KEYWORDS: ***Jarawa – Iconicity – Paleoart – Juvenile – Ethnography – Andaman Islands***

TRACES OF THE ANCIENTS: ETHNOGRAPHIC VESTIGES OF PLEISTOCENE 'ART'

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Abstract. Due to their traditional fierce and sustained opposition to external contact, the Jarawas of the Andaman Islands have become only recently accessible to detailed study. Their graphic art-like productions appear to consist entirely of non-figurative, essentially geometric patterns. In this paper, they are compared with the palaeoart of the south-eastern Asian mainland's final Pleistocene and early Holocene, and distinctive similarities are documented. Linguistic and genetic evidence suggests that after humans occupied the archipelago, probably during a period of low sea level in the Late Pleistocene, the rising sea of the initial Holocene interrupted contact with the mainland. This isolation may have led to the preservation of cultural elements in an endemic population. The recent discovery that the Jarawas can produce very realistic iconic art, especially when young, leads to the hypothesis of explaining the rare occurrence of figurative graphic art in most Pleistocene traditions of it being a 'juvenile' art form, practiced mostly by the young. This coincides with the pronounced lack of evidence that the cave art of south-western Europe, the only known Pleistocene graphic art body comprising a significant component of iconic motifs, is the work of adults. It also links with the strong hypothesis that the course of hominin development during the last third of the Late Pleistocene is marked by conspicuous neotenisation of the human clade. Consequently the rise of semi-naturalistic graphic art may be an exaptation of a juvenile trait favouring pictorial thought and, ultimately, leading to the introduction of pictographic writing.

Preamble

The use of ethnographic analogy to fathom aspects of human behaviour in the distant past of our species, and even that of previous hominin species, has been a tool of Pleistocene archaeology for all of the discipline's history. But the inference of one or several properties from one entity (the source) to another (the subject) on the basis of perceived shared similarities between two entities (Huchet 1991) has always been fraught with epistemological difficulties (Binford 1967; Wylie 1982, 1985). For instance, human choices defy the notion of determinism, in that they are far more commonly derived from complex cultural practices than from environmental givens. It is self-evident that human action is frequently irrational, driven by beliefs, social patterns, behaviour that is essentially obsessive (Bednarik 2011a: 121–127), and other basically non-logical currents. Therefore uniformitarianism in human behaviour cannot be ascertained, and yet 'virtually all facets of archaeology involve implicit or explicit reliance on analogy, including classifications, descriptions and interpretations' (Huchet 1991: 6). Biconditional statements, which embody knowledge of exclusive causality (that only the cited cause could be responsible for the consequence), are rarely presented (Wylie 1982: 390). Spatial and temporal distances between source and subject also contribute significantly to incommensurability in the application of uniformitarian analogy in archaeology, and often even in anthropology (Bednarik 2012).

This paper derives much of its inspiration from ethnographic information about the hunter-forager-fisher society that has most recently become available for detailed study. However, it does not apply this knowledge source in an analogical sense to any other society. In fact on the basis of empirical evidence it quite explicitly rejects much of the received wisdom of Pleistocene archaeology. In presenting a study of the artistic production of the Jarawas of the Andaman Islands, this paper illuminates a purely non-figurative tradition of graphic art. The observation that its limited motif range has notable similarities with the currently available repertoire of Pleistocene graphic art, except in western Europe, is not presented as an analogical justification, but as a primer for investigating the respective roles of iconic and non-iconic traditions.

Surprisingly, Jarawas are perfectly capable of producing fine figurative drawings, especially when young. Indeed, some of the graphic imagery presented here demonstrates outstanding observation of detail and talent.

It is from this empirical base, not from any endeavour to pursue notions of analogy, that this paper explores tantalising possibilities of interpreting a large body of earlier evidence. Such re-interpretation leads to a remarkable series of frequently interlocking insights into aspects of human nature, culture and evolution not previously explored. The discovery of figurative Jarawa art, in conjunction with several other factors, raises the intriguing conceivability that iconic graphic production was perceived as ludic or immature by early societies. This would explain several otherwise inexplicable phenomena, including the lack of credible evidence that the graphic figurative art of the western European Upper Palaeolithic is not the work of juveniles, and the extremely rare but nevertheless provocative occurrences of iconic palaeoart in otherwise non-iconic traditions.

Not content with thus contradicting many of the most ardently held beliefs about the French and Spanish cave art of the final Pleistocene, this paper goes much further still. It recruits the neotenous developments over the last forty millennia that have resulted in 'anatomically modern humans' and proposes to explain the rise of iconicity as a triumph of the cognitive plasticity of youth over society's conservatism. Thus the seemingly straightforward examination of the Jarawas and their art-like productions leads to a series of increasingly complex issues, and to rather consequential challenges to archaeological dogma.

1. Introduction

One of the fundamental impairments in the epistemology of Pleistocene palaeoart studies, formerly called prehistoric art studies, is that this field originates in Europe, and that it has been perceived as an essentially European issue for well over a century. While the discipline must be grateful for the leadership and pioneering excellence Europe has in many ways provided in this field (and continues to do), this bias has also resulted in various encumbrances. Burdened by significant theoretical impediments, archaeology has largely ignored that there is far more Pleistocene rock art *outside* of Europe than there is *within* Europe; and that most surviving Pleistocene palaeoart of the world is of *Middle* rather than *Upper* Palaeolithic traditions (Bednarik 1986, 1992a, 2003a, 2010a). Similarly, the figurative component of Franco-Cantabrian palaeoart of the 'Upper Palaeolithic' (UP) has been over-emphasised, which has led to several sophisms. For instance, it was often assumed that 'naturalistic' zoomorphs are the main themes of the UP cultural traditions, which has led to sustained searches for such imageries across much of Eurasia (and even in North America in some cases) in efforts to locate Pleistocene palaeoart. It has also facilitated the belief that these figurative elements of the Franco-Cantabrian rock art and portable art were the more sophisticated elements in these traditions — yet another falsity.

These inferences have significantly affected understanding of Pleistocene palaeoart traditions. Even among authentic western European cave art, non-figurative motifs (usually called 'signs') outnumber figurative ones several times, but they have received comparatively little attention. So-called naturalistic images, as they occur in this corpus, can be found in many other palaeoart traditions around the world (e.g. in San or certain Saharan rock art, or in China; Fei 1996), therefore 'naturalism' of zoomorphs is not a valid criterion for the identification of Pleistocene art.

Moreover, it should have always been obvious that figurative imagery is cognitively less developed than non-figurative. Whereas in figurative symbolism, the connection between referent and referrer is purely via iconicity, the symbolism of non-iconic 'art' is only navigable by possessing the relevant cultural 'software'. Figurative 'art' results from a deliberate creation of visual ambiguity (Bednarik 2003b: 408, 412) and is therefore based on lower levels of perception and neural disambiguation than non-figurative art. The cognition involved in the creation of marks or forms that prompt the mind to see them as another object is deeply rooted in mental processes found in numerous animal species, such as flight reactions to the silhouette of a bird of prey, 'eyes' on the wings of a moth, or plastic tubing resembling a snake (cf. Coss 1985: 256; Pinker 1997: 386). It is even related to the effect of camouflage, which is just as widespread in natural systems. Iconicity (figurativeness) is based on these relatively simple cognitive factors, building on visual ambiguity, and is accessible to various animals other then humans. Some animal species master iconic recognition, in the sense that they recognise a likeness in a photograph or film (Cabe 1980: 324–5), although 'humanness' may still be a function of the *degree* of competence in perceiving an image. But not only are these animals unable to detect the referent in non-figurative motifs, all humans not attuned to the cultural tradition that has produced them also cannot spontaneously perceive the semiotic dimensions of such motifs. Therefore non-iconic graphics tend to be cognitively far more sophisticated, although iconic imagery, too, can have incidental symbolisms (not referring to the iconic warrants) attached to it.

Another way of expressing the issue the authors wish to canvass here is to posit it within the model that regards symbolic production as a 'surrogate cortex', providing storage of cognitive information external to the human brain. This model, foreshadowed by R. L. Gregory (1970: 148) and developed by M. Donald (1991), suggests a circumvention of the need for continued encephalisation by holding information in a more reliably stable and relatively permanent form. Non-iconic symbols (e.g. beads, geometric marks, hand signs, writing) tend to be the most economic form of storing

cognitive information externally. The exploration of mark production to exploit their iconic ambiguity is by comparison trivial and may even be regarded as a merely ludic pursuit. More importantly, its potential of holding cognitive information is relatively limited, and certainly less economic. Hence the orthodoxy of traditional Palaeolithic art research in Europe, of regarding the 'figurative' images in cave art as the most sophisticated elements, is simply a falsity.

We could speculate that, had savants conditioned by a culture limiting its own graphic art to the non-iconic (e.g. Islamic scholars rather than Christian) first studied Franco-Cantabrian cave art, they may well have formed different views or priorities about this much misunderstood corpus. This illustrates why the zoomorphs may dominate our constructs of these ancient graphic traditions: the European intellectual tradition implicitly and intuitively regards the figurative component as the more sophisticated, more evolved — more worthy of attention. This is despite the high probability that the nonfigurative motifs are the semiotically more fertile and culturally more distinctive. One might argue that the animal images, too, can be significant, for instance in illustrating faunal and climatic conditions at the time, but this depends on the validity of our zoological interpretations, which is an unfalsifiable property of palaeoart that will not even be pursued here.

But there are numerous further misconceptions in orthodox archaeological views that the authors wish to dispel before considering the ethnography of one group of people that has had minimal contact with the outside world until very recently. Embedded in a contemporary European mindset is a predisposition to perceiving cultural evolution as Darwinian, progressing from the 'primitive' to the 'developed'. This clashes significantly with the observation that extant cultures in several continents would, under the European system, be defined as Palaeolithic, Mesolithic, Neolithic, Bronze and Iron Age respectively. In some countries, all of these 'stages' coexist today with modern society, which severely challenges the efficacy of this technological nomenclature in assessing, for instance, the cultural or cognitive complexity of such early societies. The origins of palaeoart have been traced mainly through archaeological means, which have generally focused on 'Palaeolithic' and other ancient 'cultures', which in fact are not cultures at all, in the sense of the term's usage. Rather, these ancient 'cultures' are inventions of archaeologists based mostly on perceived combinations of invented artefact types. Archaeological finds include a vast number of art-like manifestations, such as non-figurative engravings, proto-figurines, pendants and beads, cupules and linear petroglyphs, but when these are identified as being of Lower or Middle Palaeolithic provenience (Bednarik 1992a, 2003a), orthodox archaeology tends to reject them in compliance with its Darwinian model. The failure of this program is illustrated by many examples. For instance Tasmanian culture, as observed ethnographically, is clearly of Mode 3 technological production (*sensu* Foley and Lahr 1997), yet Tasmanians created much 'art'. Not only that, their rock art even resembles that of other 'Middle Palaeolithic' or Mode 3 traditions (Bednarik et al. 2007), including in Europe (consider the sepulchral block in La Ferrassie).

