

ROCK ART STUDIES: NEWS OF THE WORLD VI

Edited by

Paul Bahn, Natalie Franklin & Matthias Strecker

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(Photo by Natalie Franklin).

Back cover: Yangjeon-dong style petroglyphs

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Dedicated to the memory of
Katja Devlet (1965-2018)



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Contributors

Paul G. Bahn

428 Anlaby Road
Hull HU3 6QP
United Kingdom
pgbahn@anlabyrd.karoo.co.uk

Rodrigo de Balbín

Area de Prehistoria
Universidad de Alcalá de Henares
c/ Colegios 2
28801 Alcalá de Henares
Spain
babubera@movistar.es

Mara Basile

CONICET,
Museo Etnográfico-UBA,
J.B. Ambrosetti Moreno 350, Código Postal: C1091,
Ciudad Autónoma de Buenos Aires,
Argentina
mara_basile@yahoo.com.ar

Ulf Bertilsson

Swedish Rock Art Research Archives
Institutionen för Historiska studier
Göteborgs universitet
Box 200
405 30 Göteborg
Sweden
ulf@shfa.se
ulf.bertilsson@archaeology.gu.se

James Blinkhorn

Pan-African Evolution Research Group,
Max Planck Institute for the Science of Human History,
Jena, Germany
Centre for Quaternary Research,
Department of Geography, Royal Holloway
University of London
Egham
United Kingdom
blinkhorn@shh.mpg.de

Primitiva Bueno Ramírez

Area de Prehistoria
Universidad de Alcalá de Henares
c/ Colegios 2
28801 Alcalá de Henares
Spain
mimibueno@movistar.es

Gloria Cabello

Instituto de Estética y Centro Interdisciplinario de
Estudios Interculturales e Indígenas (CIIR),
Pontificia Universidad Católica de Chile,
Santiago
Chile
gloria.cabello@uc.cl

Leonel Cabrera Pérez

Instituto de Ciencias Antropológicas, Depto. de
Arqueología,
Universidad de la República,
Av. Uruguay 1695,
CP. 11200, Montevideo
Uruguay
jesuscab33@cs.com
leonelcaberaperez@gmail.com

Ge Chao

School of Humanities,
Minjiang University,
C-519, Fu Wan Lou Bldg, No. 200, Xiyuangong Road,
Minhou County,
Fuzhou City,
Fujian Province,
China
chaogemanu@163.com

Michael A. Cinquino

PCI, Buffalo Branch Office,
2390 Clinton Street,
Buffalo
NY 14227
USA
mcinquino@panamconsultants.com

Philippe Costa

CNRS-Université Paris I,
Maison de l'Archéologie et de l'Ethnologie,
21 Allée de l'Université,
92023 Nanterre
France
costa.philippe14@gmail.com

Sandra Cruz

Av. Rómulo Escobar Zerman, núm. 126,
Colonia Industrial, C.P. 07800
Alcaldía Gustavo A. Madero,
Ciudad de México,
Mexico
scruzf@yahoo.com.mx

Claudia Defrasne

EDYTEM,
UMR5204
Université Savoie Mont Blanc,
CNRS
73000 Chambéry
France
claudia.defrasne@univ-smb.fr

Dánae Fiore

CONICET - AIA - UBA
Bartolomé Mitre 1131 7 "G"
(1036) Buenos Aires,
Argentina
danae_fiore@yahoo.es

Natalie R. Franklin

Honorary Senior Research Fellow,
School of Social Science,
University of Queensland,
Brisbane
QLD 4072
Australia
n.franklin@uq.edu.au

Jamiyan-Ombo Gantulga

Department of Bronze and Iron Age
The Institute of Archaeology
Mongolian Academy of Sciences
Jucov street-77, Ulaanbaatar-51
Mongolia
ganuudg@gmail.com

Eric Gelliot

INRAP – Institut National de Recherches Archéologiques
Préventives,
Direction Interrégionale Grand Est Nord,
Bureau d'Etude Topographique,
12 rue de Méric,
CS 80005 – 57063 Metz Cedex 2
France
eric.gelliot@gmail.com

Liz Gonzales

Calle Apu Pachatusán C-13,
APV-Tambillo, CP. 08003
Cusco
Peru
liz.gonzales.ruiz@gmail.com

María de la Luz Gutiérrez

Instituto Nacional de Antropología e Historia, Baja
California Sur
Legaspy 1637, Colonia Los Olivos,
La Paz, Baja California Sur, CP. 23000
Mexico
lukerotres@gmail.com

Michele H. Hayward

PCI, Buffalo Branch Office,
2390 Clinton Street,
Buffalo
NY 14227
USA
mhayward@panamconsultants.com

Rachel Hoerman

Dept. of Anthropology,
2424 Maile Way,
Saunders Hall 346,
University of Hawai'i at Manoa,
Honolulu,
HI 96822
USA
rbhoerman@gmail.com

Christian Horn

Institute of Historical Studies,
Gothenburg University,
Gothenburg
Sweden
christian.horn@gu.se

Rainer Hostnig

Urb. Magisterio, 1a etapa,
Calle Osvaldo Baca 106,
Cusco
Peru
rainer.hostnig@gmail.com

Andrei Isnardis

Setor de Arqueologia pré-histórica
Museu de História Natural da Universidade Federal de
MInas Gerais (UFMG)
Rua Gustavo da Silveira 1035
31080-010 Belo Horizonte
Brazil
isnardis@gmail.com

Seog Ho Jang

Honorary Research Fellow,
Northeast Asian History Foundation,
Imgwang Bldg.,
81 Tongil-ro,
Seodaemun-gu,
Seoul
Republic of Korea 120-705
baigrim@hanmail.net
pisanitcha@nahf.or.kr

Anni Jin

School of Humanities,
Minjiang University,
C-530, Fu Wan Lou Bldg, No. 200, Xiyuangong Road,
Minhou County,
Fuzhou City,
Fujian Province,
China
Sagapo330@163.com

Martin Künne

Friedrich-Wilhelms-Universität Bonn,
Institut für Archäologie und Kulturanthropologie,
Abteilung für Altamerikanistik,
Oxfordstr. 15,
53111 Bonn
Germany
kuenne@zedat.fu-berlin.de

