XXVI VALCAMONICA SYMPOSIUM 2015

Capo di Ponte (Bs) ITALY
September 9 to 12, 2015

PROSPECTS FOR THE PREHISTORIC ART RESEARCH
50 years since the founding of Centro Camuno

PROSPETTIVE SULLA RICERCA DELL'ARTE PREISTORICA
a 50 anni dalla fondazione del Centro Camuno

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Atti del XXVI Valcamonica Symposium , 9 - 12 Settembre 2015

I Edizione multilingua, Edizioni del Centro (Capo di Ponte)
ISBN 9788886621465

Edited by / A cura di: Federico Troletti (CCSP / University of Trento, Italy)
Editing / Redazione: Federico Troletti, Valeria Damioli
Tranlated / Traduzioni: William J. Costello, Valeria Damioli, Ludwig Jaffe, Federico Troletti
Layout and Graphic Design / Impaginazione e grafica: Valeria Damioli

Printed in September 2015 by Press Up s.r.l.
Finito di stampare in Settembre 2015, presso Press Up s.r.l.

EDIZIONI DEL CENTRO
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Comune di Capo di Ponte

Riserva Naturale incisioni rupestri di Ceto, Cimbergo, Paspardo

With the support of / *Con il sostegno di*

Banca Valle Camonica (Gruppo UBI Banca)
SIAS Segnaletica Stradale s.p.a., Esine

A chronology of Saudi Arabian rock art

Robert G. Bednarik * and Majeed Khan **

Summary
The traditional chronology of Saudi Arabian rock art is examined in the light of the ongoing scientific dating project of this vast corpus of petroglyphic rock art. A series of radiocarbon, microerosion and optically stimulated fluorescence dates from various parts of the Kingdom is presented and discussed. The inconsistencies of the traditional model are explained and age estimates of epigraphic manifestations are also expounded in an endeavour to introduce a scientifically based chronology of Saudi Arabia. This replaces the timeline derived from presumed stylistic sequences and subjective interpretations based purely on photographs.

Riassunto:
L'articolo riesamina la cronologia tradizionale del vasto corpus dell'arte rupestre dell'Arabia Saudita alla luce dei moderni metodi di datazione; dati ricavati da analisi al radiocarbonio, microerosione e fluorescenza ottica, raccolti da progetti di ricerca attivi in diverse zone del territorio, vengono presentati e discussi. Le incongruenze con il modello tradizionale sono argomentate nel tentativo di introdurre una cronologia fondata sull'anali scientifica che sostituisca la linea temporale derivata da presunte sequenze stilistiche e interpretazioni soggettive basate unicamente su fotografie.

Introduction

In 2001 the Deputy Ministry of Antiquities and Museums of the Kingdom of Saudi Arabia commenced a project to assess the analytical potential of Saudi petroglyphs. This was envisaged to be a logical extension of the work of the past three decades of the Epigraphic and Rock Art Survey of the country (Khan 1990; Khan *et al*. 1986, 1988; Kabawi *et al*. 1989, 1990). A primary objective was to determine which of the suite of methods currently available for estimating rock art age (Bednarik 2002) might be applicable to Arabian petroglyphs. This involves an investigation of the conditions of sample procurement, of calibration in those cases where it is required, and a determination of which methods could be employed with any reasonable promise of success. Most published information about this vast corpus of rock art lacks comprehensive information of such aspects as geomorphic surface conditions, types of accretionary deposits, rates of exfoliation or patination, petrographic descriptions or weathering rates, and even relevant details of site morphology and geology are uniformly lacking. Yet before preferred analytical approaches could be selected, such basic information was required. Therefore the first objective of the many field missions conducted from 2002 to 2015 was to gather the preliminary data to formulate research strategies that might ultimately lead to a chronology of Arabian rock art based on 'direct dating' methodology (sensu Bednarik 2007). Recently this work has led to the decision of the Saudi government to nominate successfully two major rock art precincts for World Heritage listing (SCTA 2014).