The traditional Eurocentric model also fails in numerous other respects. For instance it has maintained for over a century that the palaeoart produced by societies with an 'Aurignacian' technology is the work of 'anatomically modern humans' (AMHs), sometimes mistakenly called 'Cro Magnons'. Not only is it unclear what purpose the anthropocentric term AMH is intended to serve, the contentions that it is a separate species are most probably false (Bednarik 2007, 2008a). Recent corrections show also that there is no evidence of the presence of fully 'AMHs' in Europe by the time the 'Aurignacian' ends, about 30 000 years ago, but there is ample evidence that throughout the period marked by Aurignacian technology, robust humans were present, including of the type described as Neanderthals. This seems to indicate that the extensive art traditions of the entire first half of the European UP are the work of members of robust (e.g. Neanderthaloid) societies. Therefore few generic claims archaeology has so far presented for this much-discussed corpus can be sustained upon closer examination.

Of even more consequence is the almost complete lack of proof that the Franco-Cantabrian cave art of the Late Pleistocene is the work of adults. All types of this particular, much-studied corpus of palaeoart offering empirical indications of the approximate ages of the artists suggest that most of it was produced by children and adolescents (Bednarik 1986, 2002, 2008b). For instance there is not a single human hand stencil known in the French and Spanish Pleistocene cave art that has been attributed to an adult. Moreover, most imprints of human body parts in the soft clay of caves with Palaeolithic rock art, such as footprints, are also of young people. Although this may still not exclude the possibility that some of this art is the work of adults, as the record currently stands there is little evidence of this. The importance of the observation lies in the fact that this cave art is almost certainly a taphonomic remnant, a sample that only survived because it was placed deep inside limestone caves. If this circumstance were related to the possibility that the caves were primarily explored by children and youths, as most available tracks indeed indicate, these many traditions covering well in excess of 20 000 years are perhaps largely a legacy of children's art. Again, the interpretations we have seen for well over a century may all need to be abandoned.

Almost all of the world's graphic palaeoart safely attributable to the Pleistocene period — certainly more than 99% of it — is non-iconic (Bednarik 1993a, 1994, 1995a, 2010). Apart from a few thousand motifs in the Franco-Cantabrian corpus of the UP, principally of south-western Europe, there are almost no two-

dimensional iconic depictions from this period. For instance, iconic sculpture is well represented in the UP of Russia and Siberia, but graphic art is limited almost entirely to non-figurative compositions (there are just two exceptions, the quadrupeds interpreted as mammoths from Berelekh and Mal'ta; Bednarik 1994), notably the sometimes incredibly complex engravings found on ivory and bone plaques. These clearly had symbolic meanings; they often resemble maps but might well be mnemonic devices, e.g. for telling stories (Marshack 1972, 1976). Similarly, all credibly Pleistocene and early Holocene rock art of Australia seems entirely non-iconic, but can be shown to refer to very complex, if unexplained cultural practices. On the basis of all available credible evidence, iconic art appears in Australia only during the Holocene, possibly together with the dingo, an introduced species, and the advent of the 'small stone tool traditions'. What renders this particularly relevant is that Australia was initially colonised by 'Middle Palaeolithic' (MP) seafarers from southern Asia, and the massive corpus of surviving MP rock art is many times greater than the body of UP rock art of Europe. In other words, there is more surviving MP palaeoart in the world than UP, and with one single possible exception (Bednarik 2006), all of the known Middle (and Lower) Palaeolithic graphic 'art' appears to be non-iconic, and of a quite narrow range of motif elements.

The question arising from these considerations is this: if non-iconic graphic art is cognitively more complex, why is iconic art largely but not completely absent from the record? For instance, why do we have only one single figurative motif from the entire MP record available to us? It could imply that people were able to produce iconographic markings, but rarely made use of this ability. Similarly, from the palaeoart record of Eurasia east of the Rhine we may have only two iconographic markings from the entire UP (Bednarik 1994), yet even a single such image proves that the ability itself was available to at least some people. How do we interpret this pattern? Does it mean that there were just a few people who made use of the cognitively more simplistic figurative graphic convention?

The authors will attempt to illuminate these issues here by investigating one of the very few remaining cultures of the world whose graphic 'art' is entirely non-figurative. It is reported that, contrary to what we had been led to believe until now, these people are perfectly capable of producing figurative drawings spontaneously, at least when they are young. It will be shown that this throws an entirely new light on the matters being explored here.

The present study does not dwell on the archaeological record; rather it taps into 'living evidence' in order to examine the scope of an alternative source for enriching the already compromised discussion on the beginnings of palaeoart. In that sense, but not as an exercise in simplistic ethnographic analogy; it is hoped that a consideration of the art of the Jarawas of the Andaman Islands in the Indian Ocean can contribute to a discussion of cognitive anthropology.

However, before examining the ethnographic evidence, the authors would like to clarify that, in addition to the reservations already expressed about archaeological modelling of the distant human past, they have many further prerequisite qualifications to present upfront. They use the modern term 'palaeoart' to define art-like human productions of the distant past, which does not suggest that such corpora represent art in the sense of the word's general usage. Nor does it refer to the Palaeolithic period, which the authors regard as much as a superseded concept as most other terms for 'prehistoric' periods. Indeed, 'palaeoart' stands in place of 'prehistoric art', which is a nonsensical term in two senses. First, there is no scientific evidence that this body should be defined as 'art'. Most archaeologists would concede this point, but they might baulk at the second objection: that the term 'prehistoric' is unscientific and unwarranted. It has been based on an untestable proposition, namely that written transference of knowledge is more reliable than oral. Yet eyewitness accounts of geological events have survived in Australia for many millennia, while the idiom of a text written less than two thousand years ago is incomprehensible in its original language to all but specialist linguists. Therefore the basis of this separation of the past into history and prehistory can be challenged. Indeed, it can also be questioned how there could be a history before history, and to the great majority of human societies and peoples of the past it would be offensive to define them as prehistoric. The introduction of writing is also a tenuous marker, because for most of the period when writing systems were in use, most people were in fact illiterate. If 'historic' were the term used to describe the period since the introduction of written communication, i.e. if it is applied as suggested by a *minority elite*, it would be more appropriate to consider this as a historical period, like the Renaissance, and capitalise the word as 'Historic'. Therefore the only legitimate use of the rather puerile term 'prehistoric'—other than in the context of, for example, 'prehistoric monsters' — would be in the form of 'pre-Historic'. It would then mean the period before the historical period *some* members of the human species consider to be *their* history.

There is no doubt that all human societies tend to aggrandise their own achievements and disparage those of 'the others'; societies necessarily define themselves by contrasting their characteristics with those of others — most often in negative terms. This even applies at the level of subspecies and species, which has led to the absurd belief that modern humans are the pinnacle of evolution. Derived from a corrupted Darwinism, this prominent self-deceit exemplifies the perversion of orthodox archaeology, the charter of which has always been to define 'us' (whoever that is) by contrasting us with 'the other'. This belief, without which archaeology loses its appeal for many, is doubly

mistaken. First, evolution is a 'blind' process; as a dysteleological phenomenon it does not aspire to some ultimate state, and the only permanency achievable is that of species capable of tolerating a wide range of environmental changes and catastrophes. Second, modern humans have been subjected to devolution for several tens of thousands of years (which in natural selection is an impossibility). We are a 'degenerating' species, an evolutionary failure, as demonstrated by numerous indicators that are consistently ignored by both archaeology and palaeoanthropology in favour of the puerile, self-idolising mantra of our greatness. The inconvenient truth is that since the times of the so-called Neanderthals we have lost a massive 13% of our brain volume; our skeletal and especially cranial robusticity has disappeared, our physical strength has been halved, and we have acquired literally thousands of defective genes, ranging from degenerative alleles, syndromes and Mendelian disorders to numerous neurodegenerative and mental diseases (Bednarik 2011a). These conditions, together with the rapid neoteny of *Homo sapiens sapiens*, more than cancel out the effects of the incredible cultural and technological achievements of that species. Ultimately our biological 'devolution', attributable to our unintended self-domestication over the last forty millennia, will determine our future (these issues are much too complex to be rehearsed here, but see, e.g., Bednarik 2008a, 2008c).

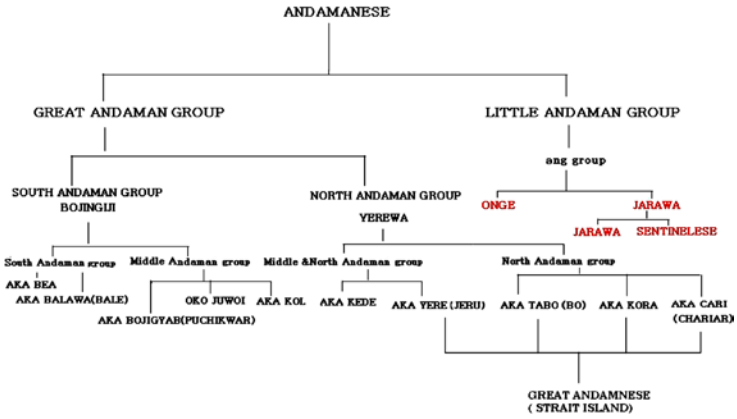

Figure 1. *Diagram showing the tribal divisions of the Andamanese according to relative linguistic and cultural affinities.*

The issue the authors canvass here is that science recognises the system's dysteleology (purposeless in nature), whereas archaeology tends towards teleology (design or purpose in natural processes or occurrences), perhaps subconsciously. This may account for its neo-Darwinian model of human history, explaining it as a relentless ascent spanning a few million years. Thus mainstream Pleistocene archaeology tells us merely what we would like to hear: that there is purpose and destiny in our being, and that the primitiveness of those societies that were in the process of our rise displaced, out-competed or defeated serves to confirm the model of our magnificent rise.

