sequence ("Bronze Age", "Iron Age") and exegesis about what it meant, and why it may have been made. Here, visitors to Naquane are told that the grid-like object is a "two-storied dwelling"; visitors to Lövåsen are specially directed to notice the otherwise inexplicable figure of a "shaman".

Reframing rock art in this way looks transparent, but it is an essential part of translating rock art for modern consumption. Among other things, it defines the rock art in a new temporal relation to the viewer, as heritage or tradition associated with a particular classificatory period and way of life rather than contemporary. It also (usually implicitly) sets it within a representational framework, typically by answering the question "what does it depict" rather than questions such as "what effects did it have?"

18.3.4 Selecting Images

What is reproduced? Often a highly selective repertory. Holocene art from Europe shows a pattern already familiar from Palaeolithic art. The rock art itself includes many uninterpretable geometric and irregular motifs. What is reproduced is "representational" images, particularly ones with a simple, comprehensible meaning today: humans, animals, boats, weapons, "ritual" figures, handprints. This is generally true in venues in which rock art is presented to general audiences—books, websites, even signboards at sites. It is also obviously the case when images from rock art are reused as political symbols, logos, and in commercial products such as t-shirts and mugs. More surprisingly, it also happens in academic discussion. For example, at Porto Badisco Cave, Italy (Fig. 18.7) (Graziosi 1974; Graziosi 1980; Whitehouse 1992), well over 90% of motifs are "abstract" motifs; only a tiny minority are "representational". Yet what is reproduced from the cave, sourced both from Graziosi's original 1980s publications and from images by authorised visitors circu-

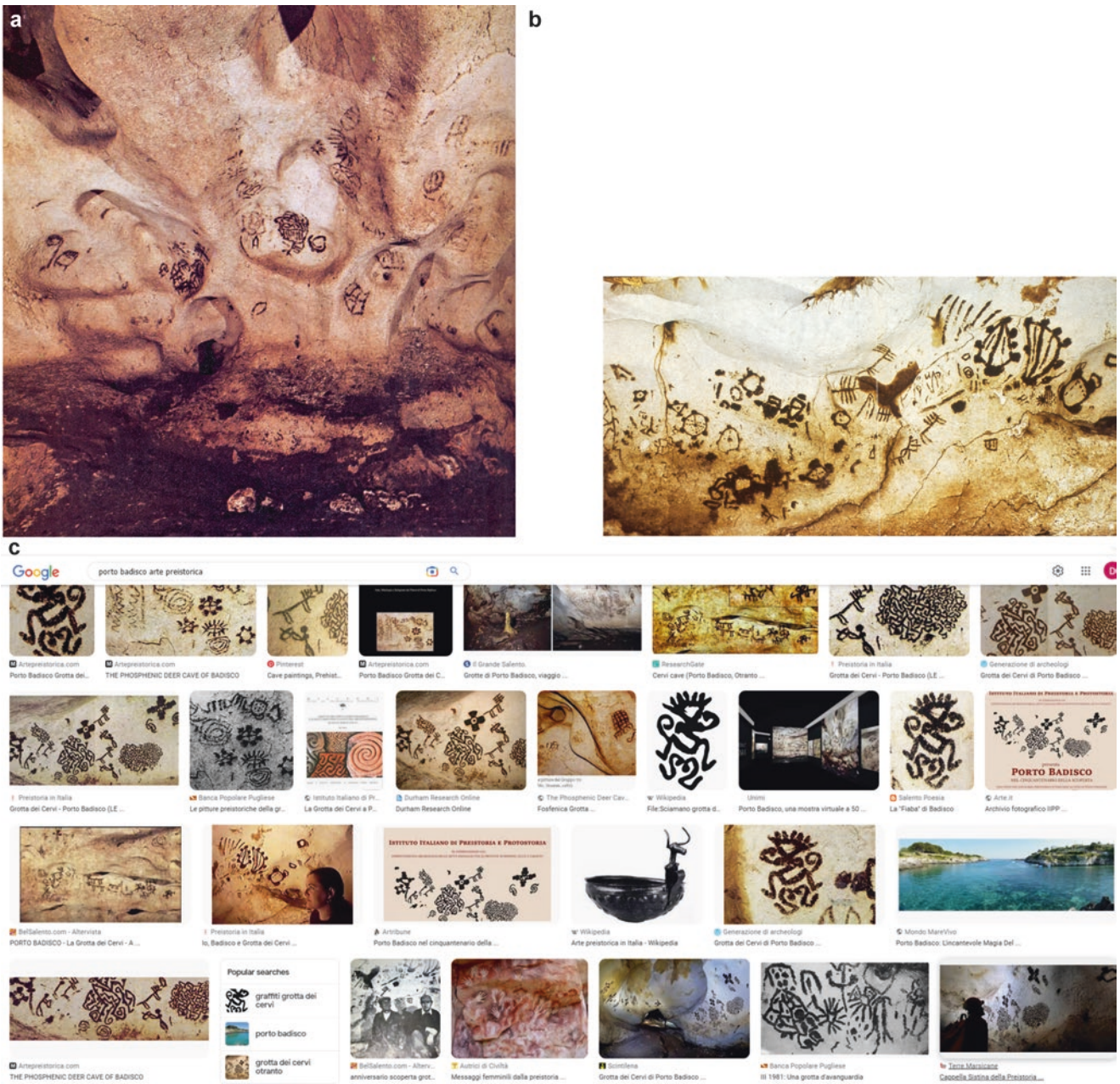

Fig. 18.7 Porto Badisco Cave, Italy. (**a**) Some typical imagery from the cave (Graziosi 1980: Tav. 8). (**b**) A commonly-reproduced "hunting scene" panel (Graziosi 1980: Tav. 70b). (**c**) Google Image search results for "Porto Badisco arte preistorica"; note repetition of the same images

lated on websites, are one or two panels which can be read as portraying hunting scenes (indeed, the cave, "Grotta dei Cervi", is named after one of them). The next most popular image from Porto Badisco is an anthropomorphic image interpreted as a dancing shaman figure, followed perhaps by handprints. These few images—deer, hunters, anthropomorphs—turn up not only on tourist, news and local history websites aimed at the public, but also in academic venues—on monograph covers, in illustrations from scholarly publications, and as logos for professional associations and journals.

As this illustrates, there is a strong selection bias, even when professionals write for other professionals, in favour of art that has identifiable motifs and, ideally, a composition that can bear some exegesis—things that look like "pictures" to us. Indeed, many descriptions of sites have only minimal visual documentation of other kinds of rock art. This also works in the marketplace of competition between sites and, indeed, between entire traditions of rock art. For example, Levantine art is much better-studied than other Iberian Holocene rock art traditions such as schematic art, megalithic art and Atlantic rock art, precisely because it shows

interpretable scenes which are commonly used as illustrations of prehistoric hunting, warfare, pastoralism, ritual, and gender.

18.3.5 Moving to New Venues

Where is rock art found? On bleak rocky moors, in remote canyons, on the underside of boulders halfway up steep hillsides, deep in dark wet caves, in eroding sandstone pockets on cliffsides, above the treeline—and generally far from where modern urban, lowland populations live. Where is rock art encountered? *In situ*, for the minority of viewers who visit it in person (sometimes via adventure tourism with heritage foci). Most other people encounter rock art in books, journals, magazines, Wikipedia, websites, museum exhibitions, and as diffuse memes entering the bloodstream of culture via posters, cartoons, films, t-shirts, coffee mugs, jewelry designs and so on. If you want to encounter the Neolithic art of Northumbria (UK), you can spend several days driving around rural roads, climbing fences and examining eroding rock outcrops to find a faded set of carved concentric rings—or you can sit at a computer anywhere and within minutes consult highly visible, easily located images on websites presenting it in various scholarly and unscholarly ways. Similarly, the Alpine valley of Valcamonica (Italy) has one of Europe's largest concentrations of rock art (Anati 1961). It is located 1.5 h by car or train from the nearest sizeable city, Brescia. The two most heavily visited rock art sites, Seradina (Fig. 18.1) and Naquane just outside the central valley-bottom town of Capo di Ponte, receive a moderate number of casual tourists and school groups; sites further afield and at higher altitudes are visited only by hikers and serious enthusiasts. For other people, the rock art can be seen in casts and placards in the local archaeological museums and tourism centres, or encountered in pamphlets and books at the tourist offices, bookstores, and newsstands throughout the region. Decontextualised images and pastiches of the rock art turn up casually around town, familiarising local audiences with highly selected images and reminding them of its presence (Fig. 18.8). Increasingly, all of these pale in comparison with virtual spaces. While statistics on website hits are unavailable, more people probably encounter Valcamonica rock art through its Wikipedia page in a day than visit it in person in a year, and images of it turn up on many other websites. Such sites render the art not only more accessible, but also define what is felt to be "typical". (Indeed, as the Wikipedia webpage for any major rock art site shows, such sites are a major point at which the range of imagery is strongly narrowed and selected). Moving rock art to a venue where people can encounter it is a fundamental step in translating it for modern audiences.

18.3.6 New Media, New Objects

The final liberation, and the moment when it is clear that rock art has achieved true memehood, is when it leaps off the rock face on to some other material object. This can certainly involve commodification or politicisation, but it can also involve reusing patterns and images from the past in new ways to meet today's needs in ways that are not patently anachronistic, exploitative or unethical. Palaeolithic art has already achieved the status of a free-floating, cartoonable cliché—or at least images of skin-wearing "artists" painting large animals in cave "art galleries" have. Some of the things rock art can turn into include (Figs. 18.9, and 18.10):

- Photographs, drawings, calendars or posters
- Books, articles, and scholarly capital
- Websites and publicity material
- Logos or brands; whatever it originally connoted, the "rosa camuna" motif from Valcamonica rock art now represents both a brand of cheese and the Lombardia regional government.
- Mugs, key chains, jewelry, mobile phone cases, stickers, and personal accessories, even including protective face masks
- Garments such as T-shirts, scarves, and hoodies

In fact, it is the same range of items one can get any image printed commercially on. Although these are material objects, virtually all of them pass through a digital stage of life in the design phase, and the globalised digital world is probably the major way they are circulated (the images in Fig. 18.10 are mostly culled from websites such as Etsy and Redbubble). They thus are progressively dematerialised as rock art and re-materialised as something else.

Such new incarnations are not mere ephemera or epiphenomena; they transform prehistoric art by giving it a new materiality and new affordances. You cannot wear a rock surface. Putting the image on a t-shirt not only makes it wearable; it also changes its social functionality. The rock art morphs from its original social functionality into the modern role of "image one prints on figured personal paraphernalia to express one's identity", along with flowers, political symbols, puppies, photos of one's loved ones, Impressionist paintings, cartoon characters, and so on. It attaches meanings to one's personal identity in the way typical of modern social encounters. Such changes in function are partly responsible for the transformation of the image in other ways, notably the choice of images to use and the way they are reworked. They select a narrow range of clear, vivid images which resonate with modern narratives, and they simplify them, reducing three dimensions to two, texture to outline, and shadows to solid colour. This loses context and ambiguity, and it highlights above all iconography and meaning—effectively turn-

Fig. 18.8 Moving rock art off the rocks and into new places in Capo di Ponte (Valcamonica, Italy). (Images: J. Robb)

Fig. 18.9 Tanum (Sweden): gift shop at rock art visitor centre. (Image: J. Robb)

Fig. 18.10 Objects available on the internet inspired by prehistoric European rock art. (Image: J. Robb, montaging images from Etsy.com and redbubble.com)

ing the prehistoric material object into a representational design identical to imagery we consume from other sources. Secondly, they harness prehistoric rock art to new narratives. Originally, it often may not have functioned principally as a signifier at all. Now, its ability to act materially is redefined semiotically: it supplies signifiers for meanings of new kinds. One is a range of narratives about history, progress, civilisation, wildness, and so on. This is evident not only in the choice of imagery but in the terms mapped on to it: "shamans", "warriors", "primitive", "pagan", "mythical", "ancient", "prehistoric", and so on. It is also evident in the meanings referenced: claims to tradition, heritage, authenticity, and attitudes and identities which often would not have existed in the art's original social context.

18.4 What Is Lost and What Is Gained, or the Tyranny of the Black and White Line Drawing

The examples above could be repeated around the world. They build upon standard practices in archaeology and extend them into the globalised digital world. The six steps outlined above (summarised in Fig. 18.11) essentially constitute a method or formula for enabling modern audiences not connected to rock art by living traditions to access and consume it. Each step in the chain looks obvious and trivial. What is so remarkable is their cumulative effect. Taken all together, these steps constitute anything but a neutral process of transcription. As discussed above, three fundamental aspects of rock art's materiality are its material substance, location and informational context. Rock art is integrally bound to its material substrate, which may dictate the methods used to make it, its colour and texture; it is variably visible and, often, difficult to see or ambiguous to distinguish; and it has a clearly defined scale relative to the human body. Transcribing it loses virtually all of these qualities, replacing them with a two-dimensional, flexibly scaled series of images processed to be visible and unambiguous. Spatially, rock art's location may originally have been one of its defining qualities—what kind of landscape it forms part of, who frequented it, what activities were associated with it, and other spatial qualities. Transcribing and circulating it renders it despatialised, associated with new place and contexts (the museum, the classroom, the library, the clothed body) or the no-space-every-space of digital space. In terms of local

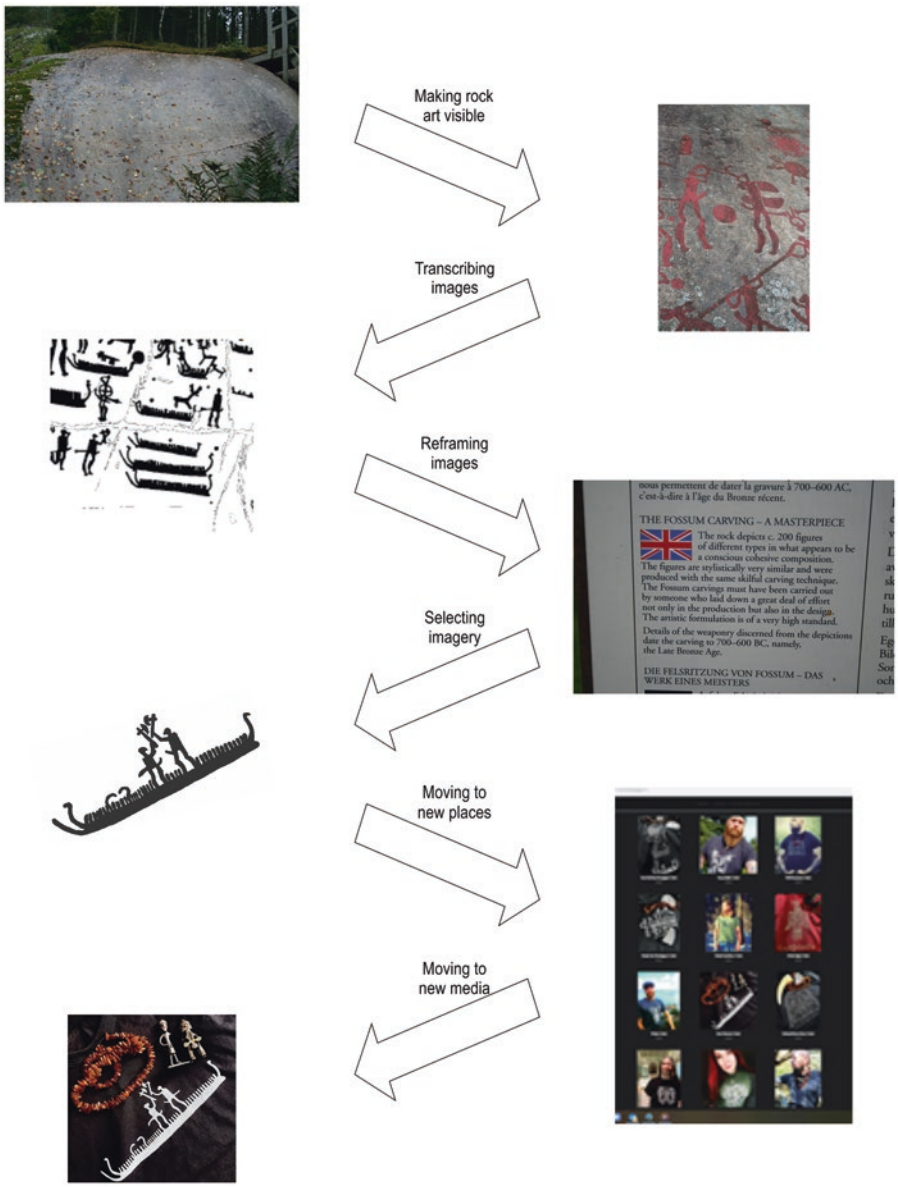

Fig. 18.11 The translational process. (Images, from top: J. Robb, J. Robb, Ling and Bertilsson 2016: Fig. 18.3/ SFHA, J. Robb, Ling and Bertilsson 2016: Fig. 18.3/ SFHA, https://theatreofwar.bigcartel.com/category/men-s-t-shirts?page=1, https://theatreofwar.bigcartel.com/product/boat-warriors-t-shirt)

knowledge, rock art's informational context may originally have been implicit, polysemous, or differently accessible to different kinds of person; it often may not have been representational or communicational at all. In translation, this changes in several predictable ways. While all symbols are polysemous, reframing tends to prioritise a particular dimension prioritised as its discursive meaning. A narrow, highly selected range of motifs, strongly biased towards recognisable representations, stands for all; exegesis is added to make clear their meaning and inscribe it into modern frames of reference, and this is rendered flatly accessible to all viewers.

In other words, the process of translation removes most, if not all, of the qualities which actually made rock art rock art. It dematerialises rock art as one kind of thing, passes it through transformative informational filters, and reconstitutes it afresh as a different and new kind of object. The main effect is to transform our understanding of what the object actually is and how it acts. What did rock art do, originally? If we consider Gell's approach to art as a social technology (Gell 1998), some of it may have resembled the pictures on our walls or the religious icons in our places of worship. Some of it may have made spaces such as tombs appropriate for their function. Some of it may have recorded someone's presence or agreement or protest, like modern graffiti. Some of it may have supported stories being narrated, or presenced ancestors or supernatural beings, or merged past, present and future temporalities, or united a landscape with an unseen dimension. It may have been spiritual infrastructure or channels for power. Differentiating such possibilities requires understanding all aspects of its materiality, location and context. Very little of this information survives the translational process.

Table 18.1 Rock art, before and after its transformation

	Rock art in original context	Rock art in translation
Substance	Three-dimensional; images interact with material substrate; variably visible and invisible; have a clearly defined scale	Two-dimensional or digitally 3D; no inherent scale; no material substrate; images clearly visible and unambiguous
Location	Immovable, embedded in landscapes, associated with people, activities, contexts	Generically transportable, despatialised
Informational context	Wide range of motifs and images; informational context mainly implicit; diverse capabilities for acting	Highly selected range of images, chosen to fit into modern narratives, with explicit exegesis added, uniformly accessible; narrowed capabilities for acting (mostly as a representational signifier)

The black and white line drawing is the most common way of recording and presenting rock art, and it tends to form the condensed, portable version from which most digital and globalised versions are reconstituted. However, it is strongly tied to interpreting rock art as "art" in a modern sense. It effectively strips out all information except form; it serves to answer one question only: "what is it a picture of?" This in turn serves a prelude for the other obvious question: "what does it mean?" By reducing what we know about rock art to merely its form and signification, our disciplinary practices implicitly assume that rock art formed a signifier much as modern signs do. They enforce a semiotic or communicational view of what rock art is, reducing its capability of acting to this single dimension. Because this is how we usually understand our own representations as working, we don't even usually notice that we are doing this. It merely seems the obvious interpretive pathway (Table. 18.1).