Palaeoart in the Middle East

Rock art occurs in practically all the countries of the Middle East, but knowledge about it remains very uneven. Moreover, apart from the few exceptions listed below, no other rock art has been credibly dated anywhere in the Middle East. Intricate relative chronologies have been invented for some regions, such as the Sinai Peninsula and southern Saudi Arabia, but have been refuted at least in the latter case (Khan 1998; Bednarik, Khan 2005). It has been claimed that 40,000 images exist at the Sinai's main concentration, the extensive mountain Har Karkom (Anati 1996), but the reliability of the claim has been questioned and the tentative dating of Anati's (1996) Negev sequence is dependent on his earlier, false stylistic chronology of Arabia (Anati 1963, 1968, 1972, 1974).

Some of the earliest rock art in the Middle East has been claimed to be in southern Turkey, at sites such as Belidibi (Mellaart 1975), Kara'In and Öküzlü'In, but these contentions refer to portable 'art' rather than rock art, which has in fact been found of earlier ages in the Levant (Goren-Inbar 1986; Weinstein-Evron, Belfer-Cohen 1993; Goring-Morris 1998; Kaufman

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1999). Relatively richer concentrations are found in northern Syria, where a great wealth of pre-Islamic inscriptions (reportedly 28,000) has been mentioned, in Safaitic, Hismaic, Thamudic, Nabatean, Greek and Latin. A large proportion of these are thought to relate to adjacent petroglyphs. Rock art continues in Jordan, where again portable art has been 'dated' through epigraphy (Betts 1998). About a hundred rock art sites are known in Yemen, which include rock paintings (Jung 1991, 1994). Similar conditions are apparent in neighbouring Oman, with only two notable concentrations of rock art, at Jabal Akdhar in the al-Hajjar mountain range (Clarke 1975; Preston 1976; Jäckli 1980) and in Dhofar (al-Shahri 1991). In United Arab Emirates, several scattered petroglyph sites have been reported (e.g. Jongbloed 1994), but they are small groups and of comparatively crude execution. Further north along the coast of the Gulf, even the small state of Qatar contains a few rock art sites, where the occurrence of presumed boat petroglyphs is noteworthy (Facey 1987).

Rock art certainly does occur in Iraq, but there are virtually no detailed reports of it, although it appears the major occurrences may be in the Kurdish parts. Most certainly petroglyphs are plentiful across Iran, but published international reports about this wealth have only begun to emerge in recent years (e.g. Lahafian 2004, 2010; Ghasrian 2007; Ghasrian *et al.* 2014; Safaran, Mozhdekanloo 2014). Further east, in both Pakistan and Afghanistan, the level of knowledge about rock art is even lower than in Iran. Although it is known that there are great bodies of rock art in those regions, nothing of consequence is known about them internationally, and there are, in contrast to Iran and especially India, not even established traditions of surveying rock art. Finally, Egypt features substantial rock art sites (e.g. Winkler 1938; Červíček 1986; Reimer 2009), especially in the Eastern Desert (Redford, Redford 1989; Judd 2007). In fact Egypt is the only Middle Eastern country, apart from Saudi Arabia, to have provided scientific dating for any rock art (Huyge *et al.* 2001).

Northern Saudi rock art

Rock art occurs in many parts of the Kingdom, mostly in the form of petroglyphs (Fig. 1). Some of these sites are among the largest concentrations in Asia, but most sites are of significantly smaller assemblages. Beginning in the country's northwest, the two most important rock art complexes are those of Jubbah and Shuwaymis. Jubbah is an isolated oasis in the Great Nafud Desert, next to the imposing sandstone stacks of Jabal Umm Sinman. Dozens of petroglyph sites occur on this mountain and on several smaller ones nearby (Fig. 2). So far, only two of the many thousands of petroglyphs at this site complex have been dated, by microerosion analysis. They are two anthropomorphs, E4890 + 760 / - 650 and E5877 + 1190 / - 220 years old respectively, and are therefore of the Neolithic period.