Romain Lahaye

Doctorant en Histoire, Anthropologie et Archéologie,
Université Paris 1 Panthéon-Sorbonne (IMAF),
3 allée Saint-Gildas, App. 9583,
35700 Rennes
France
romain-lahaye@laposte.net

Jean-Loïc Le Quellec

Brenessard
85540 St Benoist sur Mer
France
jllq@rupestre.on-rev.com

Elena Levanova

Candidate in History,
Institute of Archaeology,
Russian Academy of Sciences
Dmitry Ulianov St. 19,
117292 Moscow
Russia
maraveriza@gmail.com and paleoartlab@gmail.com

Johan Ling

Swedish Rock Art Research Archives
Institutionen för Historiska studier
Göteborgs universitet
Box 200
405 30 Göteborg
Sweden
johan.ling@archaeology.gu.se

Nadezhda Lobanova

Karelian Research Centre,
Russian Academy of Sciences.
Institute of Linguistics, Literature and History,
Karelian Research Centre of the Russian Academy of
Sciences,
ul. Pushkinskaya, 11,
185910 Petrozavodsk
Republic of Karelia
Russia
hopelob@yandex.ru

Francisco Mendiola Galvan

Centro Instituto Nacional de Antropología e Historia,
Puebla
Avenida Ejército de Oriente s/n,
Colonia Centro Cívico 5 de mayo,
Zona de Los Fuertes, C.P. 72270
Puebla,
Mexico
panchomendiola@yahoo.com.mx

Priscilla Molina Muñoz

Museos del Banco Central de Costa Rica,
Museo del Oro Precolombino,
Plaza de las Tres Culturas,
San José de Costa Rica
Costa Rica
molinamp@bccr.fi.cr

Francisca Moya

SERP/Facultat de Geografia i Història,
Universitat de Barcelona,
Barcelona,
Spain
franmoya.c@gmail.com

Alexander S. Pakhunov

Institute of Archaeology,
Russian Academy of Sciences,
Dm. Ulianov St. 19,
119076 Moscow
Russia
alexander.pakhunov@u-bordeaux.fr

Charly Poliakov

Doctorant,
Université de Paris 1, Panthéon Sorbonne ED112,
UMR 7041 ARSCAN
Paris
France
charly.poliakov@gmail.com

André Prous

Setor de Arqueologia pré-histórica
Museu de História Natural da Universidade Federal de
Minas Gerais (UFMG)
Rua Gustavo da Silveira 1035
31080-010 Belo Horizonte
Brazil
aprous80@gmail.com

Angus Quinlan

The Nevada Rock art Foundation,
P.O. Box 2082,
Sparks,
Nevada 89432-2082
USA
arquinlan@nvrockart.org

Pedro Rivas

Instituto Caribe de Antropología y Sociología,
Fundación La Salle de Ciencias Naturales,
Av. Boyacá (con Maripérez), Distrito Capital,
Caracas
Venezuela
pedrorivasg@gmail.com

Francisco Rodríguez

Calle Venus 122,
Ciudad del Sol. C.P. 59310
La Piedad,
Michoacán,
Mexico
paczoolookologie@gmail.com

Alexei Rogozhinskiy

Researcher, Institute of Archaeology,
Ministry of Education and Science of the Republic of
Kazakhstan,
Almaty,
Kazakhstan
alexeyro@hotmail.com

Victoria Scott

School of Oriental and African Studies (SOAS)
10 Thornhaugh Street, London,
United Kingdom WC1H 0XG
Vs8@soas.ac.uk

Matthias Strecker

Sociedad de Investigación del Arte Rupestre de Bolivia
(SIARB),
Pamirpampa No. 100, Achumani
La Paz
Bolivia
strecker.siarb@gmail.com

Yuri Svoyski

Remote Sensing and Spatial Data Analysis Laboratory
(RSSDA),
Moscow
Russia
rutil28@gmail.com

Freddy Taboada

Sociedad de Investigación del Arte Rupestre de Bolivia
(SIARB),
Edif. Pucara, Depto. 402,
Miraflores, calle Nanagua No. 1805,
La Paz
Bolivia
taboadatellez@yahoo.com

Noel H. Tan

SEAMEO Regional Centre for Archaeology and Fine Arts
(SPAFA),
81/1 Si Ayutthaya Road,
Dusit,
Bangkok 10300
Thailand
noel@seameo-spafa.org

Tsagaan Turbat

Department of Bronze and Iron Age
The Institute of Archaeology
Mongolian Academy of Sciences
Jucov street-77, Ulaanbaatar-51
Mongolia
turbat.tsagaan@gmail.com

Daniela Valenzuela R.

Depto. de Antropología,
Universidad de Tarapacá,
Arica,
Chile
dvalenzu@academicos.uta.cl

Alma Vega

Universidad Autónoma de San Luis Potosí,
Mexico
alma.vega.barbosa@gmail.com

Carlos Viramontes Anzures

Instituto Nacional de Antropología e Historia, Querétaro
Andrés Balvanera 2, Centro Histórico
Querétaro
Qro, CP. 76000
Mexico
cviramontes@hotmail.com

Dagmara Zawadzka

Université du Québec à Montréal,
802-1819 Boulevard de Maisonneuve W.
Montreal,
Quebec
H3H 1K1
Canada
dagmaraz@gmail.com

Preface

Paul Bahn, Natalie Franklin and Matthias Strecker

This volume is the sixth in the series ROCK ART STUDIES: NEWS OF THE WORLD which started in 1996, partly based on a symposium held at the News95 International Rock Art Congress. In the Preface to Volume 1, the editors pointed out the constant expansion and acceleration of research in this field, as well as the proliferation of literature on the subject which make it extremely difficult to keep up with interesting developments and discoveries around the world.

25 years later we are able to envision the progress made in rock art studies (research, recordings, presentation, conservation and administration of sites), as well as the importance of publishing overviews on what is happening in this respect worldwide.