18.5 Rock Art: Translating Is Transforming

Can anything and everything be globalised? Can anything and everything be converted to a product that can be universally transmitted and consumed regardless of location, setting and context?

Rock art provides a fascinating counter-example which has implications for materiality theory. Rock art is inherently rooted in its location; it generally cannot be moved, and even if it is, it defines much of its social meaning from its physical context. It is shaped by its material substrate, which creates conditions of invisibility, visibility, heightened effect and scale. And many kinds of rock art are not intended for immediate interpretation by generic or universal eyes; they require layers of local informational context to be understood or used appropriately.

How does something which is fundamentally of its place and of its substance fare in a world oriented towards universal portability and consumption? One indication of the challenges posed is how variable the fortunes of different kinds of rock art are. Some kinds of rock art are inherently more translatable than others. In general, the more rock art approximates our visual sense of aesthetics—what a "picture" looks like to us—the more readily we take it up. The Lascaux horses and Altamira bison are reproduced so often in part because—unlike almost all other prehistoric European art—they fit into an art historical narrative about "naturalistic" Western art. Similarly, in spite of its frequency, European Neolithic rock art is very poorly known to non-specialists, mostly because it tends to consist of jumbles of cryptic geometric motifs. In contrast, Bronze and Iron Age art tends to be better known because it has recognisable motifs such as boats, horses, riders, and dancers, often arranged into narrative scenes.

All forms of rock art require considerable work to be translated and transmitted. To be made into something consumable, rock art has to be brought out into the open, identified and made visible. Then, it has to be identified and labelled, screened to eliminate information not relevant to modern text-oriented consumers working in a tradition of representational imagery, and given a sharp, clear outline—all aspects which explain the historical success of the preferred form of representation, the black and white line drawing. And it has to have layers of exegesis added (e.g. specifying its discursive "meaning"). All of these make rock art both transportable beyond its setting and interpretable as visual culture by any modern viewer, and ultimately able to leap off the rock and become part of a new narrative, array of images, or product.

But this process of translating rock art from its original form to something that can be encountered and consumed by modern audiences is not a neutral process. It loses most of the qualities that made rock art what it was, and it selectively focuses upon a narrow axis of form and signification. In the process, it refashions rock art from something originally capable of acting in many different modes, to something principally able to act as a signifier. What happens to materiality in the process? The technologies we use to know the world encourage or enforce their own presuppositions about the nature of the world (Introna 2011). Computers are an information technology; things pass through them by being reduced to binary (digital) information. They thus enforce the status of information as a basal ontological state separate from and opposed to the material constitution of things. If the substance of an object is a fundamental part of what it is, the object cannot be reproduced through a technology with

dematerialises it and rematerializes it in another medium; as you rematerialize it, it becomes a different object. At most, one might attach a text saying, rather self-defeatingly, "the substance of this was important," and perhaps include a photograph of the rock and of the landscape in the webpage or museum placard. With rock art, the process of translation thus creates a chain of representations, each one shifting what it can do from the previous one, and the final one addressing different needs for different people.

Does this make a difference? To revisit Magritte, one obvious difference between a pipe and a painting of a pipe is that you can't smoke a painting of a pipe. Rock art in translation becomes something different, and it can be used for different goals and projects. In a practical sense, at a fundamental philosophical level, it is futile to rail about more and less authentic ways of accessing the past. We have no unmediated access to the past; whether through texts, objects or traditions, it is a book we can only read in translation. We cannot live outside of time and make and use rock art exactly as ancient people did; the only philosophically realistic goals we can aspire to are to understand how they made and used it, and to use it in our own ways, hopefully ethically. Why would people want to access rock art if they cannot necessarily understand or experience it as it was originally understood or experienced? The most obvious answer is that they are unaware of the translation-transformation and think they are accessing an "original" version; this is probably true not only for "the public" but for many scholars as well. Secondly, even if recognising that they are not approaching an "original" or "authentic" experience of it, they may nonetheless find it engaging for past-focused projects of their own, whether academic or non-academic (e.g. developing a stylistic chronology, understanding a land use history of a region, etc.). Finally, they may disregard the question of originalism and authenticity entirely and yoke the rock art to modern projects, giving entirely new meanings to ancient images. In many situations, this may involve commodification and the appropriation of other people's heritage and intellectual property, but in others (for instance, developing tourism or local identity in a place like Europe, or simply re-using an attractive motif) it may not. But while reinterpretation can be innocuous and respectful or factually wrong or yoked to dubious political causes, the process of reinterpretation-via-translation in itself is not inherently harmful; it is merely the ongoing metabolism of the symbolic environment humans continually do.

However, if our goal is to try to understand the past we must recognise and work against what seems obvious. Translation is inescapable, but one can pursue multiple translations with different qualities. Indeed, used creatively, information technology may form part of new solutions (Guy and Wintjes 2009). In its elimination of extraneous information and reduction of ambiguity, the black and white line drawing is both helpful and limiting. Recording the whole corpus may overcome selection bias. Beyond this, finding new ways of seeing (or not seeing) rock art may be a challenge we can respond to using new methodologies creatively. Orthogonal photographs of record with uniform lighting preserve fine details, but may need complementing with images replicating ordinary conditions of vision, including visibility with light from varying directions, and they have little sense of human scale. Three-dimensional reconstructions may show imagery draped over complex contours. RTI may show details never observed by prehistoric people but cast light on manufacturing processes. Photos with humans may give a sense of scale, orientation and immobility. Landscape photos may show the hillslope and the water running down it. Excavation records may show relations with contemporary contexts and activities. Artists' reconstructions may put prehistoric people into the picture and get beyond twenty-first century landscapes. Videos may allow a sense of movement around a site. Audio recordings may show the ever-present wind, the noises of the river or forest. Animations may free our imagination from photographic verism. Videoconferencing may allow live real-time remote site visits. To communicate rock art as deeply as possible, and to open rather than close off understandings of it, we may need all of these and more.

Such practical solutions emphasise that, while translation cannot be avoided, it can be a creative and productive process, not merely a distortion or source of inauthenticity. However, in simultaneously creating something new growing out of globalised needs and concerns while foregrounding rock art's link to a past, perhaps one belonging to ancient or contemporary indigenous stakeholders distanced from modern consumers, translation also holds inherent potential for harm: the risk of cultural appropriation, the dilemmas of authenticity, and the danger of commodification.

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Cultures of Appropriation: Rock Art Ownership, Indigenous Intellectual Property, and Decolonisation

19

Jamie Hampson and Sam Challis

Abstract

Both on and off the rocks, it is clear that many pictographs and petroglyphs are powerful cultural and social 'tools' as well as sacred beings. Indeed, in certain regions of many countries, cultural and socio-political identity is shaped, manipulated, and presented through rock paintings and engravings. In this chapter, we focus on re-contextualised and appropriated Indigenous heritage and rock art motifs, in commercial settings, in sports team mascots, and as integral components of political and national symbols—there are illuminating similarities (as well as differences) that span the globe. Case studies include instances where descendants of the original artists have re-imagined and adapted the meanings and uses of motifs, and also where non-Indigenous/non-descendant groups have appropriated rock art imagery—often without consultation with or permission from Traditional Owners and heritage managers. We offer results from fieldwork and study in North America, northern Australia, and southern Africa.

Keywords

Decolonisation · Intellectual property · Cultural appropriation · Commodification · Heritage · Rock art

19.1 Introduction

Images, symbols, and motifs are global phenomena, and have been for tens of thousands of years. They are 'in our heads', and they surround us—yet we so often take them for granted. Indeed, established notions of what images are and what they do are rarely challenged, which in turn discourages innovative approaches to visual heritage. At the same time, there are important debates concerning Indigenous rock art,[1] and indeed the very nature of Indigenousness (from the local to the global scale) and how Indigenous groups and their heritages are perceived and used (e.g. Dowson 1996; Janke 2003; Nicholas and Bannister 2004; Nicholas and Hollowell 2007; McNiven and Russell 2005; Lydon and Ireland 2016; Nicholas 2017a).

To Westerners,[2] many images and symbols may appear deceptively familiar today, regardless of the historical context of those images or where they originate. Thankfully, however, processes of decolonisation (including acknowledgement of the inappropriateness of casting non-Western cultures in Western moulds) are increasingly helping archaeologists, anthropologists, and members of the public to avoid the dangers of 'presentism' — that is to say, uncritically ascribing modern values to the past (Nicholas and Wylie 2009; Nicholas 2011). By interrogating the de- and re-contextualisation of Indigenous rock art in settler (colonial) nations, this chapter aims to contribute to this discourse. We limit our case studies to southern Africa, Australia, and North America, and explicate both the differences and overarching similarities between and within these regions.

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[1] For a debate on whether the term 'art' is appropriate, or an incorrect categorisation (or arrogant imposition), see e.g. Chippindale and Taçon (1998); Townsend-Gault et al. (2013).

[2] Perhaps a better term than Western is 'non-Indigenous', although both epithets are problematic (see e.g. Miller 2003; Barnard 2004a). We also acknowledge here that there is rarely a sharp boundary between Indigenous and non-Indigenous.

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Because rock art sites and motifs are implicated in—and often actively drawn upon for—identity formation *today*, there is a pressing need for sensitive and appropriate presentation and for educational campaigns against misconceptions of Indigenous rock art and the people who made it. Concepts of cultural identity, Indigenous Knowledge Systems, agency, multivocality, and social exclusion are made tangible at Indigenous heritage sites; important considerations include *who* decides *how*, *why*, and *which* rock art sites are conserved, managed, and presented to the public — including the all-important subject of site access (Ndlovu 2009). As we shall see, similar questions apply to the re-contextualisation of rock art and other Indigenous imagery around the world. All of which raises the question of the arguments for and against the policing of artistic expression (Brown 2003). We have previously suggested (Hampson 2013, 2015; see also Hampson and Weaver 2021) that re-contextualised rock art motifs can be divided into five categories: commercial contexts; national symbols (Fig. 19.1); contemporary artworks 'inspired' by rock art; academic contexts; and removal to museums and art galleries.[3] But who has the right to interpret—or even speak about—Indigenous visual heritage? Can the trivialisation of reproduced or re-contextualised rock art motifs be avoided? Does sensitive and careful presentation of heritage sites and rock paintings and engravings—both on and off the rocks—make a difference, challenging visitors' and viewers' preconceptions of rock art and of the Indigenous people who made (and make) it? Perhaps the central thread of this contribution is to advocate for the combination of 'common courtesy' of community consultation (earning respect, trust and recognition), the (sad) necessity of hard legislation, and the public education that informs and encompasses these.

Indigenous art functions at both the performative/ritual as well as (what many Westerners would consider) an 'aesthetic' level (e.g. Atalay 2008; Townsend-Gault 2001; Schaafsma 2013; Townsend-Gault et al. 2013; Hampson 2016a, b; Nicholas 2017a). Indeed, the physical or virtual removal of rock art from its original context (i.e. *de*-contextualisation) by non-Indigenous individuals separates performative and aesthetic aspects, often with harmful results—there is an alarming disconnect that needs to be acknowledged (e.g. Dowson 1996; Henry 2007; Nicholas and Smith 2020).[4] Sometimes rock art is removed in circumstances of 'inevitable' land engineering, and it is deemed the best thing for the motifs even when context of place is irrevocably gone—these decisions, of course, are still largely driven by the Western mindset (Arthur et al. 2021). In short, Western predilections and desires for that which is deemed to be 'aesthetically pleasing', 'progressive', and 'beneficial'

Fig. 19.1 Indigenous rock art motifs are often found on stamps. Left: San motifs feature in this 1977 Swaziland/eSwatini set. Right: stamp and postmark celebrating the 1996 Centennial Games in Atlanta, USA, using the South African Olympic team logo, based on San motifs, on ebay.com. (See also Smith 2016: 142, Fig. 7.7)

[3]These categories are of course not mutually exclusive; they are intended merely as helpful, albeit arbitrary, guidelines (Hampson and Weaver 2021; see also other chapters in Rozwadowski and Hampson 2021).

[4]For appraisals of the situation in *Murujuga*, Western Australia, where many rock engravings have been removed or destroyed, see McDonald 2016; Zarandona 2020.

are often dangerous and offensive to Indigenous groups (Fig. 19.2). After all, Indigenous images are not just pretty pictures; they are powerful things in themselves.

Because painted and engraved symbols are often materialisations of contested identities, and the result of specific 'modes of action' and agencies (Hodder 1986; Gell 1998; Dobres and Robb 2014; Brady et al. 2016), the presentation, manipulation, de- and re-contextualisation of images have profound consequences for many stakeholders. Indeed, perceptions of Indigenous art—especially rock art—tell us much about cultural identity and modes of being (e.g. Schaafsma 1980, 1997; Whitley 2000, 2001; Hampson 2015; Loubser 2013; Brady et al. 2016). Although tourists who visit and engage with public rock art sites and Indigenous motifs are of course part of a public that comprises manifold and ever-changing communities, there are widely shared beliefs about Indigenousness, self, and 'other' (Blundell 1996; Ouzman 2006). Some of these beliefs extend across continents; it is clearly useful to consider this topic from global, as well as regional and local, perspectives. Moreover, the use of Indigenous peoples and their rock arts in identity formation worldwide has often objectified those people as homogenous entities frozen in a mythic time—and sometimes overlooked their very existence today (see below; also see Dowson and David Lewis-Williams 1994; Lewis-Williams 1995; Hoff 1997, 1998; Smith 2016; Skinner 2022). Perceiving Indigenous groups as nothing more than mediators (or worse, as extinct, or vanishing) opens the door to the perpetuation of egregious stereotypes.

On all scales—individual, group, regional, or larger—cultural identities, and how others perceive those identities, is a recurring theme in the humanities and social sciences (e.g. Bourdieu 1977; Handler 1988; Shennan 1989; Miller 1994; Jones 1997; Blundell 2004; Nicholas and Hollowell 2007). Researchers often fail to specify, however, exactly *how* identities are formed, revised, and perceived, and how they differ through time. These omissions often lead to the idea that identity formation is an end in itself, the ultimate goal of all cultural processes—an approach labelled essentialist or 'primordialist' (Rowlands 1994). In contrast, Malkii (1992) and

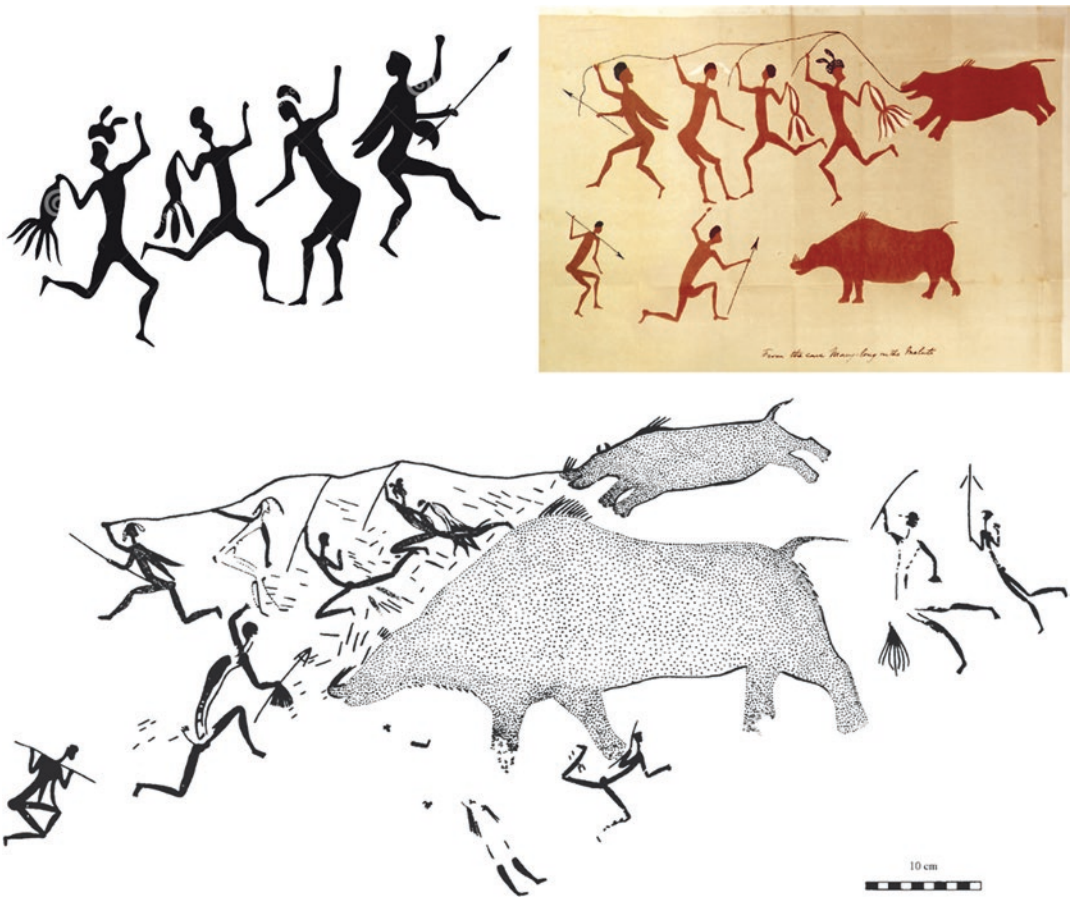

Fig. 19.2 Top left: stock image from 'dreamstime.com' titled 'Primitive figures looks like cave painting – primitive art', which simplifies and trivialises the original southern African San art, not least because the spiritually significant rain animals have been removed. Top right: the historical copy made by Joseph Orpen in 1873 from which it was abstracted (photograph by Justine Wintjes). Bottom: the archaeological tracing and re-drawing of the original rock art by Patricia Vinnicombe (Courtesy Rock Art Research Institute, University of the Witwatersrand, the KwaZulu-Natal Museum and Lucas Smits). For further discussion see Wintjes 2014

Fig. 19.3 The sacred 'sun symbol' is found on Indigenous rock art panels (left) as well as the state flag of New Mexico (right). (Photos: Jamie Hampson)

others define identity as 'always mobile … partly self-construction, partly categorisation by others, partly … a label, a weapon, a shield, a fund of memories'. Following Malkii, we employ such an 'interactionist' approach to identity, and find it particularly applicable when addressing Indigenous art and image diversity, as well as the re-contextualisation of symbols (Rowlands 1994; Blundell 1998, 2004, cf. Latour 2005; Hampson 2015). Indeed in some contexts, especially in the colonial era, identity is mutable in the extreme and, accordingly, creolisation theory is most germane (e.g. Challis 2018a).