Jabal Umm Sinman is one of two major site complexes in the Kingdom that have recently been submitted for World Heritage listing; the other is the similarly large petroglyph complex of Shuwaymis, over 300 km to the south. It was only discovered in 2001 (Bednarik, Khan 2002) and also consists of numerous sites, the two largest of which have been nominated, Jabal al-Raat and Jabal al-Manjor. The Shuwaymis rock art precinct is one of the most impressive occurrences of rock art in the world. So far, four petroglyphs at Jabal al-Raat have been soundly dated: two anthropomorphs, an ibex-like zoomorph and a cupule (Table 1). Their ages range from about 5000 to up to 9000 years, the earliest motif being the cupule of the pre-ceramic Neolithic (Fig. 3).

Janin Cave, east of Hail, is of particular interest because it is one of very few deep caves in the predominantly sandstone region. The cave is about 100 m deep and well decorated, but mostly so in the part accessed by daylight. At the nearby main site of Janin, one of those in the Kingdom that are protected by long steel fences, the patination of a zoomorph resembling an antelope was sampled for accelerator mass spectrometry radiocarbon analysis. The result, 1820 ± 50 years BP (OZF900) was, however, regarded as an inconclusive and conservative minimum date, because of the inherently open carbon system of such deposits (Bednarik, Khan 2005, pp. 61-62).

The Milihiya site, in the same area, comprises only sporadic occurrences of petroglyphs on low cliffs and boulders, whereas nearby Yatib is a spectacular site on a high cliff and the boulder scree below it. This site is also well protected by a steel fence and a caretaker from a nearby community. Yatib presents rock art of exceptional quality, but is of significantly smaller size than Umm Sinman or the massive Shuwaymis sites. Of interest is Jabal al-Bargh, to the south of Shuwaymis village. Although also a small site, its purported depiction of date palms is of interest because of the question of that tree's debut in central Arabia. One of these tree images has provided excellent conditions for microerosion analysis and has yielded a date of E2370 + 810 / - 600 years, which falls into the early part of the final desertification period.

Two petroglyph sites in the central part of the Kingdom have been subjected to scientific analysis, and one of them has also yielded a dating from one of its hundreds of motifs. This is Al-'Usayla, about 115 km southwest of Riyadh. The site is very compact and exceptional in the number of motifs over a small surface area. One zoomorph, resembling an ibex, has provided a direct age estimate of E2680 + 500 / - 560 years BP, using the Jubbah calibration curve (rather than the geographically much closer, but less reliable Umm Asba'a curve). The second site, Umm Asba'a, is c. 85 km west of Riyadh. Marked by its prominent mushroom-shaped rock it features a relatively small assemblage of petroglyphs.

Southern Saudi rock art

Another major rock art complex of Saudi Arabia that has received recent scientific attention is the great concentration of sites north of Najran, generally of the mountains of al-Qara and Jabal al-Kawbab and nearby regions. In contrast to the relatively compact properties at Jubbah and Shuwaymis, the many sites of this

complex are spread over a considerable area, measuring with outliers up to 130 km in north-south extent. This is clearly the only other Arabian contender for highest protection status, and it may also be nominated for World Heritage listing in the near future. However, this would involve first addressing the low accessibility relative to the two other nominated site complexes as well as the current lack of protective measures. Whereas the Jubbah and Shuwaymis properties have been enclosed in extensive steel fences for many years, no such safeguard exists anywhere in the extensive al-Qara site complex. Nor have formal caretaker arrangements been established, like those at several sites in the Hail region. Nevertheless, for the purpose of comparison it needs to be appreciated that the al-Qara complex houses several tens of thousands of petroglyphs, and its substantial library of Arabian rock inscriptions exceeds those at Jubbah in number. However, their Thamudic content is very low, with Kufic and recent Islamic texts clearly dominating. Although there are some minor early petroglyph sites, the great bulk of this massive heritage monument is of more recent date than much of the nominated Hail rock art; most of the al-Qara and Jabal al-Kawbab rock art is probably under 3000 years old (Bednarik, Khan 2009). The complex includes several dozen major concentrations of rock art, some of which have been examined scientifically. This has resulted in OSL and microerosion datings, and it is especially relevant that the new method of colorimetric patination analysis was pioneered at one of these sites, Najd Sahî. After determining 1620 colorimetric readings there from five petroglyphs, their seriation was calibrated against a microerosion-dated petroglyph at the nearby Ta'ar site (Bednarik 2009), providing a base for easy age estimation in the region.