Some trends in the last decades are: the inclusion of rock art in archaeological and anthropological projects and

congresses, new techniques of recording and analysis such as DStretch and Reflectance Transformation Imaging (RTI), as well as Geographical Information Systems (GIS), and application of archaeometry, for example analysis of pigments (FRX and others) and production processes; dating, including of the pigments used to make motifs and/or of surface accretions underlying or overlying rock art; conservation and management, incorporating increasingly scientific methods for intervention and monitoring, as well as techniques for visitor management and studies of visitor behaviour at rock art sites.

On the other hand, rock art studies are now underway in all continents and most countries though in different degrees of professional approaches. The list below reveals the worldwide coverage in the six volumes published in this series.

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In the past five years, some innovative approaches have been pioneered, especially in the fields of dating and the archaeology of rock art sites. In Australia, for example, this has included “archaeomorphology”, an approach that attempts to reconstruct the geomorphological histories of sites to determine when rock surfaces that now bear rock imagery were formed, providing maximum possible ages that can then be correlated with evidence from archaeological deposits. Such efforts have confirmed a Pleistocene antiquity for some sites in the north of Australia, as would be expected from recent dates of at least 40,000 years for rock imagery in Island Southeast Asia, on a route presumably taken by early migrants out of Africa and across into Australia.

In this volume, the reader will encounter the usual array of new discoveries – including a host of decorated Ice Age caves, primarily in Spain but also, for the first time, in Croatia. There are also some major surprises, such as the painting of a Bactrian camel in Russia’s Kapova Cave. Technology plays an ever-greater role in the study of every kind of rock art – for example, 3D scanning (see e.g. Northern Europe) and even 4D scanning (on the megalithic art of Southern Europe). A wide range of digital analytical techniques for colour enhancement and for recording are being applied – in Chile or the Alps, for instance, where portable XRF (X-ray fluorescence) technology is allowing detailed analysis of pigments. In Canada, on the other hand, Highlight-Reflectance Transformation Imaging of petroglyphs has proved to be a useful new tool.

Another aspect of rock art research, which has long been of importance in places like Australia, is consultation with local Indigenous peoples to ascertain what they can tell us about the imagery, what it means to them and how rock art might be managed. This has now become an important approach in Venezuela and parts of Brazil as well. However, the texts in this volume on the latter two countries make clear the difficult challenges currently posed to rock art research by their political and academic situation.

We are grateful to all the contributors to this volume, who produced their texts in the course of the most bizarre and stressful year that any of us has ever lived through. Indeed the events of 2020 made it

impossible to obtain texts from one area which these volumes normally cover (Siberia). We would like to give particular thanks to Charly Poliakoff and Gus Quinlan for stepping into the breach at short notice to replace other contributors who dropped out.

IN MEMORIAM

Each volume in this series has paid tribute to rock art specialists who have passed away during the five years in question. The period covered by the present volume has seen the departure of an unusually great number of valued colleagues and friends:

- Jean Abélanet (1925-2019), a specialist in the rock art of the French Pyrenees, and discoverer of the open-air Ice Age art of Fornols;
- Daniel Arsenault (1957-2016), a specialist in archaeological and cultural rock art landscapes of the Canadian Arctic;
- Rick Bury (1946-2019), one of the very greatest photographers of rock art, specializing in that of California;
- John Coles (1930-2020), who produced studies of Swedish rock art of major importance;
- Jean Combier (1926-2020), the foremost specialist in the Ice Age art of SE France;
- Pat Helvenston (1940-2019), the eminent neuropsychologist who did so much to combat and demolish the fallacies frequently presented about trance and entoptics in rock art;
- Dirk Huyge (1957-2018), the specialist in Egyptian rock art, who rediscovered and studied the petroglyphs at Qurta and produced the first proof of Pleistocene rock art in Africa, and who also contributed to volumes II and III in this series;
- José Antonio Lasheras (1956-2016), director of the Altamira Museum and a leading specialist not only in Ice Age cave art but also the rock art of Paraguay;
- Georgia Lee (1926-2016), the pre-eminent expert on the rock art of Easter Island, as well as that of Hawaii, who contributed to volume I;
- Elsbeth Parry (1932-2019), the foremost specialist in Zimbabwean rock art;
- Jakov Sher (1931-2019), doyen of Siberian rock art researchers, who also contributed to the first volume in this series; and

Jack Steinbring (1929-2019), doyen of Canadian and US rock art researchers, who contributed to volumes III and IV in this series.

Finally, a whole series of scholars in Peru also passed away, to whom tribute is paid in the chapter by Hostnig & Gonzales in the present volume.

However, perhaps the most grievous loss was that of our friend Katja Devlet (1965-2018), the great Russian rock art expert, who had not only contributed to several books in this series (III, IV, V), but who also made it possible for the previous volume to be published, thanks to a financial contribution from her Institute. She was our co-editor of that book, and her input has been greatly missed this time. We dedicate

this volume to her. In addition, in 2019 a magnificent book was published in honour of Katja's memory, filled with photographs of her, as well as reminiscences and tributes by friends and colleagues:

M. A. Devlet (ed.) 2019. *Iconographic and Technological Traditions in Early Forms of Art (2)*. Occasional Publications of the Siberian Association of Prehistoric Art Researchers, vol. XII. Kuzbassvuzizdat Publishing Press: Moscow/Kemerovo (in Russian).

As the book went into production we learned the sad news of the death of Luis Briones (1939-2021), Chile's foremost specialist in geoglyphs. A full tribute will be paid to Luis in the next volume in this series.

New Developments in Pleistocene Art (2015–2019)

Paul G. Bahn

Introduction

As in the previous five-year period, the years 2015–2019 saw some new discoveries of Ice Age art – albeit with few finds of enormous importance. One noteworthy development was the confirmation, from new calcite dates in three Spanish caves, that Neanderthals produced a variety of cave markings. The Uranium/Thorium dating of calcite formations has also produced further early results from caves in Indonesia. But where dating is concerned, the elephant in the room remains the age officially attributed to Chauvet cave's imagery – despite continued published critiques, the research team simply refuses to discuss or debate the issue. Every valid criticism is met with silence. The application of new technology continues to make an ever-growing contribution to the study of both portable and wall art, with software such as DStretch producing important results. Very little new interpretation of any importance has been presented. As usual, this paper cannot cover all of the very numerous books and papers which appeared during those five years, but it will highlight what are considered to be the most important.