19.2 Indigenous Cultural and Intellectual Property: Decolonising Ownership and Rethinking Value

When non-Indigenous people take rock art images and place them into new—and often commercial, money-making—contexts, they are (knowingly or otherwise) practising a form of neo-colonialism. The appropriation and re-contextualisation of the Zia sun symbol in New Mexico, for instance, is both shocking and illuminating. In 1923, when the New Mexican chapter of the Daughters of the American Revolution held a competition for a new state symbol, the winning entry was the famous sun symbol (Fig. 19.3)—a motif 'borrowed' from the Indigenous Zia group's Fire Society by physician and avocational archaeologist Harry Mera (Pino and Fugate 2012; Turner 2012; Montoya 2018; Nelson 2019).[5] Mera had seen the design on a ceremonial pot that had been removed (under suspicious circumstances) from the Zia pueblo in the late nineteenth century (Pino and Fugate 2012). Importantly, although the symbol itself has been used in ceremonies and on rock art panels by the Zia since 1200 AD (Turner 2012; Montoya 2018; Nelson 2019), according to Zia tribal administrator Peter Pino 'Mera probably had no idea that the pot was anything special' (Pino and Fugate 2012). Nor, however, did it occur to Mera to ask Zia Pueblo if they had any reservations about his using their design. In the 1920s, Zia had a population of perhaps 120 people, and, as Pino and Fugate (2012, 3) point out,

> none of them knew where their pot was or how to get it back. In 1925 the Indians of New Mexico couldn't vote; some non-Indians considered them less than human, much less to have civil rights. Zia had few if any avenues for launching a complaint about the use of their symbol.

Pino and Fugate (2012) observe further that the sun symbol is copyrighted by the State of New Mexico and used on the state flag and on federal coins—but the Zia's use of their own symbol is not! In short, 'The Zia people would like some acknowledgement that the symbol originally belonged to Zia and that it was appropriated without their knowledge or blessing' (Pino and Fugate 2012, 4).

The sacred sun symbol motif is found, sometimes with distorted dimensions and almost always without permission, on the products of hundreds of commercial companies (selling everything from motorbikes to beer to portable toilets) in the Southwest USA (Turner 2012; Montoya 2018; Nelson 2019). After successful negotiations, plus donations to an Indigenous scholarship fund, on the other hand, some companies (e.g. Southwest airlines, Organ Mountain Outfitters) *do* have permission to use the Zia symbol. It seems that the Zia—and indeed other Indigenous groups—have had more success in protecting their sacred symbols and intellectual property (IP) rights by *negotiating*, and by employing non-legal (i.e. non-statutory) pressure, than via the trademark law courts (Turner 2012; Montoya 2018; Nelson 2019). As for profit-making companies, some of them are (at last) learning that the best way to proceed is to approach the Indigenous groups and ask permission to use sacred symbols—for an appropriate fee—rather than simply 'borrowing' them and hoping the commodification goes unnoticed and/or unchallenged (or 'ask first'; see Australian Heritage Commission

[5] Pueblo Governor Anthony Delgarito makes clear that the centre circle in the motif is 'where we are born and where we return to after this life… So when I see the symbol added to with art covering [the circle] or inside the circle, it frustrates me' (Montoya 2018). Pino and Fugate (2012) point out that 'There is pride in the recognition of an important symbol on the state flag, but there is also regret that it has been appropriated for less lofty uses'.

2002; Museums Australia 2005). As should by now be apparent, much of this debate revolves around not just value judgements, but also common courtesy, respect, and open communication (Davidson et al. 1995; Schaafsma 2013; Montoya 2018; for discussion see below cf. NAVA n.d.; Mellor and Janke 2001; SASI 2017).

Another illuminating case study focuses on the Snuneymuxw First Nation rock engravings on Gabriola Island near the city of Nanaimo (Vancouver Island, British Columbia, Canada). The motifs here—including the 'Dancing Man' and 'Kingfisher' petroglyphs—were given protection in 2000 by Canadian law under Sect. 9(1)(n)(iii) of the *Trademarks Act*, which is applicable to any 'badge, crest, emblem or mark adopted and used by public authority' (Adams 2003; Brown 2003, 84; Bell et al. 2009, 395; Nicholas 2013, 2017a; Hampson and Weaver 2021). Prior to this trademarking, reproductions of engraved motifs were used without permission on T-shirts, postcards, and items of jewellery for sale in a local museum—and the profits from sales did not go back to First Nations' groups. After the ruling in 2000, and since obtaining permission from the Snuneymuxw community, souvenirs featuring the petroglyphs are still for sale—but a share of the profits now go back to the original 'owners' of the motifs. In addition, images of the original *in situ* petroglyphs have been removed from the museum's website, and visitors are no longer allowed to make rubbings of the petroglyph reproductions (Brown 2003, 84). Shortly after the trademark ruling, too, the Dancing Man Music Festival removed the image from its logo (Bell et al. 2009, 395).

Put simply, appropriation and inappropriate commodification of the petroglyphs are no longer legally possible. Although this is not a 'one-size-fits-all' ruling, from this case study we can begin to understand how, to the Snuneymuxw, the agencies (e.g. Gosden 2005) and powers of the engravings have migrated and expanded into a modern, contemporary framework (see also Appadurai 1986; Hodder 1986). Indeed, according to First Nations groups, the powerful Snuneymuxw images (and indeed the rules governing their production and use) travelled symbolically from rock surfaces to inclusion within a new, *Western* legal system (Brown 2003, 83–87; Bell et al. 2009). Tellingly, most of the Indigenous groups who have successfully protected sacred motifs under intellectual property laws have ultimately only been able to do so through *Western* forms of legislation. In some cases, the age-old concept of 'inalienable possessions' (Weiner 1992) only seems to apply when Indigenous 'possessions' are acknowledged and re-framed within colonial legal systems (Nicholas et al. 2010; Geismar 2013; Honanie and Lomahquaha 2015). How much of this debate—and other discussions around intellectual property rights—is about financial compensation? Kathleen Johnnie, the Lands and Resources Coordinator for the Snuneymuxw First Nation Treaty Negotiation office, explained that the decision to push for legal protection was taken primarily for *religious* rather than commercial or financial reasons (Brown 2003, 84). Snuneymuxw community elders succeeded in restricting what they consider to be the insulting, superficial, and trivialising use of their community's sacred symbols; they had no choice but to fully engage with a European-derived, non-Indigenous legislative system in order to protect rightful sovereignty (Brown 2003; Bell et al. 2009).

19.3 Commodification, Performance, Access, and Affect

Replication does not always *necessarily* equal trivialisation. For example, the late-nineteenth and early-twentieth-century invention of film and the subsequent 'democratisation' of the reproduced or replicated image was a seminal moment in the history of art in a Western context (Sontag 1977; Hanssen 2005). For the polymath Walter Benjamin, film photography was *the* transformational pivot of the modern era (Berger 1972; Hanssen 2005)—and it is clear that from the early days of the study of the anthropology of art there was an interest in the implications of an image travelling between different forms of expression (e.g. Heidegger 1950; Arendt 1968; Adorno 1970; Taussig 1993).[6] What Westerners failed to see, however, was the harm this might cause to Indigenous artists and communities (e.g. Silliman 2010; Nicholas 2011; Nicholas and Wylie 2012).

When discussing the implications of commodification and commercial advertising in a wider sense, Peter Pels (2010) usefully employs a concept similar to Bennett's (2001) notion of the 'enchanted materialism of modern life'—that is, the idea that capitalism employs 'magic' to construct and capture its markets (see also Hampson 2013, 160; Hampson and Weaver 2021). Also, and as suggested above, we know that objects with agency 'do things' to and for humans (Gosden 2005). Commodities, like people, have histories, and, as Pels (2010, 625) makes clear, 'like people, [commodities] do some things better than others; like people, their performance changes from one situation to another.'[7] The starting point in advertising is that the product has to be made to 'perform' (Pepsi cures dyspepsia, for instance); the product is then reified and 'mythically multi-

[6]Drawing from Hegelian ideas of sublation, too, it is worth remembering that it is possible to *re*-appropriate part of a form that has been alienated (Hampson 2013, 161).

[7]Consumption *per se* is not necessarily a negative act. It is the insensitive alteration and simplistic re-configuration of images into new contexts *without permission*, not their mere adoption, which trivialises rock art heritage. Consumption is part of a complex dialectic process central to identity formation, and those who criticise consumption without caveats in fact 'confuse the vehicle with the message it carries' (Blundell 1996).

Fig. 19.4 Left: Sign in one of the visitor centres in Kakadu National Park, northern Australia. Centre: Reproductions of Kokopelli—an important being in Native American ontologies—are found in numerous commercial contexts, some more offensive than others. Right: caricaturistic renditions of rock art on the 'Bushman Curios' shop in Oudtshoorn, South Africa. (Photos: Jamie Hampson and Sam Challis)

plied' (Barthes 1957; Pels 2010, 628). Arguably, this is what has happened to the multiply re-contextualised Zia sun symbol—and indeed to any 'brandable' image, Indigenous or otherwise.

Pels's argument is akin to Peircian ideals of indexing (Peirce 1955), a cornerstone of rock art and art history research—objects point to, or *reveal*, at the same time as they *conceal* something else. Here then is a sense of not only Marxist alienation but also an 'iconoclastic moment of denying the object's inherent value' (Pels 2010, 628). In other words, sacred cultural property and fetishised commodities are not always mutually exclusive—and wherever there is an image, there is always some form of iconoclastic fetishisation (Hampson 2015; see also Weiner 1992; Geismar 2013). Appadurai (1986) draws our attention to the nuances of this debate when he defines commodities as 'vital arenas' for detecting the 'politics of value'.

The Snuneymuxw/Gabriola Island example above highlights different and often conflicting perspectives on the societal role of artists. How, if at all, do the Indigenous peoples of coastal Canada and non-Indigenous societies differ in their views of art and artists? Indigenous peoples are the 'original storytellers' (Kovach 2009). For many Northwest Coast First Nation peoples, there is a long tradition of drawing upon performative and ritualistic tropes, as well as Indigenous prescriptive rules, in order to produce a 'sense of meaning' for audiences, both Indigenous and *non*-Indigenous (Roy 2010, 80). Coast Salish people, for example, associate specific individuals with ancestral figures, names and stories (Roth 2019, 109)—but many Coast Salish artists keep this spiritual importance private when selling artistic works to outsiders. *Within* Indigenous groups, too, it is important to remember that some individuals have greater access to spiritually important myths and artworks, depending on the individual's age, gender, status, and other factors (e.g. Brown 1988; Brown 2003; Schaafsma 2013; Roth 2019).[8]

As the Snuneymuxw and Nuu-chah-nulth lawyer and scholar Douglas White (2013, 643) points out, the role of Indigenous artists from the Northwest Coast of Canada has been 'nothing less than to assist in the formulation and expression of the philosophical and normative foundations underlying sovereignty and constitution of Indigenous nations'. Thus, while non-Indigenous individuals might be accustomed to the idea of artists 'breaking rules', for many Indigenous groups artists are supposed to work alongside lawmakers in order to thoughtfully and publicly express responsibilities, rights, and privileges (Roth 2019: 109).

When viewing and engaging with Indigenous symbols, then, we clearly need to go beyond Western notions of aesthetics, and the unhelpful notion of 'art-for-art's-sake'. In a new, non-Indigenous context we might consider whether we even recognise when an Indigenous rock art motif is being used out of context, or inappropriately. Roth (2019) argues that when an 'uninitiated' non-Indigenous person is confronted with an image that is clearly derived from, or indicative of, a different cultural context, there is often (but not always) a physical and psychological reaction of dissonance (see Fig. 19.4). That should not surprise us. On an emotional

[8]Michael Brown (1988, 198), drawing from Elizabeth Brandt (1980), who worked in the Southwest USA with Taos farming groups, argues that 'the primary motivation for closing religious knowledge to outsiders … is to prevent it from cycling back to *Pueblo* individuals who are not authorised to possess it. Strict compartmentalisation of knowledge is necessary to maintain the community's religious hierarchy and ultimately the integrity of traditional institutions, which are based on theocratic principles. Of equal importance is the conviction that in the wrong hands, religious knowledge loses its power or assumes destructive forms.' (See also Keen 1994 and Whitley 2001.)

level, too, it is likely that, even if for a split second only, Westerners can recognise when an Indigenous image is being used insensitively.[9] Who decides, though, on what is or is not insensitive or whether or not an image is 'out of place'? Here, we would do well to remember that ethical and moral value judgements are often—some would say always—bound up in power imbalances and conflict-driven agendas. Moreover, it is only by considering Indigenous views and ontologies that non-Indigenous outsiders will come to better understand which re-contextualisations are more offensive or insensitive than others (Hollowell and Nicholas 2009; Nicholas 2017b).

19.4 Indigenous Motifs and Sport

Sport can be seen as a microcosm of contemporary life. Indeed, sport encompasses ideas of cultural belonging, market economies, and moral training; 'wrapped in the rhetoric of enjoyment and character building', it is 'play around consumptive behavior' and a 'privileged space' with millions of contributors generating millions of dollars of revenue (Giuliano 2013).[10] Rock art images used in sport at a regional or national level are undoubtedly meant to convey, in part, a pride in that region's past (as per the 1996 South African Olympic team logo above), but such images are nonetheless taken out of context and often without consent.

In the USA, there are approximately 90 universities and 1200 high schools with Native American sports mascots (Chaney et al. 2011, 43). While these mascots rarely include direct referents to rock art, they are pertinent to discussions surrounding Indigenous identity. Despite schools and individuals claiming that these mascot symbols are intended to honour Indigenous groups (e.g. Steinfeldt et al. 2010; Turner Strong 2014), studies show that mascots are often seen as a simple reflection, or equivalent, of Native Americans and their culture; that is, many non-Indigenous individuals 'perceive that AI [American Indian] mascots and AI people are one and the same' (Chaney et al. 2011: 42). Moreover, a study by the Harvard Law Review (1999) found that regardless of intent, Indigenous mascots—and team names such as 'Braves', 'Warriors', or 'Fighting Sioux'—portray Native Americans in a stereotypic, inauthentic, and insensitive manner. Indeed, other recent studies have found that the mere presence of Native American mascots in schools engender hostile learning environments for Indigenous students (Baca 2004; Fryberg et al. 2008; see also Chaney et al. 2011; Giuliano 2013).

Native Americans, like other Indigenous groups around the world, have of course been seen by European colonists as wild and dangerous (and sometimes 'noble') savages; Chaney et al. (2011, 43) contend that 'the boundary between *American Indian as human* and *American Indian as mascot* has become blurred in American culture' (see also Deloria 1998; Farnell 2004). According to Slowikowski (1993, 28), one consequence of Native American sports mascots is that they keep Indigenous people 'allegorically fixed as a kind of "cultural souvenir" preserved in the American identity; as a result, efforts to eliminate Native American mascots are sometimes seen 'by the majority [i.e. non-Indigenous] culture as an encroachment on quintessentially American tradition' (see also Davis 1993; Chaney et al. 2011). Using Native Americans as mascot symbols amounts to social control (Giuliano 2013; see also Springwood 2004; Turner Strong 2014). Non-Indians are denying the rights of Indians to express their own identity in a space free from judgement and commercialism.

In the UK, the team previously known as Exeter Rugby Football Club underwent a rebranding in 1999 to become the 'Exeter Chiefs', and included in their logo an image of a Native American dressed in a 'war bonnet'. Unsurprisingly, there have been numerous critiques of the club (Mackay and Stirrup 2013, 9–10; Herrman 2016; Pratt 2016, 2018). Although the offensive logo has recently been replaced, there is *still* a mascot named 'Big Chief', a fan website titled 'The Tribe', and a sports chant named the 'Tomahawk Chop'. The 1999 rebrand was financially lucrative, but David Stirrup (2013, 10) points out that this success—like almost all forms of appropriation and caricature—is made possible only by the troubling 'absence of resistance', partly because of the vague and generic nature of the appropriation (i.e. of all Native Americans, not just one specific group). Is this Exeter example more or less problematic because the team plays in a nation (i.e. the UK) thousands of miles from the Indigenous groups whose symbol has been appropriated (i.e. Native Americans in the USA)? This is arguably a prime example of what Coll Thrush (2016) refers to as 'post-Imperial amnesia' and the 'disavowal of colonial histories'.

[9] Most researchers agree that it is difficult—and perhaps impossible—to separate emotional responses from the physical (for further discussion, see e.g. Peirce 1955; Bourdieu 1993; Errington 1998; Gell 1998; Saul and Waterton 2019). In a reworking of Walter Benjamin's famous 'work of art' essay from the 1930s, Susan Buck-Morss (1992) argues that the original field of Western aesthetics had connotations with sensory reality and emotional response: every response to an image has an emotional element. Following this, Theresa Brennan (2004, 1) developed the idea that affect is an *embodied* reaction which can be registered physiologically, psychologically, and neurologically. (For more on rock art and embodiment, and the fact that images are, once again, not simply 'decorative', see e.g. Blundell 2004 and Hampson 2016b.)

[10] For excellent discussions on the use of Aboriginal *wandjina* figures/beings in the opening ceremony of the 2000 Sydney Olympics, see Graber 2009; Blundell and Woolagoodja 2012; Nicholas and Wylie 2012; Nicholas 2017b; Ouzman 2021. This is a rare example of the sensitive re-contextualisation of a sacred symbol carried out in partnership with Indigenous groups, with full and fair remuneration.

Fig. 19.5 Photograph of an Australian $10 banknote. Note the rock art motifs as well as the Morning Star Pole

19.5 Indigenous Motifs and National Symbols

There are many examples of Indigenous motifs, rock art and otherwise, appearing on bank notes, stamps, and other national symbols—including the South African coat of arms (e.g. Smith et al. 2000; Jenkins 2012; Smith 2016; Hampson and Weaver 2021), which we return to later. In Australia, Riccardo Mazzola (2020) makes clear that trials have exposed many conceptual and practical difficulties in applying Western intellectual property categories to describe and protect Indigenous artworks (see also Keen 1988, 2010; Janke 2003; Morphy 2007). In 1991, for example, Yolngu artist Terry Yumbulul commenced proceedings against the Reserve Bank of Australia because of their use of rock art and a 'likeness' of his sculpture *Morning Star Pole* on the Australian nation's bi-centennial $10 note (Fig. 19.5).

The note's non-Aboriginal 'designer', Harry Williamson, had seen Yumbulul's *Morning Star Pole* in the Australian Museum in Sydney, and, allegedly, permission to use a likeness of the work was given by someone in the Aboriginal Artist Agency (AAA) acting on Yumbulul's behalf. Elders in the Yolngu community were appalled, and strongly asserted a communal interest in the artwork; they asserted that Yumbulul was only permitted to sell the work where it would be permanently displayed to educate the wider community about Yolngu culture (Mazzola 2020). The elders stated that authority had *not* been given to allow such an important and sacred item to be reproduced on money. In his affidavit, Yumbulul declared:

> I was particularly upset because I believe that the reproduction of the *Morning Star Pole* in this way was inappropriate […] It is a caricature of my culture and religion, particularly as only I have the rights to depict the designs which are shown on the Pole in that way by virtue of my Yolngu heritage. I felt that it is my Yolngu rights which have been attacked. Furthermore, I am offended from a Yolngu point of view, as I believe that it is insulting to my mother's clan for the design to be reproduced by a person who does not have rights under our Yolngu law to do so. (Mazzola 2020, 889.)