Recent optically stimulated luminescence (OSL) dating from the site Ain Jamal in the vast Jabal Qara rock art complex, derived from the former surface of the sandstone bedrock, now concealed by reprecipitated carbonate, dates the presence of the last water source at the site (Liritzis et al. 2013). This final wet phase in the interior of southern Arabia began about 3600 years ago, diminishing over the following millennium, with rapid desertification between 2500 and 1500 years ago (Rosenberg *et al*. 2011; Engels *et al*. 2012). Yet some of the most impressive rock art of the region dates from E2109 + 250 / - 540 years BP, at the nearby Ta'ar site. This confirms an observation made in many parts of the world that rock art production seems to peak during periods of environmental stress, perhaps in response to such conditions, as part of supplication rituals and similar activities.

The example of the Najran rock art complexes indicates that large rock art concentrations exist elsewhere in the Kingdom of Saudi Arabia, but this corpus, although more recent than the bulk of the Jubbah and Shuwaymis rock art, is often less well preserved. There is the evidence of the frequent practice of using prominent rock art panels for target practice in the Najran region, which has left numerous bullet impacts, and the sandstone is also slightly less stabilized.

Summary

The traditional chronology of Saudi Arabian rock art is based on Anati's (1968, 1972, 1974) iconographically derived "stylistic" phases, which he determined from 232 photographs randomly taken by travellers at and near Jabal Qara (Bednarik, Khan 2005). Anati himself has never been to Saudi Arabia, and his idiosyncratic sequence of styles consists almost entirely of fantasies about fictional ethnic groups and imagined objects. It ignores even the patination evidence on the photographs he examined and has been shown to be false in almost every respect (Bednarik, Khan 2002, 2005, 2009). Since 2002, microerosion analyses, radiocarbon dating and OSL analyses have facilitated the establishment of an initial chronological framework for Saudi Arabian rock art that differs fundamentally from Anati's model (Fig. 6). Much of the world's rock art dating is still conducted by "stylistic reasoning", and the Arabian experience provides a classical example of how such constructs are likely to be false.

References

al-Shahri A.A.
1991 *Recent epigraphic discoveries*, in *Dhofar, Proceedings of the Seminar for Arabian Studies*, 21, pp. 173-191.

Anati E.
1963 *Palestine before the Hebrews*, New York, Alfred A. Knopf.
1968 *Rock art in central Arabia*, Vol. 1, *The 'ovalheaded people of Arabia'*, Bibliothèque du Muséon, Vol. 30, Louvain/Leuven, Institut Orientaliste/Instituut voor Oriëntalistiek.
1972 *Rock art in central Arabia*, Vol. 3, *Corpus of the rock engravings*, Parts I and II, Louvain, Institut Orientaliste.
1974 *Rock art in central Arabia*, Vol. 4, *Corpus of the rock engravings*, Parts III and IV, Louvain, Institut Orientaliste.
1996 *Har Karkom*, in «BCSP» XXIX, pp. 13-48.

Bednarik R.G.
2002 *The dating of rock art: a critique*, in «Journal of Archaeological Science» 29(11), pp. 1213-1233.
2007 *Rock art science: the scientific study of palaeoart* (2nd edn), New Delhi, Aryan International Books (1st edn Tournhout, Brepols).
2009 *Experimental colorimetric analysis of petroglyphs*, in «Rock Art Research» 26(1), pp. 55-64.

Bednarik R.G., Khan M.
2002 *The Saudi Arabian rock art mission of November 2001*, in «Atlal» 17, pp. 75-99.
2005 *Scientific studies of Saudi Arabian rock art*, in «Rock Art Research» 22(1), pp. 49-81.
2009 *The rock art of southern Arabia reconsidered*, in «Adumatu Journal» 20, pp. 7-20.