New publications

Historical studies in Palaeolithic art included a new volume about the life and work of Hermilio Alcalde del Río, on the 150th anniversary of his birth (Pérez Avellaneda 2017); an exhibition catalogue about Léopold Chiron (Girard & Combier 2016); a study of Leroi-Gourhan's alleged structuralism (Moro Abadia & Palacio-Pérez 2015); an examination of the tracing methods of Léon Pales (Welté 2016); and an excellent general history of the study of Palaeolithic art (Palacio-Pérez 2017). A historical analysis focusing on some recent researchers such as Marshack can also be highly recommended (Cooper 2020).

Where portable art is concerned, the acts have appeared of a major conference (Cleyet-Merle *et al.* 2016). There have also been studies of objects in St Petersburg's *Kunstkamera* (Chlopachev 2016), of the finds from the Swabian Jura (Conard *et al.* 2015; Wolf 2015; Wolf *et al.* 2018; Conard & Kind 2019), and those from the Aude (Sacchi 2015). D'Errico & Vanhaeren (2015) presented a survey of the jewellery found in Upper Palaeolithic burials, showing different chronological and geographical patternings.

The present author published (Bahn 2016) an entirely revised and updated edition of his book, the only volume available which covers every aspect of all kinds of Ice Age imagery; a book written with Michel Lorblanchet (Lorblanchet & Bahn 2017) which focuses on the earliest imagery; and a new, updated edition of the guidebook to all the decorated Ice Age caves open to the public (Bahn 2018).

The most important publication, however, was undoubtedly a new, enlarged edition of Lorblanchet's major opus, which originally appeared in 2010, and which constitutes the greatest contribution to the subject since Leroi-Gourhan (Lorblanchet 2018).

Several other general books on Ice Age cave art also appeared – most notably Groenen (2016), as well as volumes by Clottes (2016), Rigal (2016), Delluc & Delluc (2017) and Paillet (2018). A massive tome on prehistoric art (Fritz 2017) contains some fine photographs of Ice Age imagery.

A number of important collections of papers also appeared: for example, in volumes dedicated to Rodrigo de Balbín (Bueno-Ramírez & Bahn 2015) and to the late Norbert Aujoulat (Hommage 2016). Other general collections include Pastoors *et al.* (2017), Garate & Unzueta (2017), White & Bourrillon (2015), Papeles (2019), Domingo & Palomo (2020) and a special issue of the journal *Les Nouvelles de l'Archéologie* (2018). All of these works contain interesting texts on Ice Age imagery.

Several studies appeared on different parts of Europe: for example, on Iberia as a whole (Straus 2018), on Aurignacian art in Iberia (Garate *et al.* 2015), on the Cantabrian caves (Ochoa 2017), on the Basque country (Garate 2018), on Bizkaia (Garate 2017), on Asturias (Menéndez 2014), and on the final Palaeolithic imagery of Mediterranean Iberia (Domingo & Roman 2020). There were also valuable new volumes on Ice Age imagery in Italy (Martini 2016), Romania (Cârciumaru & Mitu 2018), and Central Europe (Floss & Pastoors 2018).

One of the most important general studies published was a monumental catalogue of every Palaeolithic hand stencil in Spain (Collado 2018). There were also interesting surveys of rare animals in the imagery (Cretin & Madelaine 2019), of canids (Lombo 2018), reindeer (Martin 2016), bears (L'Ours 2016), and humans

(Welté 2015). The Dellucs provided useful studies of eye depictions (Delluc & Delluc 2016), and imagery showing human hair and teeth, etc (Delluc & Delluc 2017a). Lbova (2016) has attempted to recognise clothing and backpacks on the human figurines from Mal'ta; while Lombo (2017) has presented evidence for humour in Ice Age imagery.

Where “signs” are concerned, Madariaga de la Campa (2014) interpreted those in Cantabria very literally, while Sauvet *et al.* (2018) pondered the function of the quadrilateral signs of Cantabria. Vázquez Marcos (2014) studied the “M” sign on horses’ flanks, finding that there are very few examples in Iberia (mostly in Ekain and Siega Verde). There was also a popular book on the subject which, alas, contained very little new information (Von Petzinger 2016).

Medina-Alcaide *et al.* (2018) provide a list of the many different kinds of evidence in caves that should be included in any cave art study, but Lorblanchet (2016) actually provides concrete examples from the Quercy caves – such as markings, finger traces, retouches, ex-votos, removal of material, etc. Medina-Alcaide *et al.* (2018a) have also proposed that some red marks in caves may have been left accidentally on walls by people with painted bodies. Where pigment is concerned, Lbova & Volkov (2017) have examined coloured decoration of the anthropomorphous figurines of Siberia, finding traces of red, green, blue, etc.

Finally, Apellániz presented further work on identifying authorship in Palaeolithic imagery (Apellániz & Amayra 2014); Fazenda *et al.* (2017) presented work on the acoustics of decorated caves; Hodgson (2019) explored the neurological roots of early art; Pettitt (2016) wrote about shadows, art and ritual in the caves; de la Rasilla & Duarte (2018) presented a new study confirming the probable links between some decorated caves and thermal/medicinal springs in northern Spain;

Ruiz-Redondo (2016) surveyed late Palaeolithic art, highlighting some similarities in composition and layout between, for example, the caves of Candamo and Covaciella; while Sauvet (2019) emphasised the dominance of the horse throughout cave art. Garate *et al.* (2020) presented a predictive model for finding decorated caves, with Northern Spain as an example of its application.

New studies of known caves

These five years saw the opening of two major cave facsimiles (see Bahn 2018) – in April 2015 that of Chauvet, in which the main decorated panels are artificially compressed into a smaller space than in the original cave; and in December 2016, that of Lascaux IV which presents almost the whole cave. It is

therefore inevitable that this period saw a whole series of new publications on both caves. Where Chauvet is concerned, there was a new account by the discoverers (Brunel *et al.* 2015), as well as other popular works (e.g. Huguet 2015), and also the first official monograph – the vast and unwieldy Atlas (Delannoy & Geneste 2020). Jouve (2020) showed clearly that this cave originally had more than one entrance. There were also some decidedly offbeat contributions, such as a bizarre interpretation of the cave’s supposed therianthrope (Ubick & Thackeray 2016), and a ludicrous claim that the cave contains a depiction of a volcanic eruption (Nomade *et al.* 2016)!