Yumbulul also embraced Western concepts of intellectual property rights and 'originality' when stating that:

> The particular yam […] design is unique to me. I have not copied anyone else's version of this design. While other artists paint yam designs, I believe that my version of the yam design is unique to me. Each artist has his own interpretation of the yam story and the yam spirit […] I made it without any assistance from other person. (Mazzola 2020, 890.)

The dispute was eventually settled 'by agreement', and the judge in Darwin even noted the inadequacy of Australian copyright laws (see below for South Africa) to deal with community claims and customary laws dealing with ancestral designs (Mazzola 2020). Indeed, as the National Association for the Visual Arts (NAVA's) 'code of practice' makes clear, in Australia 'current copyright law does not protect rock art works that are older than 70 years from the death of the artist. Permission for reproduction of rock art or other such cultural images should be sought from appropriate local Indigenous groups or custodians.' (NAVA n.d., 112; see also Mellor and Janke 2001).

The situation in southern Africa is quite different. While in Australia there is an Indigenous Art Code (2010) as well as a national code of conduct for the marketing, sale and exhibiting of Indigenous art (NAVA n.d.; see also Pham and Janke 2009), South Africa has no such protocol specific to art and heritage (van de Weg and Barnabas 2011, 290), except for the San Code of Research Ethics (SASI 2017) which guides current studies. Both codes, however, rely on the integrity of outsiders and are thus very difficult to implement in legal terms (although see Schroeder et al. 2019). Perhaps the main reason is that the complicated modern mosaic of Khoe-San[11] survivals and struggles today belies a simple truth: that owing to processes of contact and colonisation

[11] We follow Morris (e.g. 2006) and Hollmann (2007) in their use of 'Khoe-San', hyphenated to distinguish it from the linguistic terms 'khoisan' or 'khoesan', and to highlight that culturally Khoe and San can be, and often are, separate, though their material culture can be indistinguishable in the archaeological record. We reject any pejorative connotations associated with the word 'Bushman' in addition to 'San' (see Challis and Sinclair-Thomson (2022) for discussion).

there are no longer any rock art producers (Challis and Sinclair-Thomson 2022). Although Khoe-San rights are protected to varying degrees across the nations they inhabit (Angola, Namibia, Botswana, South Africa), the most immediate legal concerns are, of course, concerning land use rights (e.g. Chennels 2004). The IP of Indigenous Knowledge Systems came to the fore with the infamous Hoodia debate (Wynberg et al. 2009) but artistic IP seems non-existent for living Khoe-San, let alone a code of ethics for using ancient rock art. Thus the use of rock art in the public domain goes unchecked (cf. Dowson 1996).

Wendy van de Weg and Shanade Barnabas (2011, 289) observe that living San artists, whose modern work is separated temporally, geographically and stylistically from rock art (Guenther 2003, 95), though relatively safe in terms of copyright is nonetheless subject to the continued stereotyping of the San as childlike and close-to-nature. Their untrained and 'naïve' art is highly desirable to collectors yet (often knowingly) plays into 'discourses of primitivism':

> The quandary is this: the mythologising of the contemporary art increases sales (which is beneficial to artists), but it also recreates a notion of Bushman-ness as prescribed by those dominant in society (which is detrimental to communities).

So marginalised and disenfranchised are the San/Bushmen in southern Africa (including Botswana and Namibia) that not only are they 'good' to think with in the sense that they embody indigeneity, but they are 'safe' to think with in the sense that they are virtually powerless to contest the use of ancient rock art (Barnard 2004b, 19). The new South African national coat of arms (please see Fig. 19.6), commissioned in 2000 by President Thabo Mbeki, takes San rock art as its central motif; it has certainly raised the profile of Indigenous issues in South Africa and beyond (e.g. Smith et al. 2000; Barnard 2004b; Hampson 2013, 162). The irony is that the image chosen comes from a well-known rock art panel that was removed from its mountain location by Europeans in 1917 and transported over hundreds of kilometres to be displayed, for aesthetic purposes, in Cape Town (Henry 2007). It is at once African, South African and Indigenous, 'safely' out of copyright, while the motto beneath it is written in a San language no longer spoken—that of the ǃXam—so as not to favour any of the 11 extant official languages. In 2022, as a move towards giving voice to San descendants, the artists' collective at the Bushman Heritage Museum at Nieu Bethesda was commissioned to create an artwork referencing themes in the national coat of arms *as they see them*. It forms part of a more nuanced reading of the original rock art and coat of arms at the Origins Centre Museum at the University of the Witwatersrand in Johannesburg.

During the negotiations with the artists' collective, it became apparent that the traditional legal approach to commissioned artwork favours buyers at the expense of traditional artists. It is commonplace that agreements for the sale of commissioned artworks include a transfer of an artist's copyright to the buyer, thus elevating Western private property rights over any collective benefit that may accrue to traditional communities.

Fig. 19.6 The South African coat of arms and motto, created with the assistance of the Rock Art Research Institute at the University of the Witwatersrand, intended to centre first peoples, has drawn debate concerning their continued marginalisation (e.g. Barnard 2004b). Image courtesy Bureau of Heraldry, non-free media 'illustration in an educational article' gcis.gov.za

With sensitivity to past injustices and the appropriation of heritage, the legal agreement with the artists' collective was prepared to ensure that the artists' collective retained the copyright in the artwork, thus protecting their right to future commercial opportunities. Whilst the South African government and many other legal activists have taken some steps to ensure that Indigenous communities receive what is due to them, it is a concern that the legal system can be used to entrench the prejudice and historical exclusion of communities like the San.

19.6 A Way Forward?

What role should academics play in these debates? As Dowson and David Lewis-Williams (1994) made clear, total withdrawal from the political arena by lecturers and researchers would mean missing an opportunity to influence how, for example, the Indigenous Khoe-San are portrayed in southern Africa (see also Buntman 1996; Jenkins 2012). Here indeed is a chance to make a difference, and to advance heritage and education 'activism'. In some parts of the world, academics have been actively involved in rock art management and

non-tokenistic community engagement for decades, but there is clearly far more to be done. This is not a naïve and fruitless call to arms, especially given the fact that incorporation of Indigenous symbols into national identities and commercial contexts will, in any event, continue with or without academic intervention.

All of the case studies outlined above are of course nuanced and complex; this is true of any topic when value judgements are being made, reinforced, and challenged. Referring to debates about different belief systems, Polly Schaafsma (2013: 2) provocatively asks 'is reconciliation [between different groups] always reasonable, desirable, or necessary?' and need we always pit an 'archaeology of colonialism' against an 'archaeology of service' (to Indigenous groups)? More would undoubtedly be solved with open communication and genuine mutual respect. Similarly, by fully recognising and incorporating Indigenous Knowledge systems—i.e. systems other than just the narrow, Western legal systems and hierarchies, which were invariably established to reproduce the dominant, colonial status quo in settler nations—we are in a better position to bring about meaningful legal reform and social justice.

Just how difficult is it to control and police artistic expression, however? According to Michael Brown (2003, 52), 'history suggests that the legal regulation of culture is at best a fruitless enterprise and at worst an invitation to new forms of manipulation by the powerful.' Indeed, advocates of 'Total Heritage Protection' talk of respect, cultural survival, and economic justice for Indigenous communities—all of which are obviously admirable goals. But, more often than not, the same advocates fail to predict how things will play out on the ground after they have imposed the institutions of surveillance, border protection, and cultural protection (Brown 2003, 52). Schaafsma (2013, 69) agrees and states that 'wholesale suppression of information … even in the interest of "protecting" Indigenous groups … ultimately fosters continued misunderstanding, misrepresentation, and boundary maintenance'. Time will tell if Brown's and Schaafsma's statements are overly pessimistic or not.

Regardless of tensions, it is apparent that *presentations* of rock art images—whether on or off the rocks, in museums or in visitor centres—also provide important opportunities for challenging misconceptions. Education is crucial for bridging cultural gaps. In full (and non-tokenistic) collaboration with Indigenous groups, cross-cultural understandings of alternative worldviews can indeed be promoted judiciously and effectively (Schaafsma 2013: 69). Thankfully, very few tourist boards continue to promote Indigenous groups as 'nature's children', removed from the political realm (Hampson 2015; see also Duval et al. 2017).[12] It seems too that fewer and fewer heritage managers consider rock art motifs to be simple doodles or 'part of the natural backdrop'—they are increasingly aware of the deep spiritual significance of rock paintings and engravings both in the past and today (Duval et al. 2017). Similarly, more and more people are realising that rock art highlights and confirms Indigenous 'connection to country', and that local rights must not be usurped by unilateral claims about academic, national, or world heritage significance (Ouzman 2005; McDonald 2016; Nicholas 2017a). Suggested tenets and principles—such as full and meaningful collaboration, and obtaining permission prior to fieldwork—constitute a useful code of ethics, not least when those ethics are enshrined in university policy when researchers conduct anthropological interviews or collaborative archaeological fieldwork (e.g. Challis 2018b). Clearly, much of this debate revolves around notions of common courtesy as a starting point and a *sine qua non* (e.g. Meehan 1995; Schaafsma 1997, 2013; Nicholas 2017a). But action is needed too, and as we have seen, increased and sustained pressure by numerous different stakeholders brings success, and, at times, improved legislation.

There are of course many unanswered questions about the authenticity, privilege, and power of owning or presenting another culture's intellectual property, especially their sacred knowledge (Lacy and Terry. 1994, 491; Akerman 1995; Schaafsma 1997, 2013; Whitley 2001, 2013; Nicholas and Bannister 2004; Nicholas and Wylie 2009; Nicholas et al. 2010; Brady and Taçon 2016; Nicholas Nicholas 2017a, b). Intervention in the identity formation process inevitably raises concerns about research ethics, censorship, and freedom of speech—all of which contain value judgements. Schaafsma (2013: 29) warns us against 'a flaccid rhetoric of "respect," "openness," and "inclusiveness"'. Seldom are there simple answers to these political issues, and, oftentimes, the scramble for the moral high ground is itself unfettered by moral concerns. But surely we should speak up, however clumsily, rather than sit back and wait in hopeful silence. One of our central duties as anthropologists and archaeologists of rock art is to convey the richness of Indigenous ontologies and the importance of sacred symbols, whether we are Indigenous or not—especially where voices have been silenced, and meanings glossed over or wilfully ignored, for so many decades and centuries.

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[12]For a discussion on replicas of rock art sites as heritage attractions, see James (2017) and Duval et al. (2019).

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Replicated Temporality. Time, Originality, and Rock Art Replicas

20

Laura Mayer and Martin Porr

Abstract

The understanding of the notion of 'the past' has undergone a complex development in recent years within archaeology and related disciplines. It continues to be interpreted in different ways and in relation to different types of evidence. Indeed, understandings of the conceptualisation of time itself has received an increasing amount of attention, both in relation to methodological and theoretical considerations as well as in terms of public and historical imaginations. In this paper, we explore these aspects in relation to the transformation of archaeological evidence into heritage in the context of European Palaeolithic cave art sites. We focus on the processes of the perception, creation, and imagination of time in relation to 3D replicas of two famous painted cave sites: Lascaux and Chauvet. Through our analysis, we demonstrate that these replicas are reflections of a modern, essentialist, and linear understanding of history, which is linked to a fascination with the notion of originality and related ideas of purity, authority, and wholeness. Engaging with the temporality of the replica also allows an understanding of the unstable character of these notions as the replicas simultaneously exist in (at least) two temporalities and the viewer's engagement might oscillate between the two. While being wholly located in the present, the replica equally reflects human masterful abilities in the present and the deep past. Our analysis consequently allows to appreciate how the replica participates in the unstable and socially constructed temporalities of authenticity and originality.

Keywords

Replica · Authenticity · Fake · Cave art · Immersive environment · Visitor experience

20.1 Introduction

Archaeology is traditionally understood as the discipline that is concerned with the understanding of past human behaviours through the study of material remains. Archaeology draws its fascination from its perceived ability to unravel the deep past and the origins of humanity. In the public imagination, archaeology is most often associated with the discovery of ancient civilisations, hidden tombs, and mysterious artefacts. These imaginations tend to emphasise temporal depth, antiquity, and a distance between the present and the archaeological evidence. Discoveries that emphasise a previously unknown antiquity or the origins of an important development tend to generate the greatest public attention, such as the earliest abstract signs, the earliest evidence of sedentism, the earliest evidence of the settlement of Australia or the Americas. However, the notion of 'the past' continues to be interpreted in many different ways within archaeology itself and the discipline has diversified considerably in its approaches to different types of evidence and periods. These variabilities also relate to differences in the understanding and conceptualisation of time, both in terms of theoretical and methodological approaches towards the temporal dimension as well as the impact of public and historical imaginations. In this paper, we want to explore how these aspects impact on the processes of the transformation of archaeological evidence into heritage in the context of European Palaeolithic cave art sites. More specifically, we want to examine how time is perceived, created, and imagined in the context of the 3D replicas of the famous painted caves of Chauvet and Lascaux. We will argue that these replicas are reflective of an established modern fascination with originality, related dimensions of significance, purity, authority, and wholeness, and an essentialist and linear understanding of history. However, the temporality of the replica also allows to reflect on the unstable character of these notions. The replicas simultaneously exist in (at least) two temporalities and the viewer's engagement might oscillate between the two. It

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similarly refers to the faithful (and technically masterful) replication of a deep time object in the present as well as past human actions and abilities (which might have been equally masterful). However, the replica also allows us to reflect on the fact that both replicas and so-called deep time objects exist in the present and that they both participate in the unstable and socially constructed temporalities of authenticity and originality.

20.2 Time, Originality, and Authenticity in Deep Time Archaeological Reasoning and Heritage

In this section, we want to explore relationships between notions of time and authenticity in relation to the field of archaeology that is concerned with the deepest past of humanity. We will use the term of 'deep time archaeology', which incorporates fields such as Palaeolithic archaeology in Eurasia and Stone Age archaeology in Africa with their respective chronological and cultural divisions (e.g., Upper Palaeolithic, Early Stone Age etc.) (e.g., McGrath and Jebb 2015; Gamble 2014). It relates to the period that is usually understood to stretch from the earliest occurrence of human-made artefacts to the origins of sedentism and agriculture. In chronometric terms, this encompasses the time between ca. 3.4 million years and 10,000 years ago. It is also the period during which humans exclusively lived as hunters and gatherers, and the evolution of modern humans from ancestral forms took place. Few of these statements are, however, uncontroversial and we recognise that they hide an enormous amount of conceptual, spatial, and temporal variability (e.g., view contributions in Cummings et al. 2014). While we will not be able to address these issues in this paper in detail, some aspects will be assessed in our critical exploration of notions of time below.

Deep time archaeology has its origins in the nineteenth century and was integral to the establishment and widespread acceptance of humanity's antiquity (Gamble 2021). It also contributed to the appreciation of the depth and complexity of the earth's antiquity and past changes in geography, climate, animal, and plant communities, and so on. In the absence of radiometric dating methods, absolute age was estimated by the depth of stratigraphies, the (perceived) crudeness of human-made artefacts, and the association between artefacts and the remains of exotic, non-endemic, or extinct animal species. These foundational developments were almost exclusively restricted to Europe with an emphasis on French cave sites (Trigger 2006, 138–155, but see e.g., Chakrabarti 2020). A progressive element was already included in the first attempts at systematically structuring the evidence into different temporal phases. While the Old Stone Age (Palaeolithic) was defined by the association with faunal remains, the New Stone Age (Neolithic) was defined with reference to the sophistication of its stone tools (Chazan 1995). This distinction placed a temporal boundary between the Palaeolithic and the Neolithic that reflects the fundamental Western understanding of human development as a progressive social and technological emancipation from nature (Porr and Matthews 2017). The boundary between the two 'Stone Ages' relate to a division between nature and culture, and, in chronological terms, between (biological) evolution and (social/cultural) history. Only humans are able to create history and are no longer purely subjected to the processes of biological evolution. Among others, Ingold (2000, 373–391; 2004) has convincingly demonstrated that this division cannot be sustained and that it is a product of an essentialist understanding of humanity. Accordingly, the point of the origin of history (and, allegedly, fully modern human beings) continues to be a matter of considerable disagreement depending on the perspectives and backgrounds of the respective authors (Porr and Matthews 2017). Deep time archaeology is full of these themes and tensions, which include the origins of art, the origins of big game hunting, the origins of the division of labour and so on. While we will come back to the origins of art below, it needs to be stressed that one of the defining features of deep time archaeology is the focus on the origins of certain phenomena that are regarded as constitutional for the present or the human condition. Gamble and Gittins (2004) have criticised that because of this orientation, approaches towards deep time evidence tend to be selective and limited and are ignorant towards the possibilities of understanding the breadth of complexities of the deep human past. It also needs to be stressed that the focus on origins firmly rests on an essentialist understanding of the respective phenomena and the assumption that they remain unchanged over time and are, indeed, the same phenomena during the Palaeolithic/Stone Age and today. A statement like 'Grotte Chauvet represents the origins of art' is only possible within such a framework.

Within archaeological reasoning, an essentialist orientation is furthermore dependent on the ontology of the Western world and modern structures of perception and interpretation, particularly a homogenous understanding of time and space (Porr 2020). Every archaeological endeavour must navigate and conceptualise the tension between individual expressions of human or hominin actions and large-scale temporal developments. In deep time archaeology, this tension between different temporal scales is most amplified. Individual cases of human activities that can sometimes be related to single individuals (stone knapping or painting episodes) must be linked to developments that stretch over thousands of years and sometimes hundreds of thousands of years. Within deep time archaeology, large temporal scales have traditionally been emphasised with a focus on time-averaged evidence and collections (Bailey 2007). The influ-

ence of human agency and socially specific contexts was neglected for a long time (Gamble and Porr 2005). However, this orientation still needs to be integrated with evidence for single and often high-resolution episodes of human or hominin actions, which provide temporal nodes of possible revolutions or origins (Gamble 2007). In this way, the temporality of the deep human past consists of nodes of activities that are conceptually linked either in deep time with each other or between deep time and the present along connections within the universal understanding of time and space in which historical processes and events occur (Porr 2020, 197–199).

The above-mentioned elements are structuring the discussion about the origins of art as well as the related debates about the interpretation and evaluation of European Palaeolithic (cave) art. During the nineteenth century, the first objects that were described as Palaeolithic art were engravings of animals on bones that were found in archaeological layers and partly in association with the bones of (locally) extinct animals (David 2017; Ucko and Rosenfeld 1967; Bahn and Vertut 1988). While these objects did not generate a substantial discussion about the origins of art, this changed with the discovery and acceptance of Palaeolithic cave or parietal art in the early twentieth century, which has remained at the centre of public and academic debates (Moro Abadía and González Morales 2008, 2013). While academic assessments about the deep origins of art have more recently moved towards Africa and Asia, European Palaeolithic art is generally still presented and perceived to be linked to the global origins of artistic human capacities, particularly in public discourses. The Eurocentric heritage of the early phases of the research history remains influential. More importantly, within this understanding, the painted caves are understood as nodes and locations, where a phenomenon (e.g., art) originated that has a direct connection with the presence and every human being. In this way, they participate in humanity's essence. This understanding can be linked to the Western view of the temporality of humanity itself, which views the human as a being consisting of layers of global evolutionary and historical development. The essence of humanity, its core, can move unaffected through time and a wide range of material expressions (Porr 2020, 197). Temporal depth acquires dimensions of significance, purity, authority, and wholeness, which connects to the unbroken fascination with origins in archaeology and in the Western imagination in general (Said 1985). In the discussion of heritage, we want to argue, therefore, that in the context of deep time archaeology and Palaeolithic cave art, the notion of authenticity needs to be understood within a framework of originality. The latter term draws attention to the importance of time and temporal depth in this context and the importance of origin narratives (Fig. 20.1).