The authors would like to clarify from the outset that they reject this model as a fantasy of an intellectually corrupt humanity. This mode of academic discourse is conducted in the mediated space arbitrarily determined by the dominant society's construct of reality. Consequently complexity of technology and organisational effectiveness decide the discourse space among unequal societies, such as those being judged and those who do the judging: archaeological attention always relates to inequalities. This 'burden of power' weighs heavily on the discipline, and yet most practitioners do not appreciate its effects. Here the authors will pursue some questions concerning the 'rise' of humans, but do so *outside* the current archaeological dogma, and in the process question a series of its myths. They will begin by presenting certain empirical evidence, and then develop from it some generic thoughts about the human journey.

2. The Jarawas

The Andaman Archipelago is situated in the east of the Bay of Bengal, between the Irawaddy delta to the north and Sumatra to the south. The Andaman Negritos are divided into the Great Andamanese and Little Andamanese groups (Fig. 1). Most of the ten territorial language groups of the originally most numerous Great Andamanese have perished in the 19th and early 20th centuries due to the impact of British colonisation (Radcliffe Brown 1948; Man 1885) and a brief Japanese occupation. The languages of the Aka-Bea, Akar-Bale(wa), Aka-Puchikwar (Bojigyab), Oko-Juwoi, Aka-Kol, Aka-Bo (Tabo), Aka-Cari (Cariar), Aka-Kede, Yereva/Aka-Jeru and Aka-Kora are essentially extinct, although a creolised form predominantly based on Jeru is still spoken by a handful of people resettled on Strait Island in the 1950s. The remaining Great Andamanese now number only about 50 individuals, occupying some 3 km^2.

The Little Andamanese language group consists of the Onges, Sentinelese and Jarawas. The Onges have been similarly marginalised and now number only about 90 members, although occupying a much larger area of over 700 km^2. The Sentinelese occupy and vigorously defend North Sentinel Island, permitting practically no entry by outsiders. They are believed to number about 100. Even in recent years, they repelled any attempt to land on their island. For instance in the wake of the 2004 tsunami it was endeavoured to land with a helicopter to check how the Sentinelese had fared. A hail of arrows and spears greeted the aircraft and the landing had to be abandoned. Almost nothing is known about them.

All Andamanese languages are thought to have evolved from a single language family, but the splits and divergences have occurred at different times. Among the Great Andamanese, the five Bojingiji groups in the southern Andamans (Bea, Balewa, Bojigyab

(Puchikwar, Kol, and Juwoi) were named after the closeness of their languages, and the Yerewa group (Cariar, Kora, Bo, Jeru and Kede) who shared a common kind of canoe (*yere*) was linguistically cognate, apart from individual linguistic identities. But the major split between these groups must have occurred earlier as their closeness is less apparent than that seen among the Little Andaman groups. The Onge and Jarawa languages are closer and it is therefore assumed that the split between them occurred much more recently than that between the Great Andamanese dialects.

Although the languages of the Andaman Islands have been studied since the 19th century (Roepstorff 1875), they remain inadequately understood. Each of the communities had further been socially recognised either as *eremtagas* (jungle dwellers) or as *aryotas* (coastal dwellers). Despite differences in environmental niche and ecology, *eremtagas* and *aryotas* of each ethnic community maintained the same language identity (Sreenathan 1996).

The Little Andaman group is assumed to have split into the Onges, the Jarawas and the Sentinelese, each maintaining separate linguistic identities but being cognates. The non-linguistic cultural database supports the linguistic divisions; for instance, the canoes, bows, spears, cooking pots and baskets of the South and Middle Andaman types were different from those of the other groups.

Based on mutual unintelligibility and homology, there are no known linguistic affiliations of the agglutinative Andamanese languages anywhere in the world. If languages change 20% of their basic lexicon every 1000 years (Gray 2005), one would expect a very small percentage of cognate words to survive 5000 to 10 000 years. If the Andamanese had become increasingly isolated from the mainland, with the sea level rises of the final Pleistocene and the early Holocene, it would help explain why no external cognates have been detected (McCarthy 1940; Radcliffe Brown 1948; Manoharan 1989; Nicholas 1992; Sreenathan 2001, 2003). Comparative methods are not thought to detect homologies beyond 8000 years, although Pagel (2000) has proposed long-lived cognate words of 20 000 years age (see also Dunn et al. 2005). Only one feature of the Jarawa language, inclusive/exclusive opposition, seems to connect to an Old World pattern and exhibits more typological closeness with the recognised patterns of the Pacific and the New World (Burenhult 1996; Sreenathan 2003). The absence of any other connecting traits in Jarawa language seems to indicate an evolutionary depth connecting to a Pleistocene substratum. From a linguistic perspective the Jarawas were very probably isolated from the mainland for much of the Holocene. Together with the Semangs of Malaysia, the Aetas of the Philippines and a few population groups of Papua New Guinea, the Andaman Islanders are considered to be remnants of Southeast Asian Negrito populations. However, with the sole exception of the Andamanese, the original languages of these Negrito groups have been largely lost. Traces of ancient and extinct Negrito languages found so far show no obvious relationship with Andamanese languages. Other proposals, like the connection of the Andamanese family with the Indo-Pacific family and with linguistic isolates like Kusunda of Nepal have not been substantiated. In contrast to previous understanding of their linguistic affinity, Abbi (2006) has proposed a language typology showing two separate families, Proto-Andamanese and Proto-Ang, which would suggest distinct waves of migration in the islands' early colonisation.

The differences in the material cultures of the Great and Little Andamanese are reflected in the languages, but there are adequate common features to assume that they left the mainland with common cultural traits. The observed linguistic difference between them could not support the scenario of separate colonisation events. The genetic split into M31 and M32 lineages was preceded by a common insertion of 2156A at the mainland, and these lineages appear to originate somewhere in eastern Asia or India. Blevins' (2007) hypothesis claims Proto-Ongan and Proto-Austronesian are sisters, daughters of a Proto-Austronesian-Ongan (PAO), but her premise is not supported by the available genetic data (Palanichamy et al. 2006; Barik et al. 2008) from Austronesian populations. Her hypothesis suggests a Negrito – Proto-Australoid contact phase in the past. This population was not part of an undivided M31 and 32 (at 2156A insertion) source population. The M31 and 32 division occurred within a mainland source population of Pleistocene origin and continues to remain on the mainland. It may be supposed that the M31 bearers have been exposed to the then Proto-Australoid hunters at a zone located between Yangtze and northern Thailand/Indochina, where the genesis of Austronesian, Tai Kadai, Hang Mien and Austro-Asiatic language families occurred (Bellwood 1997), or in coastal China (Manning 2006). Palaeoclimatological and archaeological evidence points to the Yangtze valley region as the geographic origin of the crucial transition from hunting-gathering to farming lifestyles (Lin Jin et al. 2001). This hunter-gatherer – incipient farming coexistence phase eventually allowed the maternal gene flow and resulted in M31a1 (Negritoid hunter-gatherer) and M31a2 (farming Proto-Munda) lineages. There are instances of absorption of Negritoid population into Australoid population in South East Asia (Bellwood 1997). The coexistence of Pleistocene and early Neolithic cleavages has resulted in the diffusion of cultural traits and the pressure perhaps led Negritos to the colonisation of the Andaman Islands. The presence of the M31 sub-clade among the Mundas confirms that there was a restricted gene flow.

The word '*əńg*' among the Onges and the Jarawas denotes 'human'. A phonetically corresponding word in Munda groups signifies 'mother', (*eńgãt* [Santali], *ēńgã* [Mundari], *ińgã* [Korwa], *ań* [savara], *ma-iń* [Kharia], *iyōńg* [Gadaba]), and the word for mother in Jarawa and Onge is *aaya*. In some Munda groups, the word

for mother is *ăyă* (Birhor), *mãy* (Korku, Nahali), *ya* (Savara), *ayyãni* (Gadaba). These lexical correspondences may indicate the Negritoid substratum in Munda language and seem to reflect deep-rooted admixture between Proto-Australoids and Negritoids in India. The likely scenario is that the divergence of M31 and M32 lineages occurred in India, the Mundas being the Proto-Australoid representatives and the Andamanese the Negritiod representatives. The genetic admixture has kept the borrowed lexicon alive as signatures of either a lost pidgin, or the Negritoid substratum in Austric languages of India. The reconstructed 'Proto-Austronesian Ongan' (Blevin 2007) is more likely to be a pidgin form/loanwords representing the Negrito-Proto-Australoid contact phase in the remote past. The absence of similar genetic signatures in the Austronesian population may be the result of replacement that occurred due to waves of Mongoloid admixture. The mtDNA finding of the presence of two sister lineages, M31 and M32, among the Jarawas, Onges and Great Andamanese corroborates the legend of common maternal ancestry. Genetically these lineages clearly confirm their Pleistocene ancestry. But the cultural traits evident in the folklore legends of the Andamanese support Holocene colonisation (Sreenathan et al. 2007). Certainly no ancestral affinity beyond some lexical items observed in Munda groups has been observed and Indian linguists regard the Andamanese family as a Pleistocene remnant.

Genetically, African pygmies have a partial defect in the GH (growth hormone) receptors (Merimee and Laron 1996), and the small stature typical of pygmoid groups generally is not merely an 'evolutionary adaptation', but a genetic feature often found in insular populations. More severe deficiencies of insulin-like growth factor (IGF-I) are thought to be the cause of Laron Syndrome (Laron 1984; Laron et al. 1992), which has been proposed in endemic populations of Palau and possibly Flores (Berger et al. 2008). The genetic study of Barik et al. (2006) suggests that the Andaman Negritoid groups need to be considered in view of the recent isolation of the MtDNA lineages M31 and M32. Thus both their genetic and linguistic isolation suggests an origin in Late Pleistocene populations that may have reached the archipelago at lower sea level and become genetically isolated in the early Holocene.