As for Lascaux, several general accounts appeared (e.g. Newton 2015; Dossiers 2016; Pigeaud 2017), but the most important was a major volume which was the first to reveal who caused the terrible damage to the cave in 1999 (Chassain & Tauxe 2016). Two invaluable small studies also appeared, which traced the numerous different interpretations of the enigmatic “shaft scene” (Le Quellec 2018) and of the equally enigmatic “unicorn” (Tauxe 2019).

One noteworthy event was the completion of the trilogy of magnificent volumes on the Volp caves – after Le Tuc d'Audoubert (2009) and Les Trois Frères (2014) we now have a remarkable work on Enlène (Bégouën *et al.* 2019). A critique appeared of Breuil’s famous but erroneous interpretation of an engraving in Les Trois Frères as a figure playing a musical bow (Bahn 2015). Also in the Pyrenees, there were short new studies of the cave art in Le Mas d’Azil (Le Guillou 2017), Marsoulas (Fritz & Tosello 2017), Isturitz (Garate *et al.* 2016), as well as a major survey of the three Arbaillies caves (Garate & Bourrillon 2017). An important but extremely narrow and low engraved gallery was discovered in the cave of Alkerdi (Garate & Rivero 2015).

In the Dordogne, more papers have at last begun to be published on the remarkable Gravettian engraved cave of Cussac (e.g. Jaubert *et al.* 2017; Ledoux *et al.* 2017; Jouteau *et al.* 2019; Feruglio *et al.* 2019). A new volume appeared on the Abri du Poisson and Cap Blanc (Cleyet-Merle 2016), and traces of some hitherto undetected engravings were found on the ceiling of the Abri du Poisson (Zotkina & Cleyet-Merle 2017). Some new painted figures were also detected in Les Combarelles through use of DStretch (Man-Estier *et al.* 2015), while a study at last appeared of the engravings found at the far end of the cave some years ago (Cleyet-Merle *et al.* 2016a). New Aurignacian engravings were uncovered at the Abri Blanchard (Bourrillon *et al.* 2018) and Abri Cellier (White *et al.* 2018), and a new account of Villars was presented (Delluc *et al.* 2016). Recent work in Fronsac and Teyjat was also published (Paillet *et al.* 2018, 2020).

For the rest of France, Pinçon's doctoral dissertation (2020) on Angles-sur l'Anglin has at last given that major site the study it deserves; there was also a popular book on the site (Pinçon *et al.* 2016), as well as a study of its human depictions (Fuentes 2017). A new book on the Ardèche caves focused on conservation and damage (Gély *et al.* 2019), while a thorough study of the Grotte aux Points appeared (Monney 2018/19). The story of the finding and exploitation of Pech-Merle was published by the daughter of its art's discoverer (M. David 2018). New studies were published of the rock art of the Fontainebleau area (Bénard 2018), and of an engraved fish in the Grotte Margot (Berrouet *et al.* 2014). The Grotte des Gorges was the subject of an exhibition (S. David 2018). Finally, a ridiculously ill-informed paper questioned the authenticity of the engraved plaquettes of La Marche (Sandström 2015), but was rapidly dismissed with an excellent response (Delage 2016).

In Spain, in the Basque country, Ekain was celebrated with a new popular book (Ekain 2019), as well as studies of some important new digital figures discovered in the cave (Vigiola-Toña *et al.* 2017; Ochoa *et al.* 2018, 2019). A monograph appeared on the cave of Praeleaitz (Peñalver *et al.* 2017), and a study of possible late Magdalenian female depictions in Santimamiñe and La Pasiega (González Sainz 2016-17).

In Cantabria, two major new volumes on the Monte Castillo caves appeared (Groenen & Groenen 2015; García Diez *et al.* 2018). One study (Groenen & Groenen 2015a) showed that some black marks in El Castillo were not torch wipes but deliberately made markings. A new study of the hitherto much neglected cave of El Salitre was carried out (Salazar *et al.* 2019).

In Asturias, these years saw the 50th anniversary of the discovery of Tito Bustillo (Alvarez-Fernández & Jordá 2018), the centenary of that of Buxu (Menéndez 2016), as well as the centenary of that of Candamo (Corchón *et al.* 2017) – a few new engravings were also reported in Candamo (Corchón *et al.* 2015). New volumes appeared on Les Pedroses (Martínez-Villa 2019), Coimbre (Alvarez-Alonso & Yravedra 2017; see also González-Pumariiega 2020), and Las Caldas (Corchón 2017) – the latter presents the site's hundreds of Magdalenian engraved plaquettes, as well as other portable art). The cave of Covaciella was the subject of an important volume (García-Diez *et al.* 2015) as well as a paper (García-Diez *et al.* 2016). There were also new studies of the sites of La Viña (González-Pumariiega *et al.* 2017) and of the Cueva de Las Mestas, where a figurative engraving was only identified as such, decades after the discovery (González-Pumariiega *et al.* 2018).

In other parts of the Iberian Peninsula, a new study of the horse figure in Atapuerca's Cueva Mayor concluded that its Palaeolithic age is still extremely uncertain (Fernández Moreno *et al.* 2019). The art in the cave of El Morrón (Jaén) was examined afresh (Sanchidrián *et al.* 2017), and the imagery in Gibraltar's Gorham's cave was presented (Simón-Vallejo *et al.* 2018). A new article was published on the portable art of Estebanvela (Segovia) (García-Diez & Cacho 2015).

In the field of open-air art, a new book appeared on Siega Verde (Vázquez & Angulo 2019); the Côa Valley was the subject of a number of new papers (Aubry *et al.* 2014; Luis *et al.* 2015; Baptista 2016; Fernandes *et al.* 2017), as well as a major new discovery at Fariseu (Aubry *et al.* 2020a, 2020b) [Figure 1], while Germany's Hunsrück site was also presented (Welker 2015, 2016). A new study of the



Figure 1. Huge male aurochs figure, over 3.5 m long, pecked into a rock at Fariseu, Côa Valley, and highlighted in white on the photo (Photo: T. Aubry).

female figures at Qurta, Egypt, was published (Huyge 2018). Claims have been made (Molodin *et al.* 2019) that some petroglyphs in Mongolia and neighbouring areas of Siberia – including mammoths, horses and a possible rhino – may be Palaeolithic in age, but this is by no means sure, especially as mammoths persisted long into the Holocene.