Authenticity remains an equally controversial and key concept in the study and assessment of heritage. It has been stressed repeatedly in the literature that the understanding of authenticity has changed dramatically over time in the Western world (see e.g., Shiner 1994). The emergence of the modern understanding of authenticity mirrors the establishment of the world's and humanity's antiquity during the late 18th and 19th centuries. During this time, authenticity became to be linked to the antiquity of an object itself: "Authenticity was seen as inherent in the object, and the experience of authenticity was thus dependent on the preservation of the original fabric of the object, monument, or place" (Duval et al. 2020, 144). More recently, these processes are understood in a more relational way and authenticity is regarded as an emergent feature of emotional and perceptual engagement. It is not the object itself that emits an aura. Rather, observers negotiate their understandings of

Fig. 20.1 Gilles Tosello reproducing rock art of the Chauvet Cave in his Toulouse studio. (Photo: Carole Fritz; reproduced with kind permission)

authenticity in relation to certain material properties (such as patina, damage, material decay etc.). Holtorf (2013) has described these characteristics in objects as reflections of 'pastness'. They not necessarily relate to the chronological antiquity of an object. They rather are constructed based on assumptions and orientations that observers, visitors, or consumers bring to these engagements and allow the establishment of relationships between themselves and the deep past as outlined above. While ideas of authenticity in the context of heritage have diversified considerably, we want to hypothesise that in the Western context, the element of authenticity experienced as originality remains particularly strong and especially in the context of deep time archaeology and Palaeolithic cave art. The latter example allows to make a strong case for the perception of painted caves as places in which time has been suspended and through which visitors are able to travel back in time when entering them. This understanding points to a complex conceptualisation of the temporality of the present, which can be linked to the heterogenous temporal understanding of modernity (Smail and Shryock 2013) and the dialectics between synchronicity and coevalness (Fabian 1983) in the historical and ethnographic evaluation of human difference. These preliminary considerations point to the complexities of the conceptualisation of time in the context of deep time archaeological evidence and the transformation of the latter into heritage. They are not reflective of a coherent consensus but rather of a reservoir of interpretations, views, and orientations, which can be accessed and activated in the engagement with deep time evidence and heritage. As such, they will also play a role in the negotiation and assessment of replicas and fakes in this context, which we will discuss now.

20.3 The Temporality of the Replica

In this section, we will focus on the subject of 'replicas', which we understand not only as consciously created to replicate original objects as faithfully as possible but are also "exact three-dimensional" copies at full scale (James 2016, 520). At their core, replicas are a type of heritage interpretation that are designed to transmit "public values, significance and meanings of a heritage site, object or tradition" (Silberman 2013, 21). Replicas are a regular occurrence in a wide range of contexts across cultural landscapes and institutions. They are an established aspect of museums where they can be displayed in exhibitions or are simply being sold in the museum shop. 'Replicas' need to be distinguished from 'fakes', which are created, and displayed or used deceptively (McGhie 2009, 353–354). As such, fakes have been produced to create a false sense of authenticity, have been erroneously acquired at auctions for astronomical prizes and have had entire exhibitions built around them. The distinction between fakes and replicas is a crucial one. However, the difference between these two categories does not reside in the object itself or its material qualities but in its social context, emotional engagements, circumstances, and in the motivations surrounding the creation and the use of the respective object. Because of these aspects, a replica can become a fake during its lifetime and *vice versa*. In this section, we want to discuss some of these temporal aspects, which have to do with social interactions and the related creation of meaning. We are interested in the temporality of the replica and, to a lesser extent, the fake.

Above, we have discussed the importance of the notion of authenticity in the context of the processes of the creation of heritage. But how do replicas participate in and reflect these processes? Replicas gain their authenticity in the same way that original objects gain their authenticity. These are social and relational processes of emotional and perceptual engagement. However, in the case of replicas, these processes depend on the recognition and the appreciation of the authenticity of the original object that is replicated. The viewer can simultaneously marvel at the technical brilliance and artistic quality of the replica that was recently created as well as its deep time dimensions (where technical brilliance and artistic qualities might also be a factor). The material aspects of the replica are secondary in this respect because they might or might not involve the same types of materials as in the original object. In temporal terms, the replica exists within two temporalities simultaneously and the viewer's engagement might oscillate between the two. In the first instance, the viewer is fascinated by the faithful replication of a deep time object in the present. In the second instance, the viewer appreciates past human actions and abilities (and the link to significant past phenomena such as past creative capacities or the 'origins of art'). While these aspects are not a focus of this paper, in the case of fakes, these temporalities are not equally accessed, because its relationship to the present is not realised by the viewer. The deception creates a false sense of authenticity and originality. The replicas that we discuss in this paper gain their authenticity through their reflection of the processes of authentication and dating of Palaeolithic evidence and Palaeolithic cave art. It is worth reflecting on these processes in some detail because the great antiquity and development through time of Palaeolithic art contributes considerably to its present fascination and ascribed value.

From its recognition in the early 1900s, Palaeolithic cave art dating has been in continuous development. Influential researchers pioneering its study, such as Henri Breuil (1877–1961) and André Leroi-Gourhan (1911–1986), sought to date Palaeolithic cave art on stylistic grounds and arrange it into its "correct chronological order" (Leroi-Gourhan 1968, 59). While some crucial differences existed between their respective visions, their approaches were primarily

based on the analysis of themes, techniques, and the superimposition of cave art images to develop chronologies and assign them to different cultural periods, such as the Aurignacian, Gravettian, Solutrean and Magdalenian (Gay et al. 2020, 1). One of the most important aspects of these stylistic approaches were Breuil's and Leroi-Gourhan's belief that the evolution of Palaeolithic cave art "in graphic and aesthetic terms, extended over millennia in a single ascending curve that spans the entire Upper Palaeolithic" (Leroi-Gourhan 1965, 38 as cited in Clottes 1996, 277–278). This is significant because it positions Palaeolithic cave art as evolving linearly from 'simple' to 'complex'. Based on this assumption, Palaeolithic cave art was assigned to different stylistic periods, such as Pech-Merle to Style III (archaic) and Rouffignac Cave to Style IV (classic) (Gay et al. 2020, 1; Leroi-Gourhan 1968, 66) that were supposedly characterised by increased degrees of sophistication. While these types of stylistic dating techniques and aesthetic forms of evaluation and appreciation remain essential to the study of Palaeolithic cave art, and rock art more broadly, the development of radiometric dating techniques fundamentally transformed the temporal landscape and contributed to a new appreciation of Palaeolithic art's antiquity.

In the late 1940s, an American nuclear chemist, Willard Libby (1908–1980), his research collaborator, James Arnold (1923–2012), and graduate student, Ernest Anderson (1920–2013) initiated what is now known as the first "radiocarbon revolution" at the University of Chicago (Taylor and Bar-Yosef 2014, 20). It began in 1946, when Libby first proposed the possible effects that cosmic rays might have on the earth's atmosphere and it culminated in 1954, when ^{14}C measurements from about 500 samples had been collected (Arnold 1992; Taylor and Bar-Yosef 2014, 286; Wood 2015, 61). July 12th, 1948 is often considered the "birthday" of radiocarbon dating (Taylor 2009, 202). This was the day on which the first age determination measured by radiocarbon dating was calculated. It was performed by Arnold on a sample of acacia wood from the tomb of Zoser at Sakkara, which was provided by Ambrose Lansing, then a curator at the Department of Egyptian Art at the Metropolitan Museum of Art (Libby 1980, 1017; Taylor 2009, 202; Taylor and Bar-Yosef 2014, 283–284). It was one of six samples of archaeological and geological material published in Arnold and Libby's seminal paper, *Age Determinations by Radiocarbon Content: Checks with Samples of Known Age,* which, as the title suggests, reported tests of radiocarbon dating for "samples of known ages". Using dates from the historical chronology of Egypt and comparing results from radiocarbon age determinations, Libby and Arnold stated that the "agreement between prediction and observation is seen to be satisfactory" (Arnold and Libby 1949, 678–679). This proved essential for establishing the legitimacy of radiocarbon dating (Höflmayer 2018). Yet, results from the second sample measured by radiocarbon dating, which was not published until 1967, produced a contrasting result. It was performed on a sample of wood from the Hellenistic period, which had been supposed by John Wilson, the then director of the Oriental Institute at the University of Chicago. When measured, the ^{14}C was "statistically indistinguishable from that obtained on biomethane – meaning it was a modern piece of wood" (Taylor and Bar-Yosef 2014, 284). While Wilson acknowledged that these results "did not surprise him, as fakes were a common feature of the Egyptian antiquities trade," Libby was "furious" and later stated that had he encountered more fakes "faith in radiocarbon dating would have been rapidly shaken and the research abandoned" (Libby 1967, 9; Taylor and Bar-Yosef 2014, 284).

In 1951, the first age determination for Palaeolithic cave art was published. The age, 15,516 ± 900 BP (C-406), was measured from a sample of charcoal that was taken from the Shaft of the Lascaux Cave's "occupation level by M. Séverin Blanc in 1949 and consisted of conifer *Abies* or *Larex*" (Arnold and Libby 1951, 112; Ducasse and Langlais 2019, 132). In 1958 and 1959, samples of charcoal from the Passageway and Shaft were taken and produced additional age determinations of 17,190 ± 140 BP (GrN1632) and 16,100 ± 500 BP (Sa102) respectively. Around 1966, fragments of reindeer antler were taken and yielded 18,600 ± 190 BP (GifA96682) while assegai bone measured 18,930 ± 230 BP (GifI101110) (Gentry et al. 2011, 482; Glory 1964; Leroi-Gourhan and Allain 1979). It is the radiocarbon dating of the reindeer antler that is particularly important because, as we will show below, it plays a major role in structuring the temporal relationships that influence the visitor experience provided by the rock art replica Lascaux II. Yet this relationship, and indeed temporal relationships with Palaeolithic cave art more broadly, have also been impacted by the developments of another "radiocarbon revolution" that occurred in the 1980s.

In 1987, the first studies were published employing Accelerator Mass Spectrometry (AMS) as a rock art dating technique (Hedges et al. 1987; Van der Merwe et al. 1987). This development in radiocarbon dating was transformative for rock art studies because it allowed organic samples as small as one mg to be scraped from paintings and dated (Moro Abadía and González Morales 2007; Valladas 2003). It was quickly applied to Palaeolithic cave art with age determinations of charcoal pigments in bison images measured to 12,890 ± 160 BP (GifA91319) at Niaux, 14,330 ± 190 BP (GifA91181) at Altamira, and 12,910 ± 180 BP (GifA91172) at El Castillo (Valladas et al. 1992: 69). It was also used to produce the initial dates of Chauvet Cave which measured to 30,940 ± 610 BP (GifA 95,126) and 30,790 ± 720 BP (GifA 95,132) for two rhinoceros and 30,430 ± 570 BP (GifA 95,128) for a bison depiction. These determinations were also supported by other dates from a torch mark made on top

of calcited paintings 26,120 ± 400 BP (GifA 95,127) and two pieces of fallen charcoal from another torch 26,980 ± 410 BP (GifA 95,129) and 26,980 ± 420 (GifA 95,130) (Clottes et al. 1995: 1134). From these initial dates, AMS radiocarbon techniques have served as a bedrock for comprehensive dating programs at Chauvet Cave and have been employed alongside Uranian Thorium Thermal Ionisation Mass Spectrometry (U/Th TIMS) to determine ages of charcoal, bone, and calcite (Clottes and Geneste 2012). Both dating techniques have proven essential to determining two periods of human activity within the Chauvet Cave dating from 37,000–33,500 BP and 31,000–28,000 BP (Quiles et al. 2016).

It needs to be stressed that the radiometric dates for Chauvet Cave remain controversial for some researchers (Pettitt and Bahn 2015a; Pettitt and Bahn 2015b). They also were challenged shortly after the publication of the first dates as they contradicted the established stylistic sequence of Palaeolithic art as outlined above (Züchner 1995, 1996). We are not able to delve into these discussions here. However, these debates show that radiometric dating techniques depend to a large extent on a complex interplay between the past and the present. They are techniques that translate physical or material properties that exist in the present into past processes. They are also fundamentally interpretative processes of inference and extrapolation (Bayliss 2009; Jacobs and Roberts 2007). These aspects are underlined by the increasing application of mathematical and statistical modelling in radiometric dating (Bayliss 2015; Hamilton and Krus 2018). Perhaps more than other aspects of contemporary archaeology, they are reflective of a probabilistic understanding of reality. This situation is slightly ironic because radiometric dating techniques are generally presented and perceived as precise and absolute (and, in that respect, in opposition to traditional relative dating techniques). Radiometric dating techniques appear as the ultimate way of validating the idea that an object or a structure belongs to the past or a different time. However, all objects that are radiometrically dated, exist in the present. They are not frozen in time. They have not remained unchanged. In fact, in all radiometric dating techniques, the determination of the age of an object depends on processes of change. For example, in radiocarbon dating, this is the decay of isotopes through time; in optically stimulated luminescence dating, it is the accumulation of photons in the crystal matrix of quartz grains. Consequently, the replica exists as much in the present as the original object. They similarly gain significance through the above-mentioned processes of interpolation and inference. As demonstrated above, fakes can briefly disturb this illusion. They interrupt the imagination of the ability to access an aspect of the past through a contemporary object. Fakes are interlopers and trickster objects, but their disturbances can equally be caused by bad sampling practices, incomplete sample documentation, archival errors, depositional ambiguities, and sample contamination. The antiquity or pastness of the original object is as much as an illusion as the antiquity or pastness of the replica. They both exist in the present and participate in the unstable and socially constructed temporalities of authenticity and originality.

20.4 Time, the Visitor Experience, and Rock Art Replicas

Our discussion so far has highlighted several important elements. Palaeolithic painted caves can be perceived and conceptualised as places in which time and history are suspended. They refer back in time to a point of origin of human achievement or capacity. The replicas of these caves, however, are reflective of two simultaneous temporalities; they refer both to the past and the present. In each case, there seems to be an underappreciation of the fact that both the replica and the original exist and are constituted in the present. All of these aspects come together in an enhanced form in the visitor experience of the immersive replicated rock art sites Lascaux II and Chauvet Cave 2. Both sites entirely surround the visitor in a fabricated environment removing them from the outside world. Both sites encourage an appreciation of the accuracy of the replication and the sites the replicas are copying. Both sites inspire imagination, wonder and belief. To truly understand how these ideas are created for visitors, it is important to remember that the term ‘visitor experience’ is related to each person’s “immediate or ongoing, subjective and personal response to an activity, setting or event outside of their usual environment” (Packer and Ballantyne 2016, 133). It is personal, subject to change, immediate yet continual. It is not, as it was once described, the result of a transmission sent by an organisation and passively received by an individual (Rounds 1999). It is constructed and framed by a personal context (a visitor’s unique experience, knowledge, motivations for visiting, preferences, interests, and attitudes), a sociocultural context (including a visitor’s social interactions that occur with other visitors and staff) and a physical context (an organisation’s architecture and design as well as the objects and artefacts contained within) (Falk and Dierking 2012, 26–29). While it is not essential to discuss a visitor’s personal context in light of this chapter’s subject, it is crucial to acknowledge how the sociocultural and physical contexts are shaped by the management and design of Lascaux II and Chauvet Cave 2 and how these aspects impact the contentions we have made above. This will enable a broader discussion below of the visitor experience provided by rock art replicas and what these temporal dimensions mean for visitors who chose to interact with them.

Chauvet Cave 2 and its original are located in the Ardéche, southeast France. Chauvet Cave is situated in the side of a

limestone cliff overlooking the Ardéche River and natural nearby archway known as the Pont d'Arc (Geneste and Bardisa 2014, 174). It contains over 1000 graphic representations, including 425 animal figures, in addition to thousands of animal skeletal remains, trails of animal and human footprints, combustion structures and flint artefacts (Bocherens et al. 2006; Caverne du Pont d'Arc 2016). In 2014, Chauvet Cave was inscribed into the World Heritage List for meeting two out of ten criteria. Soon after the Cave was discovered in 1994 by the three speleologists Jean-Marie Chauvet, Eliette Brunel Deschamps and Christian Hillaire, the decision was made to never open the site to the public and instead, satisfy visitor demand through the creation of a replica (Clottes 1995, 30). The result is Chauvet Cave 2, a sprawling complex consisting of a welcome centre, giftshop, on-site museum (Galerie de l'Aurignacien or The Aurignacian Gallery), restaurant (La Terrasse), event space, Palaeolithic Camp, and replica. It is situated just two kilometres from Chauvet Cave on the Razal Plateau, a densely wooded area of about 29 hectares overlooking the town of Vallon-Pont-d'Arc (Duval et al. 2020, 145; Caverne du Pont d'Arc 2016). The replica is housed in an enormous round grey concrete building that is engraved with patterns created by scanning the Chauvet Cave (James 2016, 523). It condenses the original cave from 8400 m^2 to 3000 m^2 and selectively reproduces 82 sections of the site's archaeological and geological features. Through a combination of scanning, modelling, casting and hand painting, the replica is within millimetre accuracy of the original Chauvet Cave (Duval et al. 2020, 148–149). For visitors, the result of this display, and the broader Chauvet Cave 2 complex, is striking (Fig. 20.2).

Visitors to Chauvet Cave 2 typically attend the site for 3 h (Caverne du Pont d'Arc 2016). During this time, visitors move through the grounds on a network of dry gravel paths that connect the buildings by no more than a few minutes' walk from one another. Five information shelters spread throughout the site serve as rest stops and present visitors with information on both the Chauvet Cave and the replica. One shelter, for example, details the dating activities at the Chauvet Cave and states that both dating and stylistic features of the cave paintings "allow us to assign them to the Aurignacian culture, that is, the first *Homo sapiens* culture known in Europe". This message is reinforced in The Aurignacian Gallery, where five reconstructed human figures depict the "daily life of Aurignacian families and the activities of the artists" and replicas of Aurignacian mobility art, including the *Löwenmensch* found at Hohlenstein-Stadel in the Swabian Jura in southern Germany, are displayed in well-lit cases (Caverne du Pont d'Arc 2016). Yet, it is the paintings inside the replica that most visitors are eager to see (Mayer 2020, 123). Similar to an original rock art site, the only way to see the paintings is through a guided tour of the replica. In the summer season, guided tours occur every 6 min in groups of about 25 visitors. Visitors meet their tour guide outside of the replica to collect their headsets, which allow them to hear the narration of the guide throughout their tour. Moving down an enclosed concrete ramp and waiting at a set of double doors visitors are instructed not to take pictures or video, not to touch the replica and to turn off their mobile devices (Mayer 2020, 93). With the anticipation building, visitors listen intently as their guide (who vary slightly in their approach) says softly, "I'm going to take you back a bit in time. It's 18 December 1994" before describing how the Chauvet Cave was discovered and the reasoning behind the site's permanent closure to the public. The guide then goes further:

> We will travel 36,000 years into the past. We're going to make a huge leap back in time to the Ice Age when Aurignacian people lived… I hope that everyone understands that this visit might completely change your perception of who the *Homo sapiens* were and I'm going to do my best to make that happen. Welcome to the Cave (Duval et al. 2020, 152).