During Late Pleistocene periods of lower sea level, the Andaman Islands formed a single landmass of several times the present land area, separated from the mainland by only about 50 km of sea, today's Preparis South Channel (between Preparis and Great Coco Islands). The former width of this strait would have been easily navigable by Pleistocene mariners (Bednarik 1999, 2003c) who very probably managed to colonise the greater Andaman landmass at a time when the mouths of the Irawaddy were perhaps as much as 150 km further to the south. The limited archaeological research has so far detected few traces of human occupation predating about 2000 years BP, such as the basal date from the Chauldari midden near Port Blair, of 2280 ± 90 BP (BS-599) (Cooper 1965, 1990; Cooper and Raghavan 1988). However, archaeological investigations remains preliminary and major promising cave deposits remain to be explored (Cooper 1990).

At present the Jarawas inhabit the western region and coastal belt of South and Middle Andaman Islands (Fig. 2). Their current population size is thought to be around 350 and they have led a traditional hunter-forager-fisher existence until the end of the 20th century (Man 1885; Radcliffe Brown 1948; Sarkar 1990; Sreenathan 2001). Through their reputation as fierce warriors and uncompromising defenders of their territory they have been able to maintain their way of life despite encroachment on their forests. This isolation was effectively facilitated by the 1956 establishment of a protected reserve of 765 km^2 of pristine forest (increased to 1000 km^2 in 2004). In July 1996 a Jarawa boy, Enmay, who had fractured his leg in a hunting trap, was taken to a Port Blair hospital. After his recovery and return, the hitherto hostile Jarawas suddenly began making friendly contact with the mainstream population, beginning October 1997.

Figure 2. *Map of the Andaman Islands, India, showing the range of the Jarawas and Sentinelese.*

The Andaman Negritos have resisted colonisation since the British East India Company set up a colony in 1789. By the time of the establishment of a penal colony in 1858 it had become clear that their 'pacification' would not succeed easily (Portman 1899). Attempts to integrate the islanders into the colonisers' society failed consistently, and in the case of both the Jarawas and Sentinelese their resistance and frequently open hostility has largely preserved their traditional life style. A list of 306 recorded 'incidents' involving Jarawas, many of which resulted in deaths, reports the earliest fatal confrontation in 1875, when six convicts were killed and two Jarawas captured. The most recent reports are from 1998, when five non-Jarawas were killed in separate incidents, including a police officer (Chandi 2010: An-

Figure 3. *A Jarawa hunting party.*

Figure 4. *Jarawa family gathering maritime foods.*

nexure 7). Most of the recent fatal incidents involved poachers entering the reserve illegally.

The Jarawas retain their hunter-forager-fisher economy (Sreenathan 2001), hunting an endemic wild pig (*Sus scrofa andamanensis*), a monitor lizard (V*aranus salvator andamanensis*) and other quarry with bows and arrows (Fig. 3). They divide their living space into five categories: *pilleh* (sea shore), *tagidh* (marshes), *chanhannap* (plains forest land), *tinon* (hills dense forest) and *wa* (streams and inlets) (Sreenathan 2001; Kumar et al. 2010). Coastal groups are heavily dependent upon shellfish (Cipriani 1966), dugongs, turtles and turtle eggs, fish, crabs (e.g. *Sesarma* sp.), prawn (*Metapenaeus* sp.), mollusks (*Turbo* sp. and *Trochus niloticus*), and other maritime food sources (Fig. 4). Fruits (e.g. *aab* [jackfruit]; *emel*, *tangal* [*Pometia pinnata*]; *gini* [*Baucaria sapida*]), seeds (e.g. *oomin* [*Cycas rumphii*]), tubers (*Dioscorea vexans*, *Diospyros andamanica*), shoots and roots supplement their diet. Woodborer larvae are also eaten. Food such as meat and jackfruit is cooked in pit hearths called *aalaav*, using heating stones. Honey is collected in the forests, using a plant extract (from *Canarium euphyllum*) to pacify the bees, and the Jarawas have extensive expertise in the medicinal use of plants. Various plant parts as well as certain types of red and white clay are applied in the treatment of a variety of ailments (Sreenathan 2001). Generally the state of the body is conceived as either *toomo/doomo* (normal), *ulleda* (sick) or *bechaame* (functionless, dead). There are no medical practitioners as such; the elderly people suggest the treatment. If the disease is severe and beyond their control, the patient is shifted to a *waathede/ulleda chadda* (sick hut) which is far away from the settlement area. Only one or two caretakers from immediate kinfolk are allowed to be with the patient. Many such cases end in death. *Ulleda allaale* is a common treatment of massaging the body with leaves or clay/red ochre for the treatment of fever, swelling and body pain. The leaves of a variety of plants are used for this purpose. The bark of the *oomaalu* plant (*ippolaaya*) is ground and mixed with honey to form a paste. This, when applied on the body, subdues high fever. Massaging the body with *allaam* (a mixture of red ochre and pig fat) mixed with saliva controls swelling. In *ulleda ettaha*, the treatment is that bark and leaves are tightly tied on the affected part of the body. Leaves are heated and then pressed or tied across the injury or swollen parts. *Ulleda tiithaab* is food therapy, with some of the foods taken as medicines being lizard's fat for backache/stomachache; *totkoolov* (galfrarium) for chest pain; *ukkela* (turtle), *ovu* (pig) for body pain; *othegathaab* (oyster) for headache; *chaanochoova* (*Torchus niloticus*) for acute cough, etc. There are also reports that the Jarawas treat snake and centipede bites (Kumar et al. 2010).

The name 'Jarawas' is that bequeathed to them by outsiders; they call themselves *Əng* (meaning simply 'human'; Sreenathan 1996, 2001). Their social structure resembles an Inuit-type kinship system (Sreenathan 2008) with nuclear families, monogamy and a demes community organisation. Above the family unit, it consists of hunting units, composed of intra- and inter-generational kinfolk, comprising consanguineous, collateral, affinal and descendant relatives (Sreenathan 2001). Exogamy is unknown, and there are no chiefs, medicine men or shamans.

3. Jarawa culture

The material culture of the Jarawas is gender based, hunting being a male task, gathering foods with nets and baskets primarily a female occupation. However, gender rules are relaxed and both sexes share numerous activities and responsibilities; for instance, women use bows and arrows occasionally in fishing. The Jarawas are individually self-sufficient, so there are no specialised artefact makers. Their transient camps consist of huts (*chaddas*) made of poles, leaves and palm fronds. There are two types of huts, communal huts for extended use, and temporary huts. The communal huts are usually conical in shape, elliptical in plan view, measuring 25–30 m one way, 20–25 m the other, and tend to be 6–8 m high (Fig. 5). They contain one or two communal fireplaces, around which several family fireplaces are arranged. It is there that important events take place, such as initiation, marriage, birth and communal dances. A communal hut may accommodate a few dozen individuals, but it has been reported that it may have sheltered as many as a hundred people in the past (Cipriani 1959).

Figure 5. *Communal hut of the Jarawas.*

Figure 6. *Temporary hut of the Jarawas. The man is using an adze to fashion a container.*

Temporary huts are simple lean-tos (Fig. 6), usually of rectangular shape, arranged either in rows or in an L-shaped formation. The organisation of camps reflects the non-hierarchical social structure, with children of both sexes being allowed to sleep in the parents' *chadda*. The dwelling pattern signifies the close-knit nature of Jarawa society. All temporary huts are more or less of the same size and shape. No hut, except for the sick, is built away from the rest. In all traditional encampments, temporary huts are erected corresponding to the number of the family units. After reaching adulthood, unmarried males are free to stay together in one of the temporary huts, and the same applies to females. A well-marked space for widowed individuals is observed outside the huts, in the open. One of the small fireplaces within a community hut, which always accommodates related kinfolk, signifies individual family units. Temporary huts are so arranged that there is no visual blocking. If death occurs in any hut, it is burnt and the encampment abandoned temporarily.

The systematic strategies of nomadism practiced by the Jarawas have several reasons, including the need for cyclical or periodical movement to take advantage of seasonal food sources, the need to meet hygienic conditions, protection from malevolent spirits, environmental reconnaissance, the need to meet customs relating to death, as well as the maintenance of the social fabric of the tribe. There are no boundaries of family groups, bands or clans, which are best defined as hunting kin units; the land is shared by the entire tribe, and one group may use another's temporary huts during periods of absence. Both males and females involve themselves in the construction of huts.

In contrast to the Great Andamanese, who made canoes in the past, the Jarawas use only small and crude rafts to cross water. These are traditionally made from the leaf stem of the *thuuya* palm. More substantial rafts, constructed of a number of logs or bamboo, tied with bark strips or forest vines, are used to traverse crocodile-occupied rivers and inlets with their children and belongings. Torches are made from tree resin packed in green leaves that are tied together with cane strips. Such torches, used for moving in the dark, are typically about 46 cm long and up to 10 cm thick in the middle.

The material culture of the Jarawas includes a number of utilitarian artefacts, such as digging sticks, wooden buckets (*uuhu*) and baskets (*taaiku*), and hand-made fishing nets (*pootho*) (Ganguly and Paul 1962; Sreenathan 2000). The stone implements of the Jarawas observed in use are of untrimmed and hand-held quartz flakes, and mollusk shells and fish bones are also used as tools, supplemented in recent centuries by glass from bottles and iron obtained from shipwrecks (Temple 1903; Cooper 2002). The only pottery of the Jarawas are crudely made, small and undecorated pots

Figure 7. *Jarawa bows.*

Figure 8. *Fishing with bow and arrow.*

with a conical base resembling those found in some European 'Mesolithic' contexts (Cooper 1990), and more importantly in the Incipient Jōmon culture of Japan. The latter, about 14 000 to 9500 years BP (Habu 2004), may be related to pottery cultures in the Amur basin, in Korea (the Jeulmun tradition, commencing about 10 180 BP; Kuzmin 2006) and southern China (from the beginning of the Holocene). These details are noted here in passing and will be referred to again later.