Elsewhere in Europe, major publications appeared on Russia's Kapova cave (Kotov 2019; Svoyski *et al.* 2018; Shirokov 2018; Ruiz-Redondo *et al.* 2020; see also Levanova *et al.*, this volume). Recent studies here found flat pieces of limestone with remains of ochre, like painters' palettes, and accumulations of pigment hidden in hollows between big blocks (Kotov 2016, 2019). However, the most astonishing discovery in the cave was a painting of a bactrian camel, that had lain concealed under calcite, apart from its hind-leg which had been thought to be an anthropomorph (Devlet *et al.* 2018, 2018a).

Finally, a new study compared Gönnersdorf's animal depictions with the site's fauna (Bosinski 2016). The art of Sicily's Levanzo Cave was the subject of a new study (di Maida *et al.* 2018); one of its deer engravings was reinterpreted as a horse (di Maida 2016). The art of Italy's Romito shelter was also re-examined in detail (Sigari 2020). In Romania, a new account of Coliboaia cave (Gély *et al.* 2018) had many of its claims rebutted, especially those concerning dating, identifications, and comparisons with other caves, most notably Chauvet (Cârciumaru *et al.* 2019).

New discoveries

As always, portable art has continued to be found: e.g. some new Magdalenian pieces from Bourrouilla (Pyrénées-Atlantiques) (Plassard *et al.* 2018); the remarkable engraved schist plaquettes from the late Magdalenian at Le Rocher de l'Impératrice in Brittany (Naudinot *et al.* 2017); and a highly unusual bird figure in sunken relief on flint, from the Aurignacian of Cantalouette II, which looks natural rather than man-made (Ortega *et al.* 2015). However, the most startling finds in France have been unearthed at Amiens-Renancourt, where no less than 15 female figurines (of Gravettian style) carved in chalk have been found, suggesting that this site was a production centre for them; jewellery has also been found here (Paris *et al.* 2017, 2019).

Special mention should also be made of the huge number of engraved plaquettes recovered from the small part of the open-air site excavated at Foz do Medal in north-east Portugal (de Figueiredo *et al.* 2016, 2020), as well as the engraved and painted stones from the final Palaeolithic at Fariseu in the Côa Valley (Santos *et al.* 2018).

Where new decorated caves are concerned, there have been a whole series of additions to the corpus during the five years in question, once again primarily in the Spanish Basque country – most notably Atxurra (Garate *et al.* 2016b; 2020a; Arriolabengoa *et al.* 2020) [Figure 2], where studies have shown that the Magdalenian engravers deliberately sought areas that were very



Figure 2. Two horses scraped and engraved in the cave of Atxurra, 65 cm and 109 cm in length (Photo D. Garate).



Figure 3. Bison head, engraved, carved and natural, in La Marche (Photo S. Konik, MCC/Centre National de Préhistoire).

difficult to access – these have the greatest densities of engravings, whereas places easy to reach have fewer or none. Art has also been found at Armintxe (González Sainz & López Quintana 2018), Morgota (López 2015; Garate *et al.* 2015a), Danbolinzulo (Ochoa *et al.* 2020), Ondaro (Garate *et al.* 2016/17), Baltzola (Intxaurbe *et al.* 2019, 2020), and San Pedro (Intxaurbe *et al.* 2020a). Alkerdi 2 (Alvarez *et al.* 2016; Garate *et al.* 2017) is a Gravettian cave with an engraved bison as well as red signs. However, some of the most interesting finds have been made in several of the Aitzbitarte caves (Garate *et al.* 2016a, 2020b, 2020c), especially Aitzbitarte IV (Garate *et al.* 2018; 2020d) with its astonishing figures drawn in clay on the walls in a fantastically inaccessible gallery.

In Cantabria there have also been a number of new finds – Auria (Ontañón *et al.* 2018), Cueto Grande (Muñoz *et al.* 2015), Cudón (Montes *et al.* 2015), Solviejo (Montes *et al.* 2017) and a series of six minor decorated caves (Ontañón *et al.* 2019).

Elsewhere in Spain, a new cave was discovered in the Zaragoza region – the Cueva Hermosa contains clusters of small red dots (Bea *et al.* 2019). At L'Espluga de Francolí, Tarragona, numerous engravings have been found (<https://www.elperiodico.com/es/videos/sociedad/santuario-paleolitico-espluga-francoli/4766562.shtml>). In the South, Las Ventanas was found in Andalusia (Cortés-Sánchez *et al.* 2018), as was Los Marquez (Medina-Alcaide *et al.* 2020). The Cueva de Las Estrellas in Cádiz contains a group of hand stencils (Collado *et al.* 2019).

In France, decoration was reported in Bourgogne, in the Grottes Agneux I and II (Floss *et al.* 2018, 2018a). New discoveries were also made in what were hitherto thought to be undecorated rock-shelters. In the Dordogne's famous Cro-Magnon shelter, traces of red marks including a possible figure have been detected (Bougard 2019); while at the equally famous La Marche shelter in Vienne, a bison head in relief and engraving was discovered, along with other engraved lines and some traces of red ochre (Bahn 2016a, 2017) [Figure 3]. This case somewhat resembles that of Parpalló in Spain – both sites contained hundreds of decorated plaquettes, but both were thought devoid of parietal imagery. At least one parietal figure is now known in each.

Elsewhere in Europe, an unusual engraving of what seems to be a bison in a rock shelter at Allerberg (Lower Saxony, Germany) perplexes specialists who have so far been unable to determine its age (Grote *et al.* 2018); on the other hand, there is no doubt that a Palaeolithic decorated cave, Romualdova Pecina, has now been discovered in Croatia (Ruiz-Redondo *et al.* 2019). In stark contrast, claims that some animal engravings in Crete are of Palaeolithic age (Strasser *et al.* 2018) are almost certainly erroneous, in view of the style of the figures.