Fig. 20.2 The reproduced Panel of Horses at the second last stop inside the replica at Chauvet Cave 2. (Photo: Carole Fritz; reproduced with kind permission)

It is here that the illusion begins. The double doors open, and visitors are carefully ushered onto a wide platform that hovers above the floor of a pristine cave complete with sparkling stalagmites and stalactites, floors littered with animal bones and bear-scratched walls. The double doors close and visitors are at the first of ten stops of a roughly 50-minute tour. Throughout, visitor attention is directed to large red dots made by palm prints of ochre, a bear skull placed on a large block, a unique representation of an owl on the cave wall, and more. The final two spectacular stops, which include the Panel of Horses and the Panel of Lions, are described by the guide as the beginnings of art and human visual expression (Mayer 2020, 95). The impact of these interpretations on some visitors is evident. Visitors interviewed after their tour said to one of us (LM) (Mayer 2020, 148–164) (Fig. 20.3):

> The tour guide was very good because she really got you in the zone… so by the time the door opened you were already thinking you were going into a cave (I29-R2-M-48)
>
> I think you forgot it was man made so you went with it, I mean I suppose it's like going into the [movie] theatre or something, you lose touch of reality… (I08-R1-F-35)
>
> [I] was saying to these guys that we were going to show them the, you know, earliest ever art… [from] 36,000 years ago… (I23-R1-M-42)
>
> It's actually incredible… when you consider how old that is, you know, it starts your mind thinking well, 'what were those people thinking? Why were they drawing it?' (I24-R1-M-56)

These comments can be contrasted with those made in relation to another immersive rock art replica, Lascaux II. The Lascaux Cave and Lascaux II are located in the Dordogne department in southwest France. Lascaux Cave is situated in a hillside overlooking the Vézère Valley and the picturesque town of Montignac. The Cave was discovered by four boys, Marcel Ravidat, Jacques Marsal, Simon Coëncas and Georges Agniel, and the dog Robot in September 1940. It contains over 150 paintings and 1500 engravings distributed throughout the cave that provide sweeping views of horses, aurochs, ibex, and deer (Delluc and Delluc 1984, 194). In 1947, the owner, Count de la Rochefoucauld-Montebel, instigated several changes to make the cave more accessible to visitors. This included removing rock and sediment deposits that blocked the entrance, lowering the cave's floor, and installing lighting and a walkway (Martin-Sanchez et al. 2015, 282). In July 1948, Lascaux Cave was opened to the public and visitor numbers quickly grew to 1500–2000 per day. By 1960, damage to the cave was evident. Its microclimate had become disrupted by condensation, higher temperatures, and increased carbon dioxide levels. Green stains along the walls had also begun to appear and by 1962, they had spread to critical levels (Martin-Sanchez et al. 2015, 282–283; Mauriac 2014, 244–245). In 1963, the owner closed Lascaux Cave to the public, and plans were made to create a "faithful" replica of it. After several delays and 11 years of stop-and-start work, Lascaux II opened to the public in 1983. Through 500 tonnes of carefully modelled concrete, meticulously sculpted surfaces and hand painted images, Lascaux II reproduces two of the Lascaux Cave's seven sectors, the Hall of the Bulls and the Axial Gallery, to within centimetre precision. A small museum precedes the replica, which is designed to provide information about the Lascaux Cave's archaeology and historical environment (Delluc and Delluc 1984, 195). Both sit underground in a buried complex about 300 m from Lascaux Cave and are supported by additional facilities, including a giftshop (James 2017: 1368). As a whole, this site provides an increasingly intimate experience for visitors.

Visitors to Lascaux II typically begin their tour soon after arriving at the site. After queueing at the undercover replica entrance area, they are ushered down a flight of stairs and into the first of two museum chambers. It is here that the tour starts. In a group of about 20, the guide directs visitors to a map of Lascaux Cave and explains that they are about to see about 90% of its paintings. The guide then moves visitors to a set of black and white pictures and vividly describes how four teenage boys discovered the cave and how they, "just like you in a few minutes," entered the Hall of the Bulls for the first time. After hearing the reasons behind shutting the cave to the public, the guide describes how the paintings inside Lascaux II were created using the "same techniques and the same pigments that Cro-Magnons used." In the second museum chamber, visitors are led to more pictures of the Lascaux Cave, which are used to illustrate the rare use of

Fig. 20.3 The final stop inside the replica at Chauvet Cave 2. (Photo: Carole Fritz; reproduced with kind permission)

black, red, and yellow in rock art in the Dordogne. The guide, almost whispering now, says:

> These colours are minerals that Cro-Magnons found in nature and then pounded to make a powder… We know that these paintings are approximately 20,000 years old. Imagine that time. It was completely different. It was the last Ice Age. Temperatures were cold… and reindeer [made up] 90% of their food… These days we are sure that these men, these cave men, never lived in caves… So, the real question is why would they come here? Why would they risk their lives to paint? (recorded during the English tour at 10:10am on 15 August 2016)

It is here that the guide opens up two sliding doors to the first of the replicated rock art chambers, the Hall of the Bulls. The light is low, the temperature is cool, and the guide steadily directs visitor attention from one painting to another through the careful use of a torch. After answering thoughtful questions from visitors, the guide explains that while most animals in the cave have been identified, some, such as those in the Unicorn Panel, remain a mystery. After moving into the narrow Axial Gallery, most visitors are forced to lean up against cold walls of the cave as the guide highlights figures of horses with small heads and large abdomens. Symbols are also illuminated by the guide who instructs the group to take a moment to appreciate the beauty of the paintings before leading them out onto a platform overlooking to woods to conclude their tour. After this experience, visitors interviewed at Lascaux II (by LM) said (Mayer 2020, 171–190):

> I personally enjoyed the tour guide. She gave it a sense of profoundness… and she gave it some drama… (I82-R1-F-56)

> You feel like you're in a real cave… The whole atmosphere, the shape, the walls, the way it looks, the way it feels to touch, the temperature (I67-R1-M-17)

> It's like the beginnings of art and that sort of thing (I83-R2-F-56)

> [I] felt it was quite moving, you know, quite an amazing thing, you know, art from 20,000 years ago… The people in an evolutionary sense, they were just like you and me, you know, they weren't a different species, they were like us… I personally think it's really extraordinary (I44-R1-M-45)

As the visitor experience of these replicated rock art sites unfolds, the tour guides and the environment of the replica strongly mediate visitor perceptions of pastness and origins. Within the replicated immersive displays, tour guides not only become brokers of physical or emotional access (Weiler and Walker 2014); they become masters of time. At Chauvet, they evoke the notion of time travel ("we will travel 36,000 years into the past") and the cave as a place of origin. The existence and elaborate design of the replica is celebrated ("I think you forgot it was man made so you went with it") and denied at the same time or in short succession ("when you consider how old that is, you know, it starts your mind thinking well, 'what were those people thinking?'"). At Lascaux II, the guide is just as influential. Visitors are ushered underground and told how they ("just like you in a few minutes") will discover the Hall of the Bulls for the first time. It is here that time is suspended and the pastness of the replica, or more broadly a sense of authenticity and originality, is bestowed on Lascaux II through its material connection to Lascaux Cave ("the same techniques and the same pigments that Cro-Magnon used"). The guide creates perceptions of time travel by describing the age of the Lascaux Cave's paintings ("we know that these paintings are approximately 20,000 years old") and encourages visitors to place themselves in that time ("imagine that time… It was the last Ice Age"). The environment of the replica contributes ("you feel like you're in a real cave… the whole atmosphere, the shape, the walls, the way it looks… the temperature") as does the visitors themselves through constructing meanings ("it's like the beginnings of art" and "the people in an evolutionary sense, they were just like you and me, you know, they weren't a different species"). Visitors are made aware of the replica but are enabled to appreciate the significance of the original at the same time. They are able to perceive the replicas as modern constructions while connecting them to the age (20,000- or 36,000-year-old) of the original rock art. The visitors, therefore, are able to establish a connection between an origin moment in the history of humanity and their own unique existence in the present.

20.5 Conclusion: Replicated Temporality and Imagined Pasts

The discovery of the Palaeolithic painted caves in France and Spain continue to have a deep impact on public intellectual life far beyond the field of archaeology. It appears that the fascination of the caves has not changed or declined since the general acceptance of their antiquity about 120 years ago. The key to this fascination is, obviously, the notion of art and the connection to the definition of humanity itself. These relationships not only allow a connection between the paintings and every modern observer. They also have fascinated and continue to intrigue a considerable number of art historians and artists (Pfisterer 2008; 2007). Stavrinaki (2020) has recently discussed George Bataille's deep engagement with Lascaux Cave, which became a key aspect of his writings about anthropogenesis (e.g., Bataille 1955). For Bataille, Lascaux was a miracle that "didn't just break continuous time; it also contorted it enough to actualise prehistory at the heart of the present" (Stavrinaki 2020, 206–207). Hence, Lascaux is the material reflection of the origins of art in the deep past and because of its miraculous preservation, it enables the experience of this crucial moment of human becoming.

As discussed, these notions have been almost completely preserved in today's visitor experiences of the replicas of Lascaux Cave and Chauvet Cave. The most significant elements of Bataille's vision appear to be largely unaffected by the fact that visitors are not engaging with the original place and the original art. The replication of key aspects of the original as well as the careful mediation provided by the tour guides allow the visitors to negotiate the two temporalities of the replica referencing the present and the deep past. Following Bataille, we could even distinguish four or five temporalities: the present (visitor experience), a shallow past (the creation of the replica), a historical past (the discovery narrative of the caves), the persistence of the deep past (the preservation of the original), and the deep past itself (the creation of the original). We will not be able to discuss and disentangle these intriguing complexities here. However, they rather point to issues that still need to be addressed in future research and how authenticity and originality is constructed and navigated through different and intersecting temporalities. This research could extend to the newer rock art replicas of Lascaux Cave (Lascaux IV) and Cosquer Cave (Cosquer Méditerranée) and virtual rock art caves, which inherently involve the "'weirdness' of the digital realm" and include Chauvet Cave, among others (Jeffrey 2015, 145).

In the paper mentioned above, Stavrinaki (2020, 207) argues that Lascaux became the beginning of art arbitrarily because of its perfect preservation but, foremost, retrospectively, "by pure decision of posterity". It is through these processes that elements of origins research (cf. Gamble and Gittins 2004) become entangled in the processes of the creation of heritage. These are processes of the control of time, which have elsewhere been discussed as chronopolitics (Borck 2018). These are always negotiated within dialectical relationships at individual and collective scales and involve the control of origins and the definition of authenticity. In 1973, MacCannell (1973) wrote how authenticity or, more specifically, the search and desire for authenticity, shapes touristic and cultural settings and provides visitors with intimacy and a sense of belonging. The past is transformed from an inherently personal experience to one that is collective and communal, a symbol of continuity and immortality (Lowenthal 1975). Within these processes of collective constructions of the past, descriptions of the art inside the replicas as a 'beginning' can become problematic. When time is brought to a standstill, it can become subject to manipulation and control. When an origin is tethered to one place only, it can become exclusive and exclusionary. In future research and heritage management practices, these are key aspects that need to be critically assessed to fully understand the role of rock art in the twenty-first century and to situate it within past and present processes of globalization.

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Slow Science But Fast Forward: The Political Economy of Rock Art Research in A Globalized World

21

Margaret W. Conkey

Many of us have been running all of our lives. Practice stopping.

(Thich Nhat Hanh, cited by Cohn 2022)

Abstract

There is no doubt that the past decades have brought exciting and novel understandings about geographic distributions, chronologies and analytical methods to the studies of rock art. Even from the lurch into the twenty-first century, this has been a fast forward: increasing confirmations of early image-making in Australia and other places; successful application of a new dating method to reveal previously unimagined figurative images in very deep time in Borneo; a proliferation of rock art knowledge and research; and expanded and interconnected communities of researchers are just a few among many examples of fast-breaking news for the field. But at the same time, some of the practices that are decried by the arena of "slow science" are still with us and have, perhaps, precisely as part of the "globalization" of rock art research, become more entrenched by those who consider the field to be more competitive than collaborative, still motivated by the pull of "origins" research and claims, and the lack of retractions when, indeed, a need for such is at hand and for the betterment of the field. Slow science promotes time to think, rather than haste to get out the big next "scoop"; it promotes the reminder that we are enmeshed more than ever in broader social interests, human experiences and human needs, and for a more lasting and even an ethical science, racing ahead is deeply problematic. This chapter will explore the issues implicated by the fast-moving world with its dampening of local knowledges and alienations of non-experts as is situated in rock art research and the benefits/mandates of what slow science can bring to the field. In fact, I will suggest that rock art research is an ideal field for advancing the benefits and the power of slow science.

Keywords

Slow science · Slow rock art research · Knowledge economy · Scoops · Origins/the earliest research · Indigenous archaeologies · Humanistic science

21.1 Introduction

In this chapter, I will primarily discuss aspects of the slow science movement and how this exposes some "matters of concern"[1] – more so than "matters of fact"– in rock art research, especially in association with the globalization of research, researchers, and research findings. First, I will provide some history and basic principles of slow science, a movement that has been around for several decades, at least, even if it is not exactly coordinated and centralized as a movement might be. From that, I will try to draw out some of the implications for how archaeology in general and rock art in particular have been, in some cases, in tension with–or even in contradistinction to–what a slow rock art science would endorse. The themes that emerge from this include the on-going over-valuation of origins research and the "big scoop", the resistance to reflexive reconsiderations (much less to any sort of retractions), and the often-prevalent competitive spirit at a time when, if anything, collaborations and community-based research are being not just developed but

[1]As differentiated by the late Bruno Latour (as cited by Stengers 2018, 3) whereby considering 'matters of concern' "insists that we think, hesitate, imagine and take sides...what they require is the power to make people think about what concerns them".

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elaborated and instantiated such that our research is coming to be as much about relationships as about "facts". This is not to deny the impressive and revelatory research that is being done, as well as the development of many research practices that are advocated by the slow science movement such that soon, we hope, they become even more integrated and central to what it means to do rock art research. Many chapters in this volume attest the achievement of those aspirations of rock art research that are more congruent with a slow science approach. But the political economy of rock art research is nonetheless with us, and, as with other fields of inquiry, the knowledge production economy can all-too-readily constrain and divert our research, especially in the context of a more globalized community of scholars that may well promote competition more than collaboration and contemplation. I aspire here to develop why rock art research could be among the key research fields that could not only benefit from more slow science but also be a notable leader/example.

21.2 Slow Science and the Slow Science "Movement"

There is quite a long and varied history to the development and evolution of slow science. Some aspects of it—such as its extensive manifestations in educational and pedagogical theory and practice—will be outside the scope of this summary discussion (see, for instance, Menzies and Newson 2007; Salo and Heikkmen 2018). However, as ethnoarchaeologist/anthropologist Olivier Gosselain (2011, 129) has described it, there has developed "a huge gap between a bureaucratic conception of research" —with all of its evaluation metrics—"based on… neoliberal dogma and corporate management, and the actual practice of research, based on the mutual commitment of researchers who strive above all to do their work honestly" and often for creativity and fun as much, if not much more so, than for the so-called excellence that such bureaucratic mandates seek (quotations translated from the French). Thus, the title of Gosselain's paper: "Slow Science: La désexcellence".[2] Gosselain, among others, notes that the quest and calls for a more slow science have come from many different and independent disciplines and voices, such as Eugene Garfield (1990), an information scientist; Carl Honoré (2004), a journalist; Lisa S. Alleva (2006), a molecular and cell biologist; Isabelle Stengers (2018), a chemist and a philosopher of science; Salo and Heikkmen (2018), educational researchers; and, more closely related to rock art research, see Paul Lane (2016) and other ethnoarchaeologists (Cunningham and MacEachern 2016; Brady and Kearney 2016; Gosselain 2016) there is now even a "slow birding" (Strassman 2022) that embodies a key way to think about this: more contemplative than competitive.

While one might think that all that slow science involves is just slowing down rather than fast-tracking one's research, taking more time to collect data and to publish, the concept is actually philosophically deeper than this (e.g., Stengers 2018; Honoré 2004). Certainly, the fast-tracking exists and has perhaps become accentuated, especially with the demand for publishing in the high-ranked journals (with their own narrow formats that tend to channel only certain kinds of claims and reporting genres, see in Stengers 2018, 48–52). In interesting essays that are explicitly about slowing down aspects of archaeology, Caraher (2013; 2016) suggests that the digital enhancements of the practice of archaeology—such as the use of iPads and delimited recording forms—have pushed what has been a craft (Shanks and McGuire 1996) to an often dehumanized and mechanized collection of standardized data. Kansa (2016) also draws our attention to the genuine need for "critical reflection on how new media become part of our profession": what are "the forces that shape the branding, management, and financing of digital data in archaeology"? (Kansa 2016, 444). This is a question that should be asked about all of archaeology, not just digital data methods. These critiques and calls for critical reflection come from fully engaged practitioners of the very domains that they are critiquing, such as Kansa's identification of himself as a "dedicated digital archaeologist' or Gosselain's concerns about his own field of ethnoarchaeology (Gosselain 2016). While some of these critical concerns are in relation to the increasing use of new and multiple "digital" methods, methods that themselves have contributed to the faster pace of research, similar sorts of critiques obtain for other emerging and new methods (e.g., DNA analyses, Marila 2019), ranging from dating methods as well as various geoscientific methods of research, analysis and representation, such as illustrations and other visuals. As Kansa notes for digital developments, a more widespread constraint on the rewards and practice of a slower science is the funding methods that privilege the short term and enhance the competitiveness inherent in the fast sciences.

There are various developments in the practice of science and the presentation of its results that mitigate against the possibilities of a scientific practice that enables the relationships between researcher and the worlds they are not just researching from a "scientist standpoint" but within which they are embedded. It is this embeddedness that a slow science wants to recuperate and draw from. In a telling observation, Stengers notes that perhaps some of the first practitioners of a slow science were women primatologists[3]: "They allowed themselves

[2]One term often used in discussing slow science, "désexcellence", is attributed to Isabelle Stengers (2018), but see Gosselain 2011.

[3]Suggesting that they did not have to worry about demonstrating they had the "right stuff" to be a researcher; as women, they had little hope

to be affected by the beings with whom they were dealing, looking for suitable relationships with them, putting the adventure of shared relevance above the authority of judgement" (Stengers 2018, 42). I will return to this aspect of a slower science of and for rock art in a later section.