One of the most important artefacts of the Jarawas is the bow, the wood of which derives from *Sagerca cliptica*. Its length ranges from 1.0 to 1.6 m, the grip in the middle is about 5 cm wide, tapering to the narrower ends (Fig. 7). The bowstring is usually made of entwined tree bark, collected from the *Sterculia villasa* tree. The very effective arrows are tipped with fish bones, pig tusks or fire-hardened wood (Colebrook 1795), even with sharpened fibulas of pigs (Man 1885). However, since the introduction of iron, scavenged from shipwrecks for some centuries, it has become the favoured material for arrow points — in much the same way as the Aborigines of north-western Australia used iron horseshoes to cold-hammer the feared shovel-nose spears after the invasion by the British. Neither the pig spear nor the turtle spear, formerly used by the Great Andamanese, is used by the Jarawas, nor was the former used by the Onges. The cordage employed in tying arrowheads to shafts is extracted from the inner bark of the creeper *wiibo*, an important source of cordage for the Jarawas. Bows and arrows are used in warfare, hunting, as well as in fishing in the sea's shallows (Fig. 8). The users are protected against the string's rebound by chest guards, which are made from bark of the *Sterculia villasa* tree. The bark is slightly dried and shaped according to the user's torso measurements. Chest guards, called *keikaad*, are among the utilitarian artefacts that are often decorated with line designs. The pattern along where the edges of the chest guard are fastened together at the back is called *oomboluuhu*. Among the Andamanese tribes, only the Jarawas use chest guards, and they are only made and worn by the men.

Figure 9. *Foraging basket of the Jarawas.*

The Jarawas also have several artefacts they make by weaving. Women show great skill in using *poothaalu* (*wiibo*) fibre to create geometrically patterned baskets they use in foraging (Fig. 9). Strips of cane are fashioned into sturdier, but equally well-made baskets. Hand-held fishing nets with a circular handle, called *pootho,* are also made from the *wiibo* creeper's fibre. Another application of weaving is the production of the rectangular sleeping mats, with which the Jarawas have used a wooden log as pillow in the past (Fig. 10). The production of sleeping mats reported by Man (1885) is no longer practised. Bark strips are fashioned into carrying slings suspended from the forehead and used to support

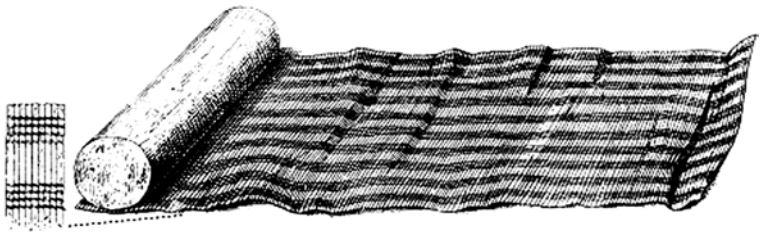

Figure 10. *Jarawa sleeping mat (after Man 1885).*

infants, pigs and any other heavy load (Fig. 11).

Wooden containers (*uuhu*) to store and carry honey, one of the principal foods, are laboriously carved from blocks of wood from a tree called *thaattuthothuaad*. Adult members of both sexes are involved in making these. Such containers are made of different volumes depending on the size of wood, but generally there is uniformity in size. They are well decorated, both internally and externally. External decoration is created with cane strips and the stem of an orchid named *teena*. The outer cover of the orchid stem adds a special kind of yellow line-design to the outer surface of the container. Internal designs are painted with *bailatta* (a creeper) juice. Designs are imprinted after applying a wax layer.

Such wooden containers are made with an adze, called *pelaitu*, *thoova* or *totaalu*, or with a *chattang*, a chisel. An iron-headed digging implement, *toov*, is now generally used by the Jarawas for digging graves. It appears that shells were used as adze blades in the past, but there is no indication for the previous use of stone flakes or axes. Jarawa adzes are not decorated (Fig. 12).

Before examining the 'artistic' production of the Jarawas it needs to be again emphasised that they, like most other ethnographically observed people, do not fit into the simplistic evolutionary models of traditional European archaeological thought. The concepts of a progression from Stone to Bronze (or brass) to Iron Age have no realistic currency in most of the world. For instance, there are currently groups in mainland India that could be defined as existing in the nuclear age or the Palaeolithic, or any intermediate 'stage' between the two. It is therefore inappropriate to assign the Jarawas a position within that kind of spectrum. People anywhere and at any time can be assumed to have been opportunistic and inventive in the ways they adapted to whatever conditions or challenges they met. The Jarawas are no exception, and to define them as Palaeolithic, Mesolithic, or attach any such simplistic label to them would serve no useful purpose. Nevertheless, their utilitarian material culture can be defined as supporting the notion that, like all people in the world today, they descend from a late Palaeolithic aboriginal population — but one that has experienced limited cultural contact during the Holocene and has adapted accordingly.

Of particular interest, in view of the geographic and social isolation of the Jarawas, is their non-utilitarian material culture. Their 'ornaments' are community specific and made from traditional materials, except that cloth and wool have recently been added to the material repertoire. They are commonly fashioned from selected shells, leaves (e.g. *epochiimi*), flowers and fruits. Utilitarian objects such as bows, chest guards, headbands and wooden buckets are frequently decorated as described below. 'Ornaments' or decoration can express tribal identity as Jarawas, social status, age, gender, personal preferences, and the wearer's skill

Figure 11. *Carrying sling used to transport a pig after a successful hunt.*

or craftsmanship. Such emblemic objects include necklaces and headbands made from both freshwater and marine mollusk shells. Simply threaded shell arrangements are called *lelele*. Leaf ornaments are found on headgear (*epoochi oothaab*) and armlets (*onipikuuav*), and are made from the fibres of yellow-coloured leaves of *eppochiimi* plants. The circular portion of the 'ornament' is called *weethaahe* and the tassels *empoochi*. Another 'ornament' is a headband made from pandanus leaves, the *mahwa*, decorated with a pattern called

Figure 12. *Jarawa adze (after Man 1885).*

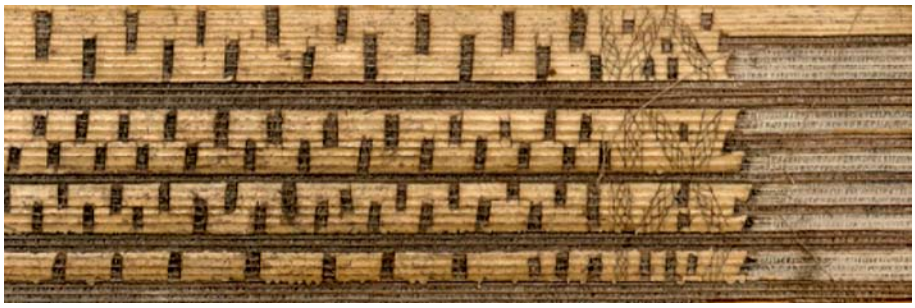

Figure 13. *The pattern* hoombaaluuv, *found on* mahwa *(headband made of pandanus leaves).*

Figure 14. *Jarawa women wearing tasselled waist ornaments called* onnige.

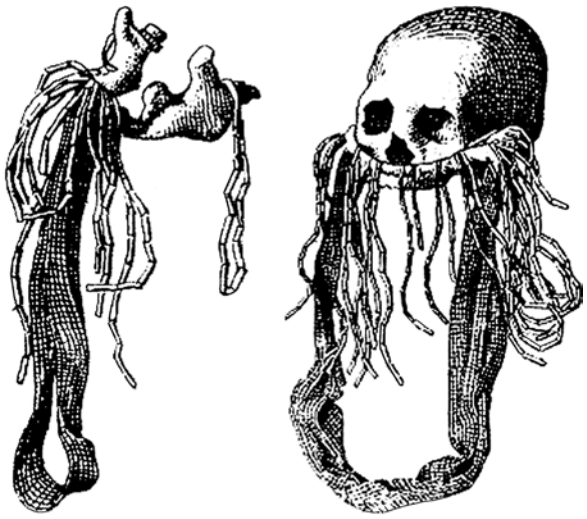

Figure 15. *Necklaces made of human and turtle bones,* cha'ugata *(after Man 1885).*

hoombaaluuv and used only by males (Fig. 13). When the Jarawas were given red cloth they did not use it to cover their bodies as intended, but they fashioned it into strips, using them to create traditional *humeeya* (thread ornaments) and *onnige* (tasselled waist ornaments worn by adult females; Fig. 14). The Jarawas wear no decorations of the nose, ear, shoulder, wrist, ankle, toes or foot.

Wearing the skull, mandible or small bones of a deceased relative is a common practice of all Andaman tribes. But unlike the Great Andamanese, the Jarawas do not wear any bones other than human. Human bone necklaces are worn as charms during illness by friends or relatives of the deceased, and may be seen tied tightly round a body part in pain; they are also worn when in health to ward off disease (Fig. 15). Wearing the mandible or a small bone of an immediate relative indicates that the departed is still among the living.

Nowadays wool is used for head and waistbands called *njohaajiiyu* and worn by women and children. In addition, the Jarawas use 'temporary ornaments' created from leaves, flowers and fruits, which are named after the plants providing them (Table 1).

Body decoration among the Jarawas often seems to be in celebration of some success: it may follow a successful hunting expedition and the ensuing feast. Pig feasting is always followed by painting the body, hands and mouth with clay, with the intent of protection from evil spirits. This also applies after eating turtle. Skulls and mandibles of pigs or skeletons of big fish are kept as trophies and suspended with cane bindings from the roofs of community huts. The decoration of artefacts is perceived as an extension of body decoration. Pig fat (*allam*) is applied to the body when there is an initiation or wedding, thus indicating a change in the status of individuals.

The performing arts of the Jarawas include music, dance, and drama, but no musical instruments of any kind are used. Their songs are community specific, all members of a group may participate in the singing, and no gender differences have been observed. Songs are mainly iso-rhythmic in structure, a single rhythm being repeated. The syllables are grouped into sequences as in words and are often repeated. Phonological deviations of the shape of the words from that of their normal form can be detected. Such

changes are yet to be recognised as anaptyxis, metathesis, dissimilation, procope, apocope, synocope, prothesis, vowel harmony, epithesis and epenthesis. Three songs have been recorded as follows:

Uu leloo waayaayi uu leloo waayaayi
uu leloo waayaayi uu leloo waayaayi
liya thadaavedi uu leloo waayaayi
liya thadaavedi uu leloo waayaayi
he lee le lee he lee le lee

Latheli vaavooth redoi
niyoolaathi deev hedev de de deev davo
davo raatheli vaavoloi doi liye lethi lede
niyoolaathi deev heve de de deev davo
laatheli vaavooth redoi

navaaaaathi hoothoi aova de dade doi
loeevahwaaya liyo dai dai vaatibuute
ve de de ve de de
naavaathi hoothoi oova de dade doi
le le le la de da de doi

Lack of sufficient data prevents determination of whether the language has developed into a poetic dialect. Breathing techniques are unknown to the Jawara, hence they pause any time during singing and then continue. However, what they mean through these songs semantically and symbolically is yet to be established.