Betts A.V.G.
1998 *The Harra and the Hamad. Excavations and surveys in eastern Jordan*, Vol. 1, Sheffield, Sheffield Archaeological Monographs 9.

Červíček P.
1986 *Rock pictures of Upper Egypt and Nubia*, Supplemento 46 fasc1., Napoli, Istituto Universitario Orientali.

Clarke C.F.
1975 *The rock art of Oman*, in «Journal of Oman Studies» 1, pp. 3-14.

Engels M., Brückner H., Pint A., Wellbrock K., Ginau A., Voss P., Grottker M., Klasen N., Frenzel P.
2012 *The early Holocene humid period in NW Saudi Arabia - sediments, microfossils and palaeohydrological modelling*, «Quaternary International» 266, pp. 131-141.

Facey W.
1987 *The boat carvings at Jabal al-Jussaiyah, northeast Qatar*, in «Seminar for Arabian Studies» 17, pp. 199-219.
Ghasrian S.M.
2007 *Sangestoon: a new rock art site in central Iran*, «Rock Art Research» 24(1), pp. 59-64.
Ghasrian S.M., Khanmoradi M., Ghasimi T.
2014 *The role of engraved inscriptions in the dating of Iranian rock art*, in «Rock Art Research» 31(1), pp. 112-115.
Goren-Inbar N.
1986 *A figurine from the Acheulian site of Berekhat Ram*, in «Mi'tekufat Ha'even» 19, pp. 7-12.
Goring-Morris A.N.
1998 *Mobiliary art from the Late Epipalaeolithic of the Negev, Israel*, in «Rock Art Research» 15(2), pp. 81-88.
Huyge, D., Watchman A., De Dapper M., Marchi E.
2001 *Dating Egypt's oldest 'art': AMS 14C age determinations of rock varnishes covering petroglyphs at El-Hosh (Upper Egypt)*, in «Antiquity» 75, pp. 68-72.
Jäckli R.
1980 *Rock art in Oman: an introductory presentation*, in «Bulletin of the Historical Association of Oman» 5, pp. 31-33.
Jongbloed M.
1994 *Petroglyphs in Wadi Ashwani, Fujairah*, in «Tribulus» 4(2), p. 24.
Judd T.
2007 *Presumed cattle petroglyphs in the Eastern Desert of Egypt: precursors of classical Egyptian art?*, in «Rock Art Research» 24(1), pp. 65-78.
Jung M.
1991 *Bronze Age rock pictures in north Yemen*, «East and West» 41, pp. 44-78.
1994 *A map of southern Yemen rock art with notes on some of the subjects depicted*, in «Proceedings of the Seminar for Arabian Studies» 24, pp. 135-155.
Kabawi A., Khan M., Mubarak A.
1989 *Preliminary report on the fourth phase of Rock Art and Epigraphic Survey*, in «Atlal» 11, pp. 41-52.
Kabawi A., Khan M., Zahrani A.
1990 *Preliminary report on the fifth phase of comprehensive Rock Art and Epigraphic Survey*, in «Atlal» 13, pp. 35-40.
Kaufman D.
1999 *A unique engraved object from the Epipalaeolithic of Israel*, in «Rock Art Research» 16(2), pp. 109-112.
Khan M.
1990 *The problem of inter-regional cultural/iconographic contacts in prehistory*, in «Atlal» 13, pp. 35-41.
1998 *A critical review of rock art studies in Saudi Arabia*, in «East and West» 48(3-4), pp. 427-437.
Khan M., Kabawi A., Zahrani A.
1986 *Preliminary report on the second phase of Epigraphic and Rock Art Survey of northern Saudi Arabia*, in «Atlal» 10, pp. 82-93.
1988 *A preliminary report on the third phase of Rock Art and Epigraphic Survey of northern region of Saudi Arabia 1986/1406*, in «Atlal» 11, pp. 61-76.
Lahafian J.
2004 *Petroglyphs of Kurdistan*, «Rock Art Research» 21(1), pp. 3-10.
2010 *Cupules in Kurdistan rock art*, in «Rock Art Research» 27(2), pp. 177-184.
Liritzis, I., Vafiadou A., Zacharias N., Polymeris G.S., Bednarik R.G.
2013 *Advances in surface luminescence dating: new data from selected monuments*, in «Mediterranean Archaeology & Archaeometry» 13(3), pp. 105-115.
Mellaart J.
1975 *The Neolithic of the Near East*, London, Thames and Hudson.
Preston K.
1976 *An introduction to the anthropomorphic content of the rock art of Jebel Akhdar*, in «Journal of Oman Studies» 2, pp. 17-38.
Redford S., Redford D.B.
1989 *Graffiti and petroglyphs old and new from the Eastern Desert*, in «Journal of the American Research Centre in Egypt» 26, pp. 3-49.
Reimer H.
2009 *Prehistoric rock art research in the Western Desert of Egypt*, in «Archéo-Nil» 19, pp. 31-46.
Rosenberg, T.M., Preusser F., Fleitmann D., Schwalb A., Penkman K. *et al*.
2011 *Humid periods in southern Arabia: windows of opportunity for modern human dispersal*, in «Geology» 39, pp. 1115-1118.
Saffaran E., Mozhdekanloo Z.
2014 *Proposed age of recently discovered petroglyphs of Iran's Toos Plain*, in «Rock Art Research» 31(1), pp. 110-111.
SCTA
2014 *Rock art in the Hail Region of Saudi Arabia. Serial nomination of Jabal Umm Sinman, Jubbah, and Jabal al-Manjor / Jabal Raat, Shuwaymis*, Riyadh, Saudi Commission of Tourism and Antiquities.
Weinstein-Evron M., Belfer-Cohen A.
1993 *Natufian figurines from the new excavations of the el-Wad Cave, Mt Carmel, Israel*, in «Rock Art Research» 10(2), pp. 102-106.
Winkler H.
1938 *Rock drawings of southern Upper Egypt*, Vol. 1, London, EES.