21.3 Matters of Concern with "Fast Science"

In 1990, Eugene Garfield's short essay in *The Scientist* pointed out what we all know at some level: "Fast Science vs Slow Science, or Slow and Steady Wins the Race". He notes, however, how there exist various "hot fields" that are "highly publicized, hyperdramatized", and that are, furthermore, elaborated by "the media, [which is] ever in pursuit of the big story, the banner headline, stoke the fire, seizing every opportunity to trumpet sudden breakthroughs" (Garfield 1990, 14). Many of us have long noted this with the many versions of "origins research" in archaeology, especially given the prominence of origins research in the political economy of archaeology that over-values it (Wobst and Keene 1983; Conkey with Williams 1991; see also Carroll 1990 on the gendered implications of "originality"). For Garfield, the key problem with this image of how science is done is that it creates and perpetuates the deeply problematic notion that "scientific progress is achieved primarily in sudden flashes of genius" (Garfield 1990, 14) or in archaeology, in sudden unanticipated discoveries. Despite the realities of how most of our research is done—slow and steady—certain topics, fields and researchers are often caught up in going for the "scoop". In a *Science News* note entitled 'Risk of being scooped drives scientists to shoddy methods', Cathleen O'Grady (2021) summarizes the research of Tiokhin and his colleagues (Tiokhin et al. 2021). Their particular study definitely reminds us that scientific disciplines vary, and, for rock art research, we need to ask ourselves—with a critical stance—how much do we reward being first to publish, how likely or how rarely do our journals and other publication venues publish negative—or at least disappointing—results, and how difficult is it to get particular projects with less well-known researchers[4] off the ground? (Fig. 21.1)

The matter of concern that Tiokhin and colleagues raise—"getting the scoop"— suggests how the competition for priority can actually "harm the reliability of science" (Tiokhin et al. 2021, 857). Of particular relevance here for rock art and related archaeological research is how this can, for example, readily lead to research with smaller samples. We are particularly vulnerable to this problem, given the inherent nature of archaeology with its issues of preservation, taphonomic constraints, and poor sample sizes in general, often leading however, to grand generalizations based on inherently limited data.

Has it been the case that some rather grand inferences have been made based on a relatively small sample? One could certainly cite here the debate over the inferences about "Neanderthals made art" (see Hoffman et al. 2018a, b; White et al. 2020) based on just a limited number of controversial dates, a study that furthermore involves not only the debated accuracy and use of the methods used (Pearce and Bonneau 2018; Pons-Branchu et al. 2020; Sauvet, this volume; Slimak et al. 2018) but also its appearance as a cover story in the top-ranked journal, SCIENCE (Hoffmann et al. 2018a) as if something of general scientific significance has been solved. It has been noted in the wider scientific literature (e.g. Franco et al. 2014) that "preferentially valuing positive over negative results can generate publication bias, which distorts the published literature" (Tiokhin et al. 2021, 858) or, more seriously, promotes the "canonization of false facts" (Nissen et al. 2016, 1). In the "Neanderthal art" case, for example, not only did more skeptical and challenging views not be given much support, but the contested view has been integrated without question into further literature (e.g., Bahn 2021, 2) and also into the general public's (unquestioned) narratives about the "origins" of Art-making. Art-making, in turn, has long been a highly valued feature[5] of humanity from the Western perspective, and as such, any claims to having "identified" it, especially the "earliest", are ideal attributes to constituting a "scoop". One unfortunate result of many "scoops" – of even just some fast science that has been perhaps mobilized by the pressures to produce positive results[6] – has been the need for corrections (which, of course, can be important and illuminating) and actual redactions. As Stengers notes, in her critique of the all-too-influential role of the so-called top ranked specialist journals:

> Without even mentioning fraud or misconduct [!], the number of articles 'withdrawn' after publication (meaning: 'should never

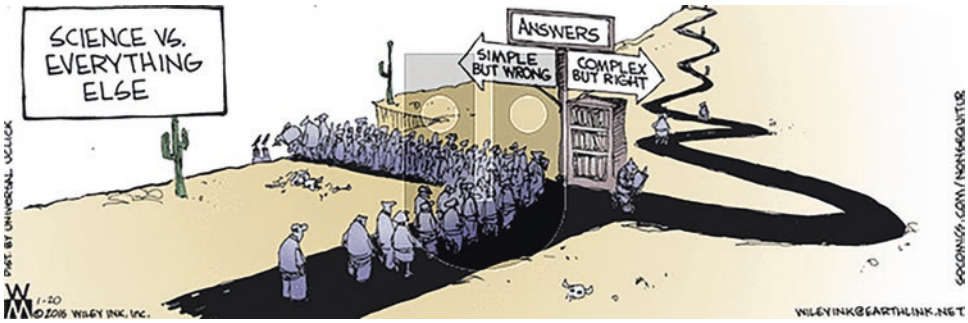
of a career path (Stengers 2018, 41–42).

[4]This brings up the interesting but problematic Matthew Effect (Merton 1968) whereby peer recognition allows already eminent researchers to win more recognition (and support) than their unknown peers; a sort of the "rich-get-richer" syndrome. See one recent study that confirms this (Brainard 2022). Not surprisingly, it is often those from elite institutions, countries, genders or other more dominant groups that are privileged. Has this too been operative in rock art research?

[5]See e.g., Conkey with Williams (1991) for a fuller discussion of how such human practices that we might call Art are part of the deeply problematic ways in which archaeological categories and preferred objects of knowledge are defined and then privileged as core features of the acceptable and desired archaeological narratives. Thus, in the political economy of archaeology, those who pursue the origins of such categories are endorsed and elevated. We are too often mobilized by an "unacknowledged hierarchy of values that dictates" what we should be studying (after Anthony Cutler, personal communication, 1991).

[6]The important study by Nissen et al. (2016) points out that the publication of negative results is "essential" for good science and that "stronger evidentiary standards do not reduce the need to publish negative results" (2016, 8 and 10).

Fig. 21.1



> have been accepted by the referees') is sharply increasing, including and even mostly in the top journals! (Stengers 2018, 51).
>
> It's polluting good science-conflating the good science we do with this ridiculous sensationalism and sucking all the oxygen out of the room (Desch in Miller 2023).

The top-ranked journal *Science* often now publishes retractions[7] (e.g., Thorp 2022, Sills 2020, 2022; see also Piller and Travis 2020). Sometimes we need to resist rushing to some conclusions without at least admitting that the results could be only preliminary.

Often, as Aubert (quoted by Zimmer 2023, A11) has described for some recent early hominid behavioral claims, including the so-called authorship of some wall engravings, "it seems that the narrative is more important than the facts". This particular case has presented the most egregious instance of widespread and spectacular but unsubstantiated claims – that an early hominin species, so-called *Homo naledi* found in the Rising Star Cave system (South Africa) at more than 240 thousand years ago – not only intentionally buried their dead but also created what they term "rock art" (see e.g., Berger et al. 2023). While multiple reviewers of the online account in e-Life have taken strong exception to claims that lack empirical support and a detailed published challenge to these claims has also been published (Martinón-Torres et al. 2023), the research team has nonetheless continued to promote their (as yet unsubstantiated) claims in multiple media outlets including having arranged for their own Netflix show and outraged the scientific community by sending some of the fossils themselves into a space orbit. By now, the wider public can only assume that these so-called "facts" are true and they become the pinnacle of the "canonization of false facts". But with this case, one that centers on the "origins"or deep time manifestation of so-called rock art, can be likened to other recent problematic cases in science, such as the astronomy researcher, Avi Loeb's claims about extraterrestrial life:

Even more significant is that such unsubstantiated and sensationalist claims and media promotion not only "skew public perception of how science works" (Desch in Miller 2023) but also poison the process of scientific review. Many potential and more objective peer reviewers of pre-published papers shy away from engaging with such claims and research papers and thus it is too often the case that it is only supporters of the research at hand that review and more than likely endorse it: "a real breakdown of the peer review process " (Desch in Miller 2023) that is so crucial and central to the scientific process.

It is relevant to note as well that metric research has shown that in many fields, especially those in the sciences, there are fewer reports that "hedge" about their observations research results (Yao et al. 2023). That is, by asserting rather than using language of some uncertainty or tentative-ness many published research papers characterized by a linguistic positivity are as much about promoting the research as about the possibilities for further research, alternative results and observations or even about ambiguity and doubts.[8] (see also Corneille et al. 2023).

There is nothing wrong with preliminary results or that there are alternative accounts, especially in archaeology given the inherent ambiguity of archaeological data (e.g., Gero 2007; Tringham 2023). There have been some interesting debates about a number of rock art manifestations in the United Kingdom focusing on both if there is an image at all and, if so, is it a depiction that could be attributed to past image-makers (e.g., Mullan et al. 2006 in regard to the "mammoth" from Cheddar Cave) and/or if it can be dated to or attributed on other grounds to a late period in prehistory,

[7]With the development of increasingly sophisticated uses of such software as Photoshop for the necessary illustrations, there has developed another area in which fraudulent or at least misrepresentation has increased (see Bik 2022, "Science has a Nasty Photoshopping Problem").

[8]In the Yao et al. study of papers published in SCIENCE over 25 years (from 1997–2001), they noted that the use of hedges (that expressed some doubts and uncertainties) decreased significantly. They suggest it has been the combination of both using more positive language and the reduction of uncertainties in the writing strategies that have developed, with important implications for peer reviewers, editors and researchers. "Hedges", they note, continue to be more widespread in the humanities and social sciences.

even to the Paleolithic (e.g., the reindeer in the Cresswell Crags, see: https://www.bradshawfoundation.com/british_isles_prehistory_archive/gower_peninsula_south_wales/reindeer_discovery.php).

And while rock art research that seeks or is engaged in some form of the earliest/origins quests is hardly the majority of rock art research, especially in the past decades where we see some very different approaches, nonetheless, it is an aspect of rock art research that is prone to what Garfield noted for fast science— "highly publicized, hyperdramatized", elaborated by "the media, [which is] ever in pursuit of the big story, the banner headline, stoke the fire, seizing every opportunity to trumpet sudden breakthroughs" (Garfield 1990,14). Stengers would call this "candy for the media" (2018, 51). Martin Porr (personal communication, 2022) reminds us that perhaps this fascination with origins, or that some art is claimed to be the earliest, is primarily a Western perspective that is incompatible with the understandings of (or just plain not of relevance or interest to) many Indigenous groups who engage with rock art. Brady and Kearney (2016), following their rock art experiences with Indigenous people in both Australia and the US Southwest, call for liberating researchers from a "linear temporal logic and empirical benchmark" and for abandoning (what are to those in the western and/or Global North) "conventional notions of time" (2016, 643). That is, to whom does the label, "earliest", matter? Why should there be such an emphasis – if not, a privileging – of locating the origins of Art? As has been suggested (Conkey with Williams 1991, 104–105), as soon as one origins claim is made, the ever-present temporal gap is simultaneously created: "A gap that is expected to be filled in some day by some equally heroic discovery". There is no closing of the gap, no finality. And origins research – as a key object of knowledge – has become a primary means through which archaeology interfaces with the public (Conkey with Williams 1991, 128) as well as is more highly rewarded in the knowledge-production economy.

Other highly publicized issues in rock art research are, unfortunately, often about the damages, destruction, effacing, or fundamental challenges to conservation and preservation (e.g., the on-going situation with the amazing Murujuga rock art of the Burrup Peninsula in western Australia, see https://www.fara.com.au/murujuga-burrup-rock-art-conservation-project/ where climate activism and urgency about perceived threats from industry emissions and general industrial expansion is creating some fast science (Smith et al. 2022a, b), hyperdramatized, often inaccurately reported through a media barrage, in contrast to the slow science being undertaken by a multidisciplinary team of 40 scientists who have conceptualized and are now implementing, albeit belatedly, an internationally peer-reviewed programme to understand the nature of cumulative emissions from the industrial estate to rock art across the archipelago (McDonald 2017) to allow the appropriate management decisions to be made: see https://www.wa.gov.au/service/aboriginal-affairs/aboriginal-heritage-conservation/program-murujuga-rock-art). Conservation itself is not a neutral process and it often plays a key role in negotiations and conflicts over who are the "experts"[9] in the relevant decision-making, what warrants being conserved, and for whose histories are being 'protected' (Caitlin O'Grady 2021). Rock art conservation in settler countries often involves the mobilizing of "green" agendas that almost inevitably impact on 'black' agendas for a range of reasons (see, for instance, Altman 2010; Pickerill 2018; Vincent and Neale 2017). In the case of Murujuga, by privileging individual Indigenous voices over a recognized Indigenous governance collective (Jeffries 2023), there is an even more potent and divisive struggle, particularly as this Aboriginal community strives to demonstrate its management authority over this cultural landscape through a nomination to UNESCO (see chapter by Stevens and McDonald this volume). As Caitlin O'Grady reminds us, "the power of conservation to legitimize claims about the past through preservation" and the "process of transforming cultural heritage into accepted narratives has been an integral part of conservation practice" (Caitlin O'Grady 2022b; see also Caitlin O'Grady 2022a). And, while it is often through the contested methods, "results" and issues that any discipline evolves and grows, a more "slow science" approach for rock art, as advocated implicitly by Brady and Kearney (2016, 643), calls for "methodological openness" and a "distinctly dialogic process" in which "all is potentially challenged, reconfigured and redefined". We must be prepared to accept and act on those challenges.

21.4 Slow Science for Rock Art Research

Here I suggest that there exists rock art research that is already within the parameters of what "slow science"can be about, but also how rock art research could take a lead in advancing slow science. To do so, I propose two key and inter-related features of slow science that seem particularly relevant to and also already part of some rock art research. I also want to reiterate that it is not just the issues of a "slow science movement" for archaeology that warrants being held up as relevant and of potential value and applicability. Rather, there are at least two

[9]It is useful here to take note of the important discussion of "boundary work" (Gieryn 1983) that probes how an "expert" is constituted in the demarcations between scientists and non-scientists. See how a Getty Conservation Institute roundtable discussion of "experts" on the preservation of rock art and its significance are four individuals (albeit smart, active and important contributors) but did not include local or Indigenous, or so-called non-specialists (Agnew and Levin 2019, 18–23).

other intellectual, conceptual and evolving resources for generating a slow science *in* and *for* rock art research. Both feminist and indigenous practices in archaeology offer complementary and sustaining support for a slow archaeology; in many ways both approaches are inherently "slow" in slow science ways. One particularly prominent treatise on "slow science" in general (Stengers 2018) is simultaneously feminist-based, with many specific reminders of the differentially gendered nature of the practices—and thus the "results"—of science. Without elaborating here on what each of these two scholarly/theoretical domains is about – the literatures for both are extensive – they are both rich and relevant conceptual resources for how a "slow science" for rock art (and other archaeological/anthropological subjects of inquiry) should be generated (for some approaches that draw on both, see Conkey 2005 and especially Supernant et al. 2020). Some of what these approaches have to offer are incorporated into the following discussion.

I focus on two key aspects of a slow science for rock art. First, there is the very core concept and issue of "slow": what exactly does this mean, require and provide? Certainly, one feature is to not only practice research and presentations that avoid being overly strong without nuance or recognition of ambiguities as well as too hasty but also to call out such moves by our colleagues. The second key component is that of relationships. Not surprisingly, these two features are interconnected. At its most literal level, a "slow science" rock art programme requires that one slows down in the research process especially if – as it is most often the case – the research involves co-design, permits, and engaging with local people, including but not limited to descendant communities or others who are, at minimum, "interested parties" such as the public and those with intellectual property rights and title holders.[10] Even in instances where there is not an obvious and defined "descendant" community, local relationships are the foundation of a research project, especially since most rock art research is place-based, involving living communities and locations. In fact, as Dodson (1994) concisely noted: "Heritage is bundled relationships". The "slow" part here is that these can take time and that time needs to be respected. Of course, while researchers are often at the mercy of funding agencies and permitting processes, a slow science approach actually requires us to work on changing and educating those very entities. Yes, a slow science approach and commitment actually mandates that we not merely do our own research but challenge[11] and change the very structures that push "fast science".

But slow means more than considering how to moderate the timeline of one's research programme. It implies that our project plans must be flexible enough to allow the time for consultations and local engagements, but it also implies that we must reign in our ambitions and allow primary time for such factors as a methodological "rigor" that is coupled with ethical practices. While we researchers may well tend to assume we are obliged or even want to work at the pace – an acceleration – of research and reporting that is typical of the press, mass media and increasingly of social media, this is rarely appropriate for the pace and requisite prudence of our desired scientific research that is coupled with an explicitly humanistic framework (Moro-Abadía pers. comm. 2023). I doubt that the practitioners of "fast science" engage much at all with the very concept of "prudence"! There are some rock art researchers who have indeed "accommodated" the tempo of research to the needs of different communities, and while this may have slowed down the publication of results, Moro Abadía (pers. comm.2023) notes that such slower practices have often had both epistemological (e.g. Tapper 2020) and social benefits, such as contributing to healing, well-being, and recuperating cultural identities (see Atalay 2020; Schaepe et al. 2017).

As one faces the demands (usually institutional) to publish, publish, publish, one has many questions if a slow science approach is at hand. First is actually questioning if a printed publication is what one wants/needs to do. Besides the access issues (of many sorts), such as who even would or could have access to the publication, Kitcher (in Izzo 2023, 4), in response to a recent study of scientific productivity overall[12], suggests that researchers should consider thinking "more slowly and carefully about how they allocate their time"; they are being pressured to publish too much and instead [should] do more "qualified and detailed studies". Once again, a slow science approach mandates demanding structural changes.

And indeed, there are other issues related to the "publish or perish" mandate in rock art research. For example, are there ways to record imagery—if that is part of a project—that are non-invasive or are there ways other than literal recording to understand what rock art images are "there" if their representation is a cultural or ethical concern (e.g., that certain images are not, according to local custom, permitted to be viewed by certain groups of cognizant communities)?

[10]There has been much debate about and disengagement with the business-based term of "stakeholders"; see e.g., Porter 2006, among many online and published discussions. Finding a better simple term is unlikely, and each research situation perhaps requires its own terms in order to recognize and honor the related relationships involved.

[11]Various projects to do this or to figure out how best to disrupt and replace such "fast science" practices, would include a 2023 proposal for the annual meetings of the European Archaeological Association from the gender archaeology group (AGE) (Montón-Subías 2023).

[12]Park et al. (2023) reported that there is an overwhelming amount of what they call "consolidating" publications across all the sciences (including social sciences)—that support and improve existing streams of knowledge—instead of what are called "disrupting "publications that intervene into basic understandings to innovate, disrupt and re-orient science. What we want from rock at research is "disrupting" scholarship!

There is considerable tension between the increasing calls (and requirements, e.g., by the U.S. National Science Foundation) for "open access" and "publication" of results on web-based platforms, on the one hand, and cultural parameters of "viewing" of local communities on the other. Are these media acceptable to different communities? And, appropriately, Robinson et al. (2021) discuss how both natural processes through time as well as new media (e.g., Virtual Reality) generate differing ontologies of context for rock art: The "immersive platforms [of VR, for example] are not just simulacra of rock-art sites but are novel and new entities in and of themselves" (Robinson et al. 2021, 413). If any new methods in a study are being proposed (e.g., certain analytical ones), have they been tested, are they replicable and can they be cross-checked? How does one both present some possibly exciting and new inferences and respect/include that they may be preliminary, ambiguous and be subject to alternative— not literal—representations of images or subject to alternative explanations – or even future retractions?