The intricate and rhythmic movements of Jarawa dance tend to be monotonous. In a common dance form they stand in a row, holding each other closely, jumping one step forward and then backward in a rhythmic manner. The dancers themselves sing the accompanying song. *Formal* dancing is generally performed as part of important social ceremonies. Men and women do not dance together (Fig. 16). Children, married and unmarried individuals dance separately. *Informal* dance, however, is a spontaneous expression of joy. It is performed as part of gift-receiving, in connection with the reunion of hunting groups or to mark the success of a good hunt. Only women and children participate in this spontaneous expression, sometimes by clapping their hands on their thighs. These spontaneous outbursts of singing are common (Sreenathan 2000). The dramatic culture includes re-enacted or mock hunting games.

Ornament	Material	Use
aatho	tender leaves	head and neck
chiiba	flowers	head and neck
weitalo	fruits	head and neck
onahadova	flowers	head and neck
opanaane	flowers	head and neck
taapaadtoha	flowers	head and neck
iinu	fruits	head and neck
onothooho	flowers	head and neck
onothooho	leaves	head and neck
tetting	flowers	head and waist
omthaheeya	tender leaves	head and neck
theenehaavaale	leaves	head, neck and waist
epochi	leaves	waist, neck, arm
taangtiinu	flowers	head and neck
wuyaav	tender leaves	head and neck
tiitho	flowers	head and neck
naavedeethiya	creepers	neck
loongodooha	leaves	head and neck
aakoluuma	leaves	head and neck
ohaavu	flowers	head
iimbo	flowers	head
dheebe	flowers	head and neck
alaamelu	ferns	neck
aymaangtoha	flowers/fruits	head and neck
enmeel	fruits	head and neck
piig	fruits	head and neck
chiihipaad	fruits	head and neck
ithotho	flowers	head and neck

Table 1. *The 'temporary ornaments' of plant materials made by the Jarawas.*

4. Graphic expression of the Jarawas

The 'art' of all the tribal people of the Andamans consists of purely 'geometric' traditions lacking any figurative component, and sculpture is unknown. There has been no evidence that any of the Andaman hunter-foragers-fishers ever produced iconographic art, i.e. graphic markings providing visual information recognised by most humans as resembling the form of an object. The exclusively non-iconic 'art' of the Jarawas occurs in a variety of geometrical patterns that can be found on the human body and on a variety of utilitarian

Figure 16. *Dance by women and children in front of a communal hut.*

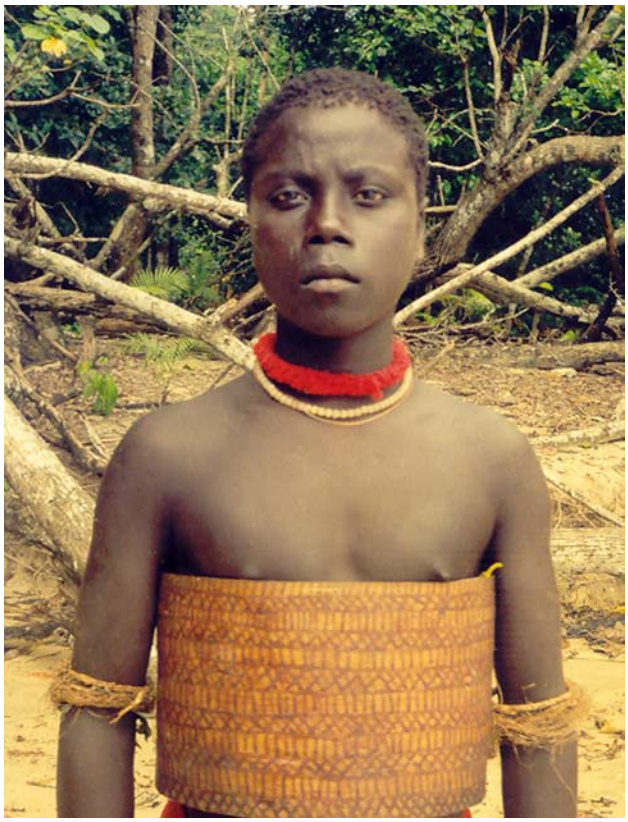

Figure 17. *Jarawa man wearing a typical chest guard.*

material culture: the bow, chest guard (Fig. 17), band of the chest guard, wooden bucket, and on the headband (*mahwa*) (Fig. 13). So far, no rock art versions have been reported but these need to be searched for. The range of graphic expressions is discussed below, but it needs to be emphasised that the semantics of Jarawa 'art' are unknown to us.

All members of a community recognise these designs, which occur both as the elementary patterns and in the form of their combinations. Within this scope of individual creativity, patterns are apparently chosen on criteria of attractiveness. The characteristic feature of graphic expression is rhythm and symmetry. The females contribute most of the design work. Whitish-grey clay, red ochre and the juice of a creeper called *bailatta* are commonly used in these graphic productions. The clay and ochre are mixed with water and used for ornamental painting of the body, which is reserved for ceremonial events.

4.1. Body pigment markings

Body painting among the Jarawas consists of several elementary patterns (Figs 18 to 20). Wavy designs (*aawaav*) are most common on the face, whereas *aaweed* is a crisscross lattice pattern drawn on the breast, chest or stomach. The *ikkaath* or *heyaaya* parallel lines design is found on the hands and occasionally on the stomach and chest. Horizontal and vertical lines occur on any part of the body and are called *oppo*. Body designs are made either by smearing the body with paint and then scraping out the designs with fingernails; or with a small scraping instrument, such as a stick; or by directly drawing the pattern with the finger. The paint is either white clay mixed with water, or red ochre mixed with pig fat (*allam*). The white body paint can be perceived as ornamentation, it may be connected with the celebration of some victory, or it may protect from spirits, but it can also be utilitarian (medicinal or as insect repellent). The use of the red paint, however, is more restricted to ceremonies, such as those related to death, but its use needs to be further investigated. Among the Onges, red paint signified mourning. Among the Jarawas, one mostly paints oneself but the more elaborate work is accomplished with the help of others, especially wives painting their husbands. Designs are applied irrespective of sex and age. No tattoos, cicatrices or scarification were observed and corpses are not decorated. Smearing the face or body with clay can also be a form of medical treatment or

Figure 18. *Jarawa man with body painting.*

Figure 19. *Jarawa woman with body painting.*

Figure 20. *Jawara boy with body painting.*

Figure 21. *Jarawa chest guard painted red on white.*

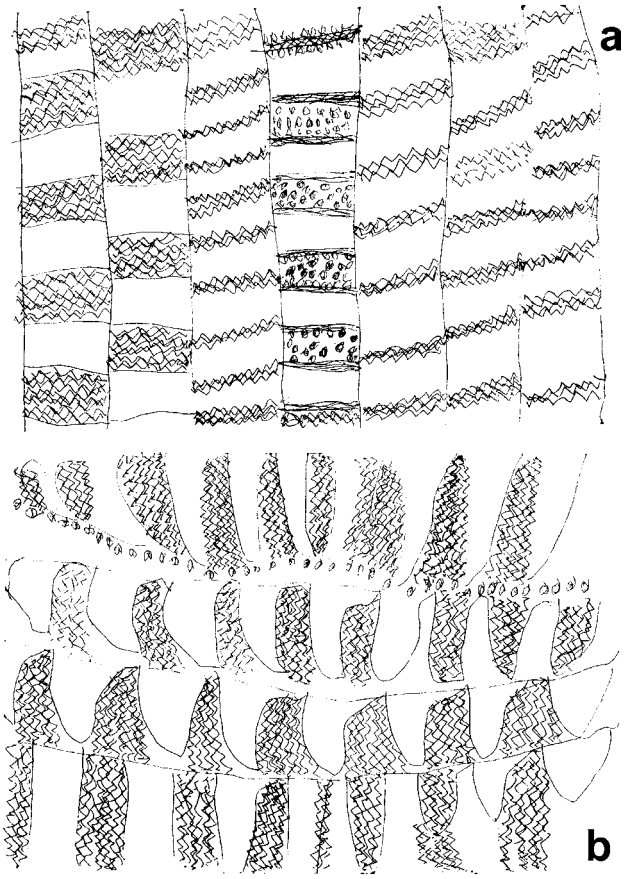

Figure 22. Onebialile *design (a) and* bethubethu oppo *design (b) on chest guards.*

insect repellent. As noted above, body ornamentation among the Jarawas can also involve wearing certain kinds of ornaments made of shells, bones, flowers, fruits, leaves and threads, and wearing the jawbone, skull or other bone of a deceased person.

4.2. Markings on objects

Cultural material objects are decorated with a natural dye of brick-red colour, extracted from the creeper *bailatta*. Before the sap's dye is applied, the surface is smeared with a coating of beeswax. The dye is usually applied with an arrow-point. Clay or ochre paint is not used in ornamenting utilitarian cultural objects, probably because such paint would wear off rapidly, and not all such objects are embellished in this way. The bow-shaft, wooden bucket and chest guard are the most important items on which designs are commonly found (Fig. 21). Such cultural material objects are not painted a second time; whatever designs once made on them will be allowed to fade. These designs do not serve to identify one's possessions; they are community designs which all members of the group may practice. Some individuals produce simple designs while others take pains to make the designs more attractive. The occurrence of both decorated and undecorated craft objects suggests that the decoration is aesthetic rather than endowed with any spiritual values. Typical motif forms found are zigzag lines and small circles (e.g. *onebialile* and *bethubethu oppo* designs on chest guards, see Fig. 22), herringbone, ladder and loop patterns (Fig. 23).