Finally, new examples of open-air Palaeolithic engravings continue to be found – most notably in the Salamanca region (Reis & Vazquez 2015; Garate *et al.* 2016c; Vazquez & Reis 2019).

Ice Age art in other continents

The petroglyphs of possible mammoths on the San Juan river in Utah (see previous volume) were presented again in a new study (Malotki 2019), as were the indisputably Palaeolithic petroglyphs at El Hosh and Qurta along the Nile in Egypt (Huyge & Claes 2013-15). Elsewhere in Africa, a new study appeared of the 30,000-year-old portable art from Namibia's Apollo 11 Cave (Rifkin *et al.* 2015).

However, the most important new work occurred in Australasia. In Australia itself (see also Franklin, this volume), doubt has been cast on the interpretation of some figures as *Palorchestes*, the extinct marsupial tapir (Welch & Welch 2015). Similarly, the claim (see previous volume) that a painted figure in Western Arnhem Land is an extinct bird, *Genyornis*, has been rendered highly unlikely by detailed geological and archaeological study of the site which showed that the figure must be less than 13,000 years old (Barker *et al.* 2017; Gunn 2018). For recent work on possible images of Australian extinct megafauna, see also Taçon & Webb (2017) and Gunn (2018: 30-33).

Further work has been reported from sites in East Timor, most notably shell beads (Langley & O'Connor 2016) and a 42,000-year-old pigment stained *Nautilus* shell (Langley *et al.* 2016). New advances have also come from Indonesia (see Brumm *et al.* 2017 for a general study of early human symbolic behaviour in the late Pleistocene of Wallacea). A new series of calcite dates from several caves in Borneo has added to the earlier results from Sulawesi (see previous volume) and shown that animal figures as well as hand stencils were being produced here in the Pleistocene (Aubert *et al.*, 2018). Further work in Sulawesi, at the cave of Leang Bulu'Sipong 4, produced a calcite dating of at least 43,900 years ago for motifs which have been interpreted – somewhat dubiously – as a hunting scene featuring a number of possible therianthropes (Aubert *et al.* 2019; see also Tan & Scott, this volume).

In China, an Upper Palaeolithic freshwater shell bead was reported from Shuidonggou 2 (Yi *et al.*, 2016), while a remarkable tiny carving in burned bone of what looks like a bird was reported from Lingjing (Henan), and dates to c. 13,500 years ago (Li *et al.* 2020).

The earliest art

For a general survey of the earliest art, see Lorblanchet & Bahn (2017); for a theoretical model of the origins of iconic depictions, see Hodgson & Pettitt (2018).

It was pointed out in the previous two volumes in this series that the concept of Neandertal art had at last come into its own, and the past five years have

confirmed this even further with new and varied evidence (e.g. Dayet-Bouillot & d'Errico 2016). The most important data are results from calcite dating of cave markings in Spain (see dating section, below), but there are many others: e.g. evidence for the symbolic use of seashells and mineral pigments by Iberian Neanderthals (Hoffmann *et al.* 2018); the use of a black pigment by the Neanderthals of Belgium's Vindija Cave (Bonjean *et al.* 2015); and a decorated raven bone from Zaskalnaya VI Neanderthal site in Crimea, dating to 38-43,000 years ago, whose regularly spaced seven notches were made in one session with one tool, and are clearly symbolic rather than butchery marks (Majkic *et al.* 2017).

Even farther back in time, a freshwater mussel shell from Trinil, Java, dating to at least 430,000 years ago, bears geometric engravings which are thus attributable to *Homo erectus* (Joordens *et al.* 2015). In China, the archaic hominin site of Lingjing (Henan Province) has yielded engraved bones (Li *et al.* 2019).

In Africa, Ethiopia's Porc-Epic Cave produced evidence of Middle Stone Age ochre processing (Rosso *et al.* 2016), while Kenya's Olorgesailie basin sites, likewise of the Middle Stone Age (c. 320-295,000 years ago) have yielded evidence of pigment use – red pigment was obtained from iron-rich rocks (Brooks *et al.* 2018). An analysis was carried out of the personal ornaments (*Conus* shells) from Border Cave, dating to c. 74,000 years ago (d'Errico & Blackwell 2016). And unsurprisingly Blombos cave continued to provide new finds – such as an abstract drawing dating to c. 73,000 years ago (Henshilwood *et al.* 2018).

Techniques

As mentioned earlier, the new facsimile of Lascaux and the pseudo-facsimile of Chauvet were opened during these years.

The application of new technology to Ice Age imagery underwent further development: for example, portable X-ray fluorescence analysis was applied, with interesting results, at Rouffignac, La Garma and Font de Gaume (Gay *et al.* 2016). Where the recording of cave art is concerned, 3D-modelling was applied at Marsoulas, so that tracings could be projected onto the cave's modelled surfaces (Fritz *et al.* 2016); and also at Atxurra where ultra-high resolution 3D models were produced for some thinly incised engravings (Rivero *et al.* 2019).

Many new analyses of pigments and other materials have been carried out: Raman spectroscopy was used on the haematite in several paintings in Altamira (Gazquez *et al.* 2016), and the shell tools used for ochre-processing in the cave were also analysed (Cuenca-Solana *et al.* 2016), while d'Errico studied the technology of Castillo's paintings (d'Errico *et al.* 2016).

At Font de Gaume, portable X-ray fluorescence has confirmed that its paintings comprise primarily iron oxide and manganese, but has obviously provided far more detailed information than was obtained from the original analyses of 1902 (Reiche *et al.* 2020). The charcoal (mostly pine) found in Nerja was analysed as a means of exploring the context of the cave's art (Medina-Alcaide *et al.* 2015).

Rivero's thesis (2015, 2016) was a major contribution in its examination of the production of portable art, and its emphasis on trying to assess the degree – or lack – of expertise in engraving the figures.

Finally, further work was reported on the finger flutings in different caves, highlighting the frequency with which children were involved (Van Gelder 2015; Cooney Williams & Janik 2018).