For example, in a controversial and much commented upon paper from a 2012 special issue of *Current Swedish Archaeology*, Bjønar Olsen challenges the current trend of interpreting rock art images and their at-the-edge-of-the sea locations as being overly attentive to symbolic and cosmological possibilities whereas—and much to the dismay of subsequent papers in the journal issue (!)—he would prefer to consider the images as material things, as "things" in and of themselves: a boat and all of its "boatness" for example (Olsen 2012, 22). But why need these be mutually exclusive interpretations? Why not celebrate multiple alternatives, propose varied ways to engage and understand the phenomena of interest? As one subsequent article in this same debate points out so importantly, it is crucial to the core task that we create "alternative conceptions of the past that work against the ideas of cultural essentialism and linear teleological development that have been at the heart of traditional archaeological narratives and archaeology as popular culture" (Källén 2012, 64).

A slow science approach respects alternatives, places one's inferences within a wider landscape of narratives while admitting and respecting a more expansive possibility of interpretation. Just as feminist and gender theory in archaeology, along with indigenous archaeologies, have opened up the possibilities for other actors, other scenarios, and other "pasts",[13] a slow science project for rock art should open up possibilities for alternative and expanded inferences and interpretations. Just as offering up research that is admittedly preliminary, opening up alternatives enriches our representations. Some advocate a methodology of "controlled equivocation" (after Viveiros de Castro 2004, as drawn upon in Moro Abadía and Chase 2021 in their challenge to how we have framed the debate about "Neanderthal art"). As Tringham (2023) has noted in her own development towards a more "sensorially aware" archaeology, our positions in the research process should turn from being someone who is a "discoverer" of "the past", of "the meanings", etc., to being an author, a constructor and certainly not some privileged researcher who can "reveal" such phenomena. She wants our writing to become "gentler", "dialogic", "self-reflexive".

In proposing that researchers "slow down" or become, as she puts it "demobilized", Stengers notes that, once demobilized, "they will learn to appreciate the landscape that situates them, instead of passing through it at top speed" (2018, 47). Recognizing and engaging with/learning from, understanding the influences and effects on the research process that define/frame/create one's situation has been a crucial (more than 25 years!) feminist concern, developed especially by Donna Haraway, and now equally important in indigenous science (e.g., Lambert 2014; Wilson 2009): "A scientist who pursues the god-trick of seeing everything without taking responsibility for his or her own partial perspective, fails to create responsible knowledge" (Haraway 1988, 582).

That said, it is the attention to, prioritizing and expansion of relationships that must be the core of a slow science, a slow archaeology and slow rock art research. These are not just relationships between researchers and "communities" or relevant interested parties, prominent as those may be. These are relationships between the images, the places, the landscapes, the histories, the past research and researchers, the social networks of audiences, and, with living communities, the relationships among and between various individuals and groups, as well as the relationships of politics, power, interests, names, languages and terms, and representation (e.g., Bawaka Country et al. 2016). What, in each research situation, does the dialogic nature of archaeological interpretation actually mean and require? Rock art research is well-positioned in multiple ways to demonstrate how a "fully relational" archaeology can proceed – from relational ontologies (see chapters in Moro Abadía and Porr 2021), to all of the long standing and abundant literature on collaborative archaeology (e.g., Colwell-Chanthaphonh and Ferguson 2007; Silliman 2008; Atalay 2012, Laluk et al. 2022, but see La Salle 2010 for an important critique[14]). In regard to rock art research, we can take Atalay's point (2020, 266) that this

[13] It is most likely the case (see Brady and Kearney 2016) that there is not even the conception by contemporary peoples that their rock art is "in the past". Smith and Wobst (2004, 393) insist appropriately that there should be "more research on the places that are important to Indigenous peoples in the present, rather than on the very old sites that primarily are of interest to-and academic capital for-archaeologists".

[14] There are many points in this critique to be taken most seriously, but above all, I would highlight that we must be wary of getting too "comfortable" with collaborations (as if these have absolved us of the extractive process for our knowledge economy) and trying to make "familiar' what we are doing. Instead, what is called for is vigilance, "constant vigilance" (La Salle 2010:417).

can be a space to "elicit and confirm connections" that, in turn, can "endow individuals and communities with identities, relationships and orientations that are foundational for health and well-being" (after Schaepe et al. 2017; see also Brady and Kearney 2016). Laluk et al. (2022) advocate for the CARE principles: Collective benefit, Authority to control; Responsibility, and Ethics (Carroll et al. 2020, see algo Gupta et al. 2023).

How would a "slow science" list of guiding terms for rock art (or any other kind of archaeology) compare with (differ from!) such a list for those engaged in/committed to a "fast science"? The former would embrace patience, humility, care, discomfort, ambiguities, healing, gifting (not extracting), balance, among other terms (see Atalay and others in Supernant et al. 2020, which is all about a heart-centered archaeology; see also Lyons et al. 2019).

> Rather than avoiding mention or minimizing our mistakes and "failures" we can reflect, learn, and share our stumbles with each other, as this will help improve our practice. Recognition and acknowledgement of the necessary imperfection in our practice bring balance to our work." (Atalay 2020, 265).

We do not see any of this in the "fast science" paradigm. What we want is a re-orientation away from such terms as "discovery", "largest", "most extensive", "earliest", "most well preserved", "most skilled", "most abundant imagery", "pinnacle of technical achievements", "use of amazing scientific methods" to shared human experiences, common human needs and an ethical project more so than a value-free "objective" enterprise [in the spirit, some say, of Husserl 1970 and, more recently, of Renn 2020, who argues that "modern science, rather than striving to be value-free, should embrace ethical projects", as cited by Coen 2020, 256].

21.5 Fast Forward?

The globalization of rock art (and other) research has been, so far, a double-edged sword. As many papers in this edited volume suggest we have indeed benefited from the sharing of ideas, information, methods and topics to pursue. We have indeed gained knowledge and understandings from a wider repertoire of rock art around the globe. The "story" of humans making rock images has expanded, has more details, more examples, and more creative and thoughtful perspectives. There is also, in some arenas, more competition, more pressure to publish and even to get "the scoop" especially by those seeking "origins"or the spectacular (as defined in limited terms, even by the major publishers). There are now more domains within which to debate how to interpret and which theoretical framework is preferred (or "the best"). The policies and politics of neoliberal educational practices, the appeal to citation indices, a demand for more and more publishing are among the many structural parameters still "at work" and still pressuring researchers in multiple ways. Fast science is not going away very fast.

But as rock art research has begun to demonstrate, there can be a "slow down" of our practices as well as a resistance to the neo-liberal and competitive strictures within which many feel trapped (or which others may play up!). The elaboration of the domain of "collaborative" research especially in settings with descendant groups has particular promise, and some (e.g., Brady and Kearney 2016, 643) have even called for not just engaging and adopting aspects of Indigenous archaeology in the ways generally being advocated as a complement to Western archaeological praxis, but an "abandonment of Western science altogether and instead be supplanted by an Indigenous epistemology". The traditional field of "ethnoarchaeology", they suggest [as do others in the special issue of *World Archaeology* (Lane 2016)], as a field to serve as a supplement or set of models for archaeology "undermines ethnoarchaeology, which stands to achieve much more than the provision of 'alternative' insights into how human life develops and manifests in cultural expressions" (Brady and Kearney 2016, 642; see also Gosselain 2016). Other chapters in this volume address the differences between the frameworks for the study and interpretation of Eurocentric rock art that has depended on a traditional ethnoarchaeology and ethnographic analogies (or just plain ethnographic parallels) and the rock art research when in the context of engagement with local, historic and contemporary and collaborative communities. The different trajectories of these approaches still need rapprochements and bridging, if possible. Are we considering different ways to carry out a "slow science"for rock art that is in the northern hemisphere considered "prehistoric" and that which is involved with descendant or other current cultural groups? (see the now-classic Lightfoot 1995 challenge to retaining a dichotomy between historic and prehistoric archaeology). As well, the term, "prehistoric", has been avoided for many years in Australia, given the indigenous backlash to their deep time history—albeit not preserved in written script/books—being considered as 'pre-history' (see Mulvaney 1969; Griffiths 2018).

Nonetheless, the "fast forward" that we should imagine and enact is not the "fast science" mode, as some globalization has mobilized. Rather, it is that we need to fast forward – by our actions today – to a time for a differentially mobilized set of practices, ones that "slow down", stop and engage/look/reflect and consider alternatives in all dimensions, or a dialogical relationship with our subjects, topics, sites, theories, methods and motivations. The number of more thoughtful studies is increasing, which explicitly include native

voices as integral to a monograph (e.g. Diaz-Granados et al. 2015) or that are just one part of longer term and more expansive research into regional rock art (e.g., Boyd and with Kim Cox. 2016). Research at the well-known Paleolithic cave art site of Chauvet has been on-going for more than twenty-five years (e.g., Delannoy and Geneste 2020).

While indeed, for example, we want to put out and share widely our findings, our methods, our insights and what we have learned, publications, as we have all experienced, can often take a long time and are often problematically limited in access. We need new models: such as the one in progress for the writing up of a 5-year research project (for which the funding finished almost 5 years ago) on the "Murujuga, Dynamics of the Dreaming" (McDonald and Mulvaney 2023). Here, as analyses are finished and are presented to the Circle of Elders, chapters are completed—and once image clearance is achieved—they are published online. The online gallery that houses each chapter is constructed for public dissemination of those results and as an aid for high school curriculum. These publications recognize the responsibility for scientific dissemination of the results of funded research projects—but has negotiated a collaborative and now co-designed approach to how that work is undertaken. This is being implemented in a new Linkage project – "From the Desert to the Sea: Managing Rock Art Culture and Country", which builds on the long term, multidecadal, relationships of these researchers with these three Western Australian Aboriginal communities—with vast rock art estates. We should pay particular attention to taking advantage of new media, podcasts, blogs and such and empowering and supporting local communities, especially those in whose landscapes (*sensu latu*) we are working. With "smart" phone cameras there is no excuse for not making videos for/with/by the local communities whomever they may be. How might we strategize to resist the top-down pressures to publish at any cost (to the integrity of the research) and to engage our fellow researchers in research protocols of more integrity (than "going for the scoop" or than deploying shoddy methods)?

In the history of carrying out research on the multiple sites and settings of "rock art" we have witnessed many innovative approaches, varying trends and possibilities as well as capitulations to the lures of "fast science". Many of these stories are told in this volume and in too many publications to mention here. From a field that was perhaps not taken seriously, especially in certain countries and contexts, to one that is leading the way in expanding how we think and talk about past image-makers and their communities, rock art research has the potential to significantly advance the goals of a more "slow science" – one with attention to human needs, human experiences, and a viable melding of science with humanisms.

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Correction to: Deep-Time Images in the Age of Globalization

Oscar Moro Abadía, Margaret W. Conkey, and Josephine McDonald

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Chapter 5:

The original version of the book was inadvertently published with low-quality figures (Figures 5.1 and 5.2) in both print and online version. They have now been corrected and replaced with high-resolution figures.

Chapter 11:

The original version of the book was inadvertently published without acknowledging or citing the original sources of Figures 11.4 and 11.5 in both print and online version. This has now been corrected by removing the concerned figures and their citations within text and by renumbering the subsequent figures accordingly.

The updated versions of these chapters can be found at
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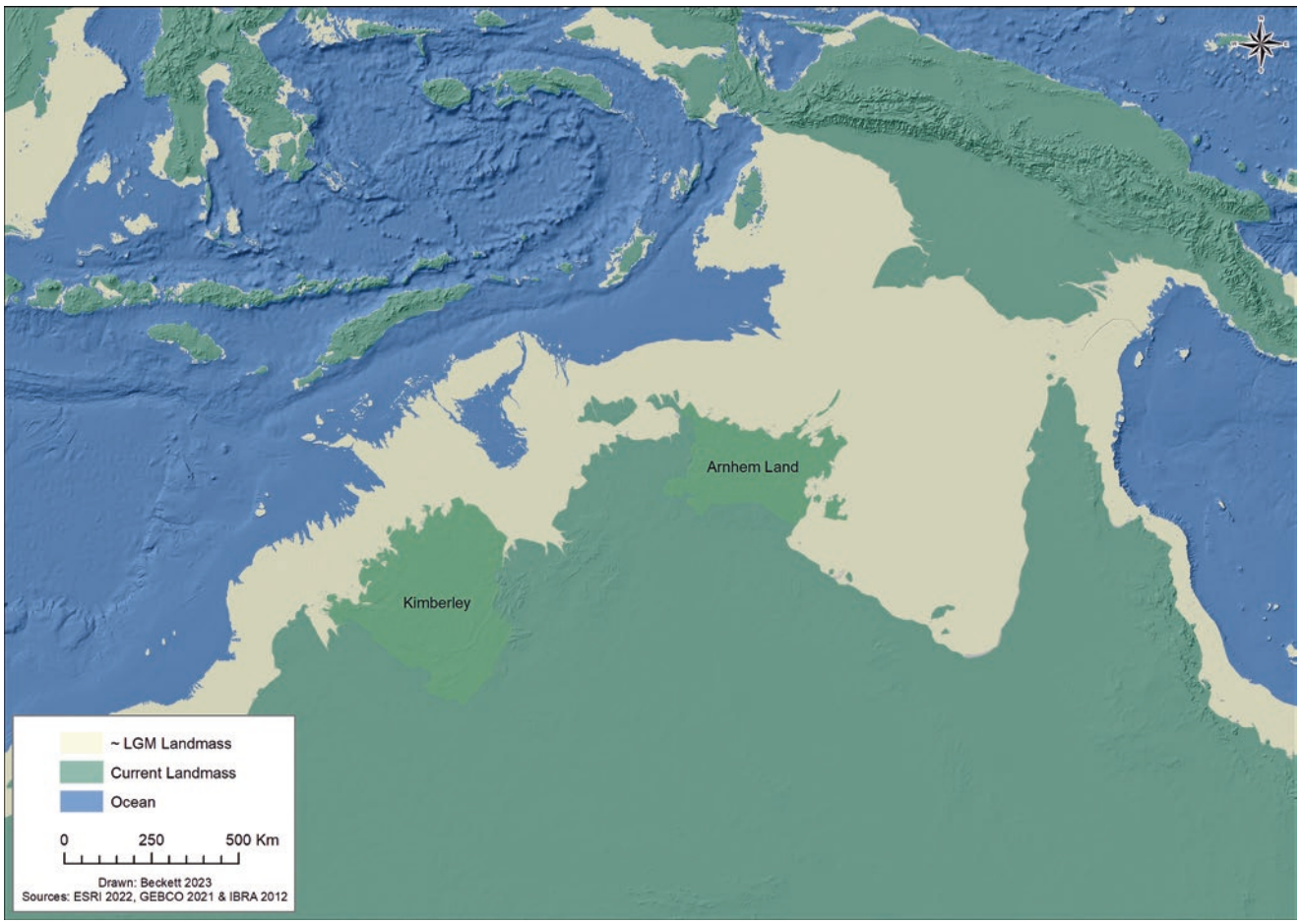

Fig. 5.1 Map of the Kimberley region and Arnhem Land showing extent of the coastal plain towards the Timor Sea at peak LGM c. 20 ka. (Map: Emma Beckett).

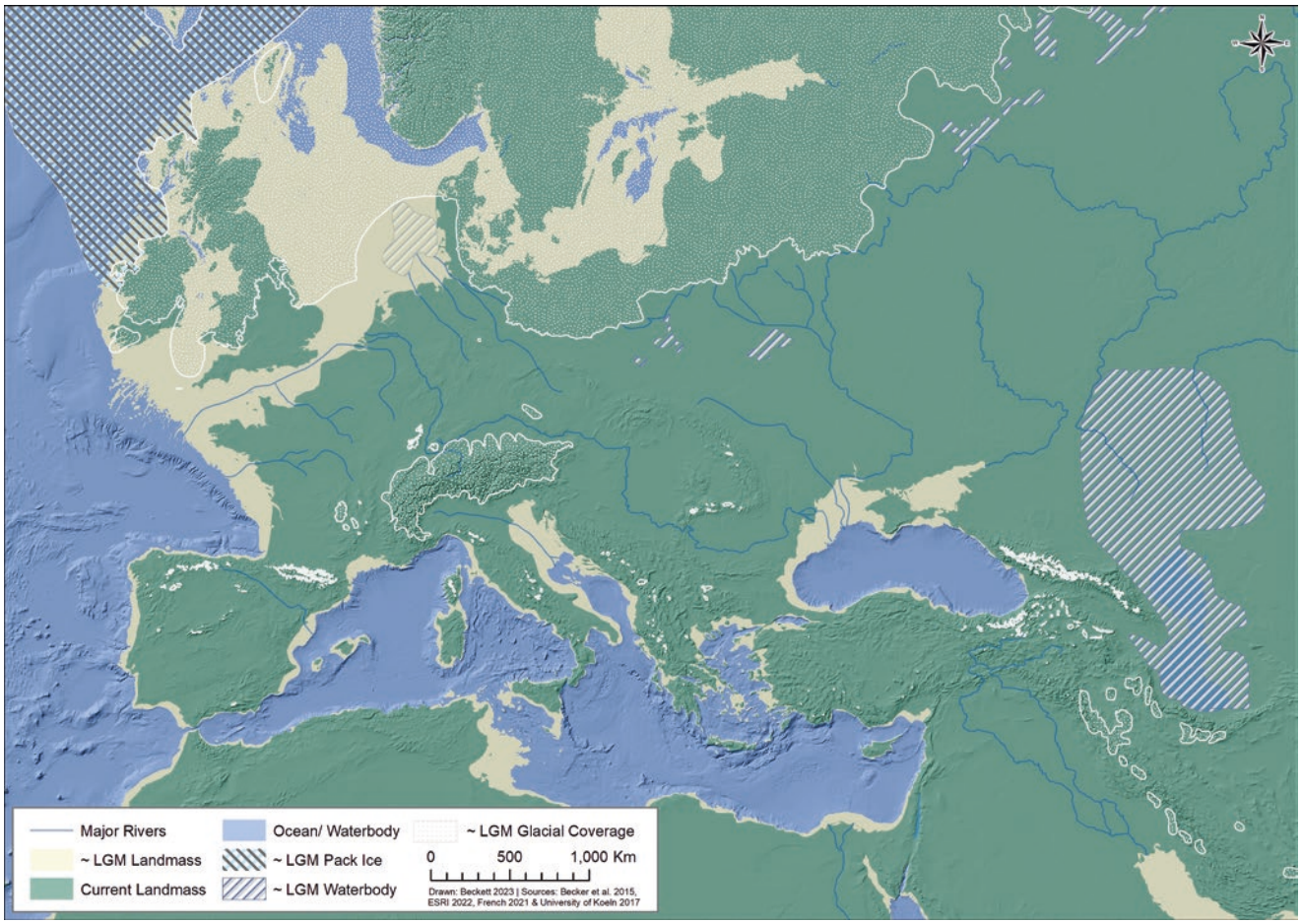

Fig. 5.2 Map of the Eurasian subcontinent showing key regions discussed in this paper. (Map: Emma Beckett)

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