4.3. Patterns in Jarawa art

The patterns of Jarawa graphic art are in many respects similar to those of the Great Andamanese, although there are differences in the ways they may be applied to the body or to artefacts, and also in the

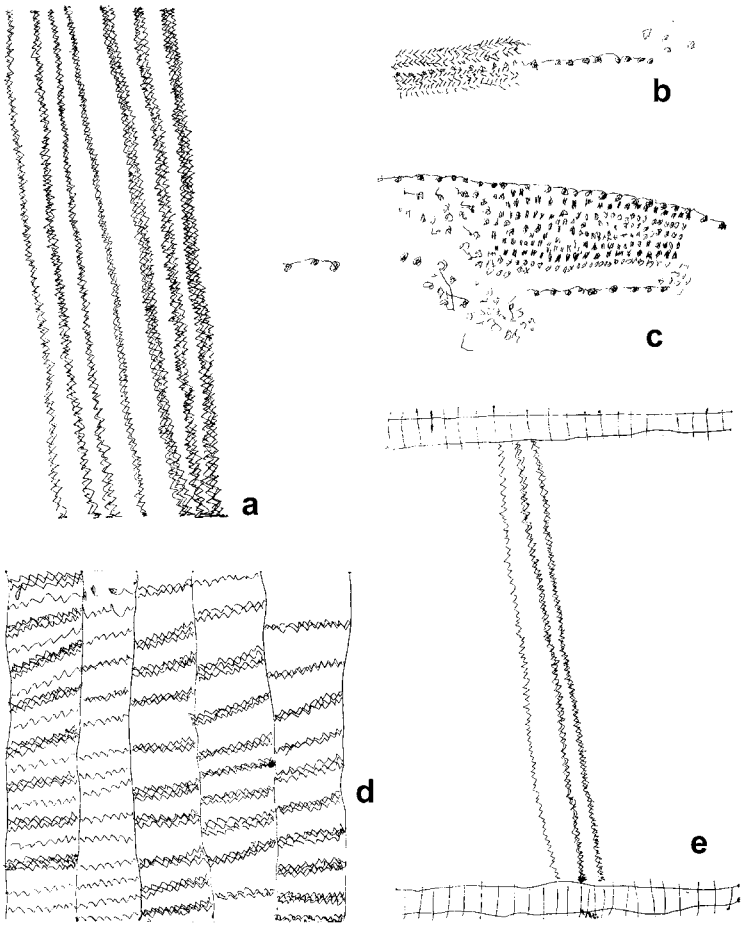

Figure 23. *Typical Jarawa designs: (a)* oppo *design on bow shaft, wooden container and body; (b)* oppo haaneev *design and (c)* thothaaleev *design, both found on bow shaft and wooden container; (d)* oppo dewevelvel *design found on bow shaft, chest guard and wooden container; (e)* beethobetholev *design on wooden container.*

Figure 24. *Guilloche pattern,* oppo diveel.

materials used (Temple 1903). The Great Andamanese have one more motif, a Vandyke pattern of alternative zigzags and scalloped bands found painted on nautilus shells. Body painting was more used by the Onges and the Great Andamanese than by the Jarawas. The following nine patterns (Figs 22 and 23) are detected in the art of the Jarawas, some occurring on artefacts, some in body art, and some in both art forms. Where they occur on artefacts, they are generally produced with the sap of a creeper.

1. Zigzags (*aawaav*): this is found on bows, chest guards and buckets, and in body art in white clay on the forehead and chest.
2. Crosshatching (*aaweed*): occurs on wooden buckets, chest guards and bow-shafts, as well as breasts and chests, in the latter case executed in clay. Two forms may be distinguished, with either narrow or wide spacing, which among the Great Andamanese had different names (*ig-yitinga* and *ig-bar'nga*).
3. Parallel lines (*ikkaath* or *hechaya*): also found on wooden buckets, chest guards and bows. In body art, the pattern is executed in white clay and occurs on the face, the stomach and the hands.
4. Combined parallel lines and zigzags (*onebialile*): this pattern occurs only in body art, made with clay and found on the face as well as other parts of the body. Among the Great Andamanese, however, it occurred mostly on the waist belt (*jobo tartanga*), and there was also a variation (*to'nanga*) combining the two forms, and found on headdresses (Fig. 22a).
5. Lozenge patterns (also called *onebialile*): found on various artefacts, in body art applied to the face in clay.
6. Crosses (*bethu oppo*): these are found incised into bow-shafts and are produced either with an arrow-point or a knife, and in the past were made with shells. They are absent in body art.
7. Fishbone pattern (*oppo haaneev*): only occurring on bows and wooden buckets (Fig. 23b). Among the Great Andamanese it was also found on slings and belts, and called *bar'nga*.
8. Loops and small circles (*bethubethu oppo*): these patterns occur only on chest guards where they are applied with creeper juice (Fig. 22b).
9. Guilloches (*oppo diveel*): this characteristic pattern is found painted with *bailatta* sap on bow-shafts, and with clay on the body (Fig. 24).

4.4. The issue of iconicity

While Andaman graphic arts appear to be purely non-iconic, this does not necessarily imply that they are devoid of possible iconic meanings. A set of wavy lines observed in some of their designs could be understood as symbolising the sea, in which case the motif could be defined as a pictograph. Another design recalls the bone of fish or the appearance of a creeper. Analogised patterns are rare and even in these cases, the Jarawas appear unable to explain the iconic potential, they merely follow a conventional style and pattern. The use of such graphics does not indicate that they have a non-phonological system expressed in pictographs, nor do the Jarawas seem to use ideographs. The potential iconic derivation of the apparently non-iconic imagery used by them needs to be

more closely investigated, as applies to so many other aspects of their inadequately explored culture.

The most surprising discovery about the graphic arts of the Jarawas is that they do possess the creative potential to produce fully iconic motifs. The Jarawa teenage boy named Enmay, who in 1996 became the first individual to have protracted contact with the outside world, demonstrated that he could create animated figures from memory (Figs 25 and 26). As mentioned above he was delivered to hospital after he had badly injured his leg in a hunting trap in July of that year. As a result of this experience, friendly contact began to be established gradually, commencing later that year, while hostilities also still continued until well into 1998.

Enmay's drawings could easily have been made by a well-tutored Western youth of his age, yet he was ignorant of the use of pen or paper when he began demonstrating his ability. They show acute observation of detail, sense of proportion and superb memory recall. Unless we were to assume that he happened to be some 'unusually gifted' prodigy ('precocious realism'; Selfe 1983; Drake and Winner 2009; O'Connor and Hermelin 1987, 1990), we need to accept that Jarawas generally have no difficulty recognising and, if they are so inclined, producing figurative imagery. Indeed, there is other evidence that Jarawas are quite capable of creating drawings on demand that are clearly iconic. Figure 27, showing the depictions of a community hut and a temporary hut respectively, by an adult Jarawa, illustrates standard iconographic treatment. Note, for instance, the three pointed ground stakes in the temporary hut, and the way haphazardness is expressed in that sketch, relative to the well-ordered structure of the community hut, showing vertical and horizontal frame members, bindings, thatching and stakes as well as overall naturalistic shape in perfect iconic clarity