Site	Dating	Range (BP)	Approx. age (BP)
Um Asba'a	Calibration	Known age 1120 BP	
Al Usayla	'Ibex'	3180 – 2120	E2680 + 500 / - 560
Umm Sinman	Calibration	Known age 1150 to 1200 BP	
	Anthropomorph 1 Anthropomorph 2	5650 – 4240 7070 – 5650	E4890 + 760 / - 650 E5877 + 1190 / - 220
Jabal Ash Shuwayhit	Inscription 1 Inscription 2	3530 – 2130 3530 – 2120	E2830 ± 700 E2540 + 990 / - 420
Janin	'Gazelle'	Significantly greater than 1820 ± 50 BP	
Jabal al-Bargh	'Date palm'	3180 – 1770	E2370 + 810 / - 600
Jabal al-Raat	Anthropomorph 1 'Ibex' Anthropomorph 2 Cupule	5660 – 4960 6000 – 5300 4940 – 4240 9330 – 6220	E5310 ± 350 E5550 + 450 / - 250 E4590 ± 350 E7968 + 1360 / - 1750
Ain Jamal	Calibration	Known age 1300 to 1350 BP	
Ta'ar	Anthropomorph	2360 – 1570	E2109 + 250 / - 540

Table 1 - Preliminary direct dating results from rock art and inscriptions by microerosion analysis and radiocarbon analysis, from nine sites in central, northern and far-southern Saudi Arabia.