Dating

One collection of papers on dating has appeared (Ontañón & Utrilla 2017), as well as a survey of the chronology of Western Pyrenean cave art (Ochoa & García-Diez 2015).

Simple stratigraphy was used at La Viña, to assess the age of the engravings from their height in relation to the occupation levels (González-Pumariiega *et al.* 2017a). In Rouffignac, by contrast, a relative chronology was obtained for the figures on the Great Ceiling through chemical analysis, style and superimposition (Gay *et al.* 2020). No less than 44 of the 65 figures on the ceiling were tested, and 3 different manganese pigments were detected. The study showed that the ceiling was not a single composition, but an accumulation of subgroups of figures, probably by a very small number of artists.

At Lascaux – still a very poorly dated site – several new C14 dates have been obtained from reindeer bones from different places in the cave, which all seem to centre around 21,000 bp (calibrated) (Ducasse & Langlais 2019). Unfortunately, this does not necessarily date the art, or at least not all of its phases, which must have been multiple (see Bahn 1994). New 14C-AMS tests showed that some black figures in the Spanish cave of Ojo Guareña date back to c. 13,000 years ago (Ortega-Martínez *et al.* 2020).

As mentioned above, Uranium/Thorium dates have been obtained from calcite covering a variety of motifs in Indonesian caves (Aubert *et al.* 2018, 2019); and also from the calcite over the newly discovered bactrian camel painting in Kapova – the layer formed between 36,400 and 14,500 years ago (Dublyansky *et al.* 2016).

Whereas the Indonesian results seem to have been widely accepted without problem, the same does



Figure 4. Ladder-like motif in La Pasiega which calcite dating has shown was made by Neanderthals (Photo J. Zilhão).

not apply to those from Spain (see also the previous volume). In 2018, new results were published from a ladder-like motif in La Pasiega [Figure 4], a hand stencil in Maltravieso and some red markings in Ardales – all showed that the calcite started forming over these motifs at least 65,000 years ago, and hence the markings must have been made by Neanderthals (Hoffmann *et al.* 2018a). Both the method and the results were vigorously attacked by numerous researchers, for a wide variety of reasons (e.g. Sauvet *et al.* 2017; Pons-Branchu *et al.* 2020; White *et al.* 2020); but the specialists involved in the analyses, who, it must be said, are preeminent in their fields, have decisively rebutted all the critiques (Pike *et al.* 2016; Hoffmann *et al.* 2020), which were often ill-founded and based on a lack of understanding of the dating method (see also Zilhão 2020).

Both calcite dating and radiocarbon were used in Candamo Cave (Corchón *et al.* 2015), and found that figures in a newly discovered area were attributable to c. 21,000 years ago. Radiocarbon dating was also presented for Cosquer Cave (Valladas *et al.* 2017), and Cova Eirós (Steelman *et al.* 2017).

However, the major problem – which still remains unresolved – is that of the true age of the art in Chauvet Cave, as already highlighted in the previous two volumes in this series. In the past five years there have been some

significant developments, most notably the appearance of a paper (Quiles *et al.* 2016) which was meant to be – and was widely considered – the last word on Chauvet’s dating, and the confirmation of its Aurignacian age, since it presented more than 350 dates. Unfortunately, there are numerous problems – not least the fact that the vast majority of these dates are from hearths, etc, and have absolutely no connection with the art; and even today only the Gif laboratory has been allowed to date the parietal figures (and remarkably few of them). This remains an unbelievably unscientific situation which should have been resolved long ago. Over the years, some of the Chauvet team’s dates for the art have been rejected, others modified, and some simply omitted from this supposedly definitive account. The alternative chronology presented a few years ago (Pettitt & Bahn 2015) has never been discussed or debated, a situation which has persisted for many years, despite a long series of objections (see previous volume, and Jouve 2017; Bahn *et al.* 2019). A detailed critique of the Quiles *et al.* (2016) paper has appeared (Jouve, Pettitt & Bahn 2020), but it remains to be seen when (or whether) the dating of Chauvet will ever be properly assessed.

Hand stencils have been the subject of two chronological studies – García-Díez *et al.* (2015a) reassessed them in Europe in light of the implications of the early calcite dates from El Castillo (see previous volume); Pettitt *et al.* (2015) evaluated the existing data to produce a new chronology.

The ivory carvings of the Swabian Jura were reassessed by Jouve (2017, 2019) who used the documentation of the original discoverers to cast considerable doubt on the Aurignacian age of most of them, and showed that most are almost certainly Gravettian or even, in at least one case, Magdalenian (see also Clifford & Bahn 2020).

Where other continents are concerned, in Australia (see also Franklin, this volume) there have been renewed attempts to date the early rock paintings of the Kimberley. Ross *et al.* (2016) obtained a new OSL date of 16,000 for a wasp nest overlying an elongated ‘yam-like’ motif. Finch *et al.* (2020) dated 24 mud wasp nests above and below Gwion figures; one of them proved to have a minimum age of 17,000 years, but most seem to have been produced around 12,000 years ago.

Interpretation

As in the previous five years, there have been few developments in interpretation, but mercifully the “shamanism” hypothesis continues to be absent!

There have been a series of new and somewhat bizarre interpretations of cave art: for example, Guy (2017) saw the imagery as heraldic emblems of a rich nobility,

while Testart (2016), in a posthumously published work, interpreted Palaeolithic signs as being parts of females, and treated major caves like Lascaux as single compositions!

Where portable art is concerned, an engraving on a stone from Molí del Salt, Spain, was interpreted – not very convincingly, alas! – as a depiction of a hunter-gatherer campsite (García-Díez & Vaquero 2015). The famous ivory “lion-man” from Hohlenstein-Stadel, Germany, was thoroughly reassessed and reinterpreted as a depiction of a standing bear (Clifford & Bahn 2020).

Finally, Hodgson (2018) concurred with previously published work by the Dellucs and by Bahn, and interpreted some supposed vulva depictions as horse tracks; while McCauley *et al.* (2018) resurrected the largely discredited theory that some hand stencils with missing phalanges are best explained by amputations!

Conclusion

As stated in the previous three volumes in this series, the most important problem that remains to be resolved is the true age of the art of Chauvet Cave.

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