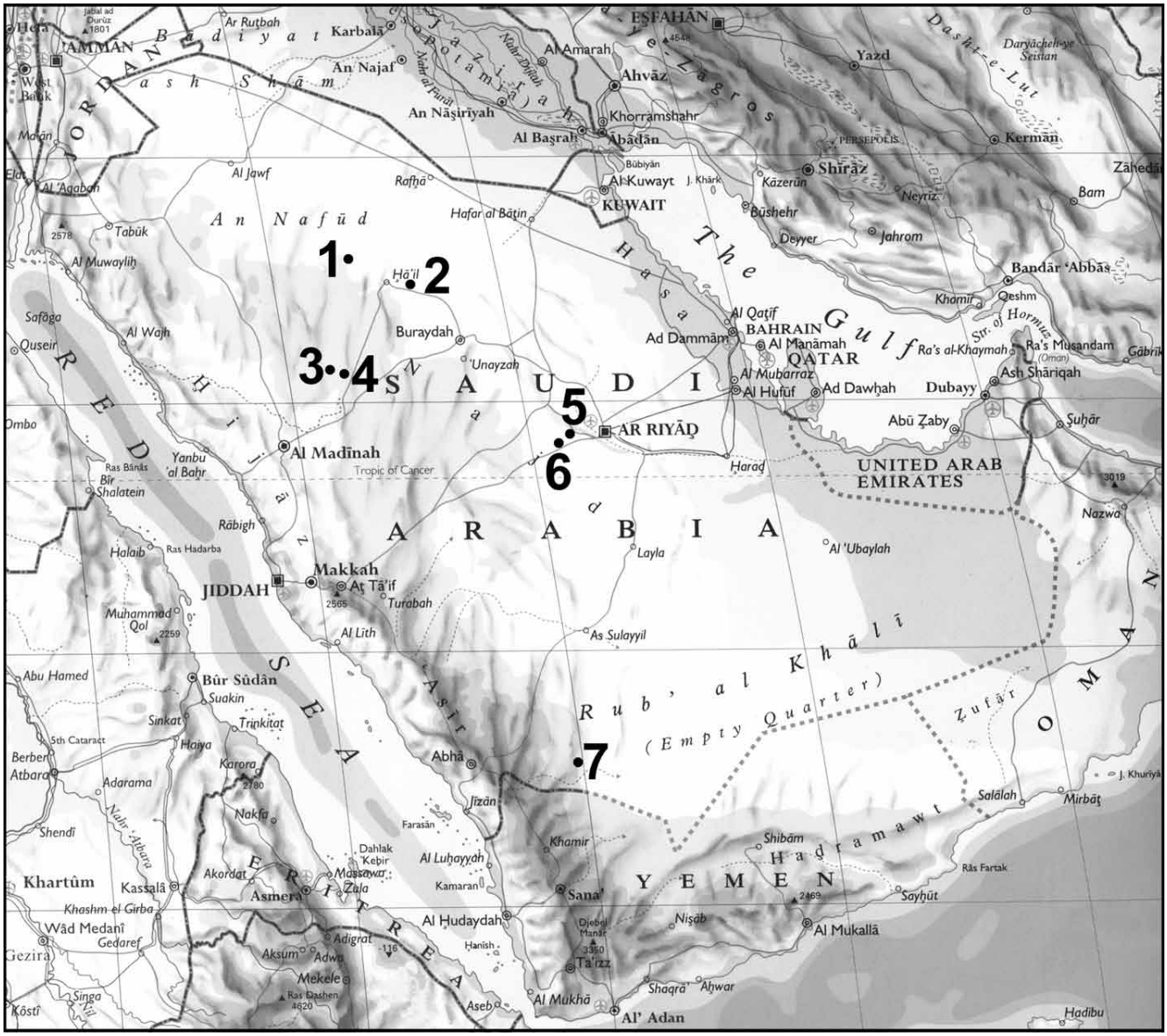

Fig. 1 - Some of the sites subjected to scientific investigation in Saudi Arabia, 2002 to 2015: 1 – Jabal umm Sinman complex; 2 – Janin Cave, Janin main site, Milihiya, Yatib; 3 – Shuwaymis complex; Jabal al-Bargh; 4 – Qilat al-Hissan; 5 – Umm Asba'a; 6 – Al-'Usayla; 7 – Jabal Qara precinct.

Fig. 2 - Large bovine figure of the Neolithic with numerous superimposed motifs of Bronze and Iron Ages, Jabal Umm Sinman.

Fig. 3

Fig. 4

Fig. 5

Fig. 3 - Monumental panel of Neolithic petroglyphs at Jabal al-Raat, Shuwaymis, of mid-Holocene age.
Fig. 4 - Typical early Iron Age petroglyphs, Jabal Qara.
Fig. 5 - Late Iron Age motifs superimposed over Bronze Age bovids and other figures at Jabal Qara; note recent bullet impacts.
Fig. 6 - E. Anati's stylistic chronology of Arabian rock art, on the left, and the scientifically derived sequence.

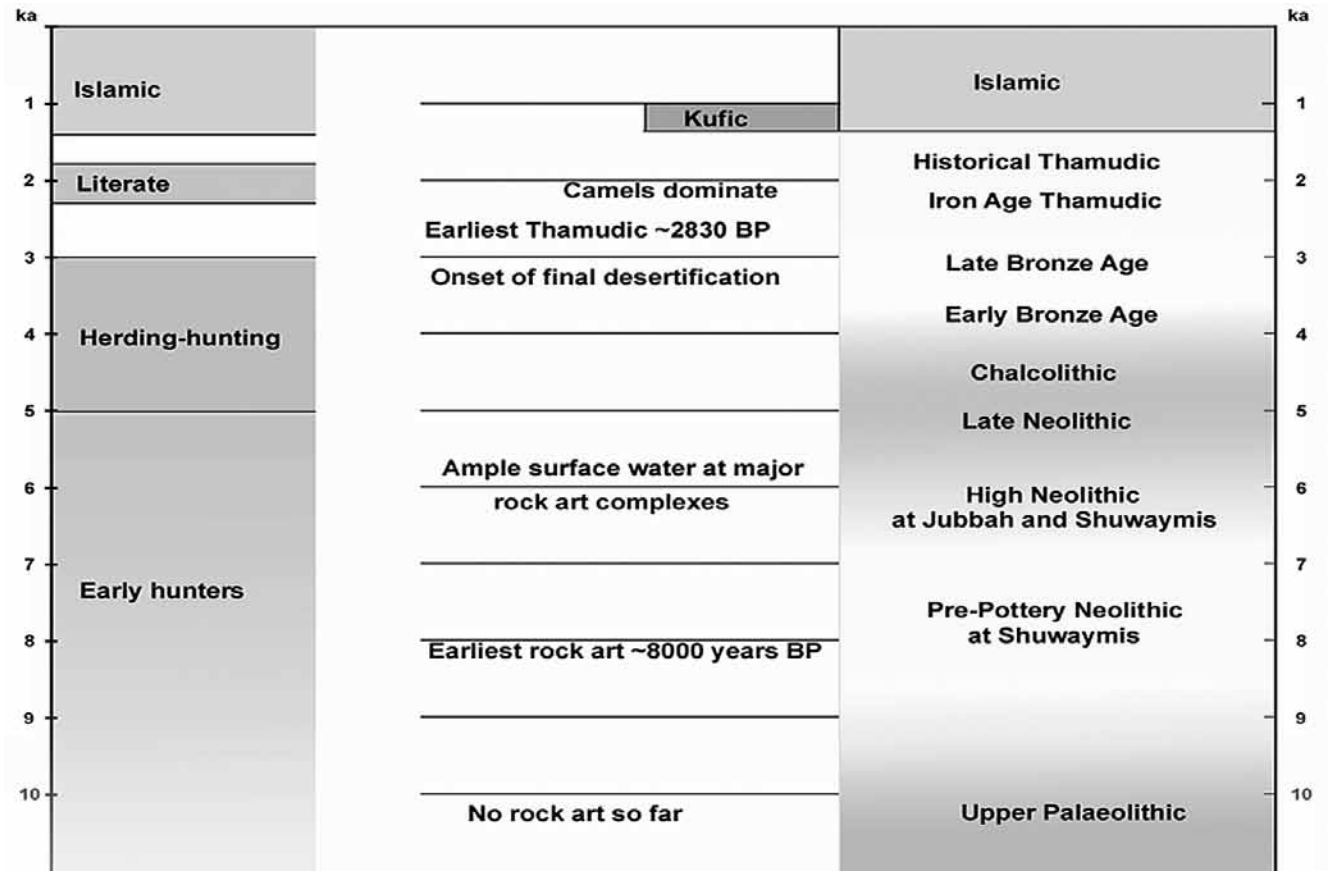

Fig. 6