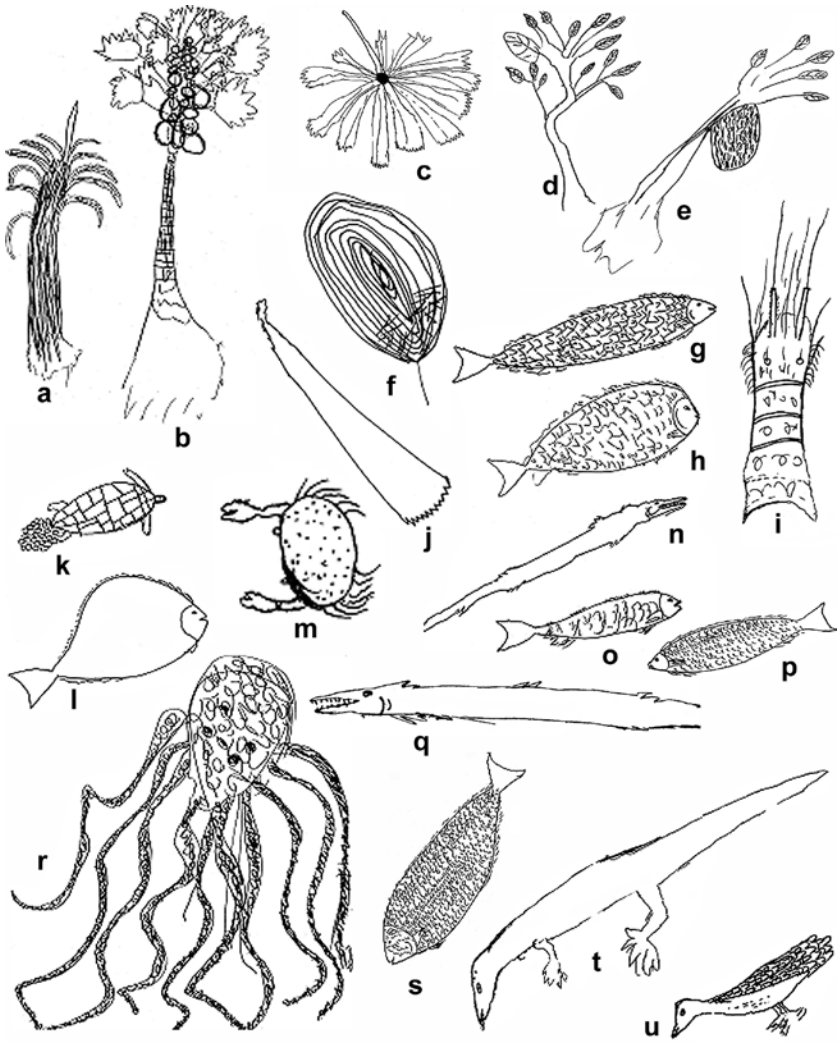

Figure 25. *Iconographic drawings of the Jarawa boy Enmay.*

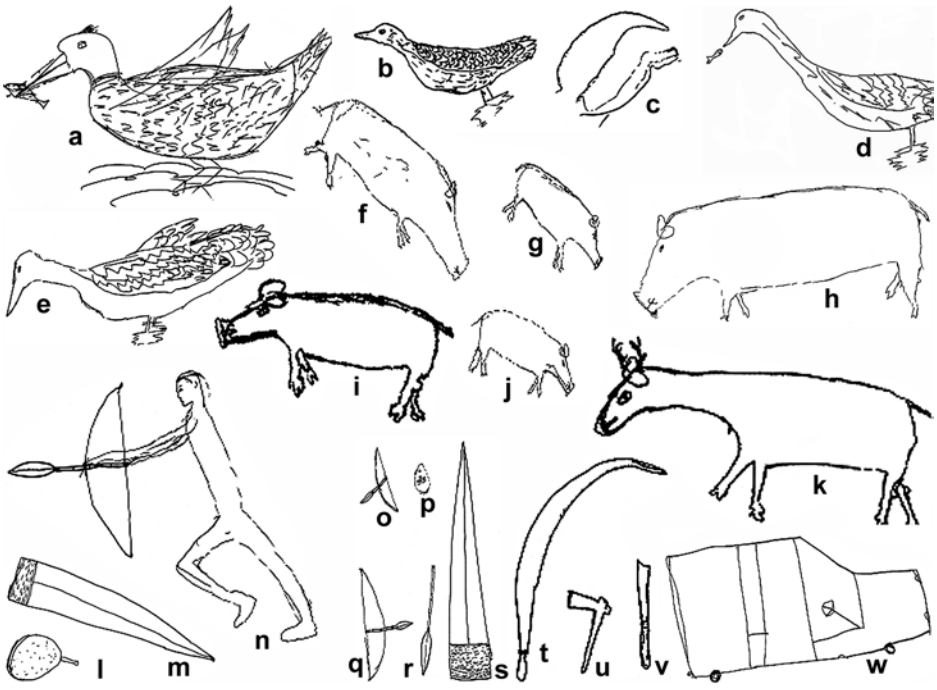

Figure 26. *Iconographic drawings of the Jarawa boy Enmay.*

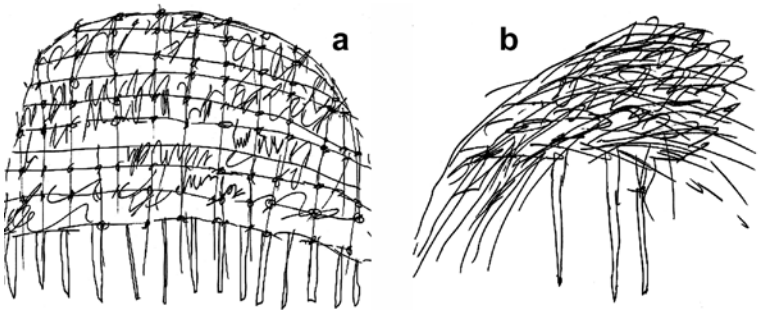

Figure 27. *Drawings prompted from a Jarawa man of (a) a community hut and (b) a temporary hut.*

and architectural economy. It therefore appears that cultural practice rather than ability determines the strict adherence of the Jarawas to 'geometric' art forms.

Cognitive capacity and the form of preferred artistic convention need not coincide, as can be seen in other cultures. It is the primary proposition of this paper that the same could well have been valid for most Pleistocene traditions, and many others of the Holocene. Numerous cultures, both extant and extinct, either restrict their art completely to non-iconic forms (e.g. De Boer 1990), or tend to use these for specific purposes, such as selected sacred symbolisms (as is commonly the case in Australia; Bednarik 2010). It is obvious that strict Islamic societies employ principally non-iconic art forms, but that this does not mean that the ability of Muslims to perceive iconicity is fundamentally impaired. The same is no doubt true for all other cultural conventions lacking iconic 'art', such as specific Amazonian tribes or Tasmanians: they have no difficulty detecting iconic meaning in pictures, or producing such imagery when prompted. This raises the fascinating question why societies might deliberately limit their art production to non-iconic forms. In the instances available for investigation, it might appear that a dominant reason lies in metaphysics or belief systems: the use of figurative imagery may not be considered appropriate.

The authors have mentioned the nexus of iconicity and perception in graphic art in the introduction, and noted that the cognition involved in the creation of marks or forms that prompt the mind to see them as another object is deeply rooted in visual ambiguity. Indeed, figurative graphic art can be defined as 'the cultural and intentional creation of features prompting visual responses to a signifier; it induces visual ambiguity intentionally', it is a 'managed, intentional use of visual ambiguity' (Bednarik 2003b). In figurative drawing, the artist places lasting marks, lines and textures on a surface, which the beholder's visual system interprets as re-sembling objects. It has been noted above that of the two types of graphic art, iconic and non-iconic, the former is the more primitive, and the one requiring far less complexity of cognition to attach meaning to.

Even in a society that makes extremely frequent use of iconicity, such as modern Western society, the ability of creating figurative drawings that 'resemble' their referents very closely is certainly not evenly shared by all members. Some have exceptional graphical abilities, while those of others defy any attempt to train them in drawing. Sustained tuition of young people seems to be very effective in enhancing natural talent or aptitude.

In order to investigate the choice between iconic and non-iconic 'arts' more comprehensively, and to endow the wider issue with the perspective only time depth can provide, the earliest known palaeoart systems will be investigated next.

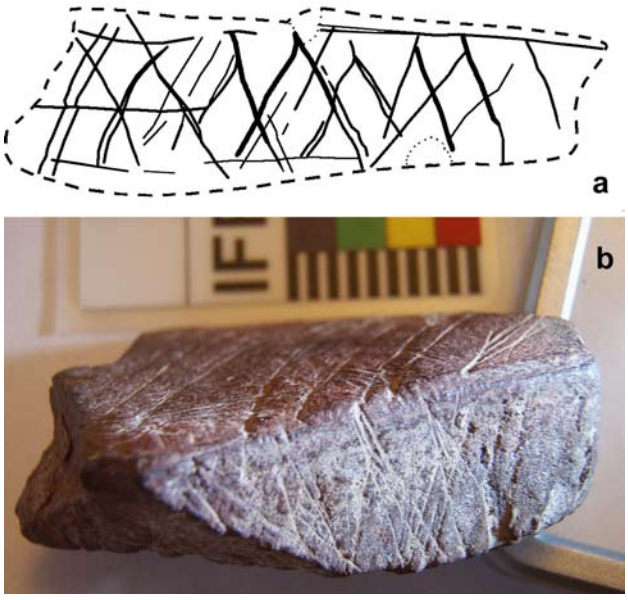

Figure 28. *Engraved patterns on haematite, Blombos Cave (a) and Wonderwork (b), both Middle Stone Age.*

5. Non-iconic graphic art in the Pleistocene

Seen in an overall perspective, the graphic art forms of humanity are globally dominated by non-iconic genres until the Holocene. A significant use of figurative art seems to commence in south-western Europe about 40 ka ago, but is not numerically dominant even in that region. It is only during the last 8000 years of human history that iconicity becomes dominant, although purely non-iconic traditions do continue and can be found right up to the present. There is a reasonable possibility that some of these latter cultures might be remnant survivals of the broad Pleistocene spectrum of non-iconicity, most especially in remote geographical enclaves or on islands, among remnant aboriginal populations, such as is indeed the case in Tasmania.

The early evidence from the Pleistocene features groupings of lines, geometric shapes and patterns, and there is a universal semblance apparent in these archaic traditions (Bilzingsleben, Wyhlen, Sainte Anne I, Wonderwerk Cave; Mania and Mania 1988; Bednarik 2003a; Bednarik and Beaumont 2010). Parallel lines, sets of convergent lines, lattices and dot patterns occur

very early and can in some cases be traced back at least 250 to 350 ka BP (Mania and Mania 1988; Bednarik 1995a; Bednarik and Beaumont 2010). In the Middle Palaeolithic they are supplemented by radial motifs, zigzags (Bacho Kiro, Bulgaria; Marshack 1972), or meandering lines, and circles. Examples that are more recent include the Blombos Cave (South Africa) evidence of geometric patterns (Fig. 28a), perhaps 77 ka old (Henshilwood et al. 2002), repeated in Wonderwerk Cave at a similar time, also South Africa (Fig. 28b) (Bednarik and Beaumont 2010). The wide distribution in the Old World of a uniform repertoire of simple non-iconic forms suggests cognitive universality among the archaic *Homo sapiens* groups involved.

Some of the world's earliest evidence of rock art has been detected in India (Bednarik et al. 2005). Although the quantity of this evidence remains minute (two sites), it is more numerous than the palaeoart from any other part of Pleistocene Asia except Siberia (Abramova 1962; Bednarik 1994). The oldest known evidence, in the form of cupules and a few linear petroglyphs, was first located in Auditorium Cave at Bhimbetka (Bednarik 1993b), then at Daraki-Chattan (Kumar 1996; Bednarik et al. 2005). Thirty cupules and four engraved grooves from these two quartzite caves must be either of an Acheulian (Misra 1985) or preceding chopping tool industry, as conclusively shown by stratigraphy. The only other reported Lower Palaeolithic petroglyphs, from Sai Island in Sudan (Van Peer et al. 2003) and two sites in the southern Kalahari (Beaumont and Bednarik 2010), are probably more recent. Other early evidence in India occurs in the form of an ostrich eggshell piece engraved with crosshatched designs from Patne (Sali 1989) and 25 ka old. Although rock paintings in central India have been suggested to be UP (Wakankar 1983), Misra (2001) describes them as Mesolithic. Tyagi (1988) also disputes Wakankar's claims for an UP antiquity of rock paintings in India. The intricate patterns observed in central Indian rockshelters by Tyagi (1988) are entirely geometric and non-iconic. The Patne eggshell fragment (Fig. 29) as well as the presumably Mesolithic (Fig. 30) core from Chandravati (Sonawane 1991) also bear distinctive geometric decoration; consider, moreover, the UP engraved bones Wakankar (1975) reports from Bhimbetka's Mesolithic.

Nearly all known Asian (as well as eastern European) graphic art of the Pleistocene is non-figurative; there are in fact only two exceptions, one each from Mal'ta and Berelekh, Siberia, and perhaps one questionable figure from Hayonim Cave, Israel (Bednarik 1993a, 1994). In about 97% of the total area of Eurasia, and in North America, graphic Pleistocene art, wherever it does occur, is almost entirely restricted to geometric or non-iconic marks. Of particular interest are the numerous 'geometric signs' on portable objects from Russia (Marshack 1976), Ukraine, Siberia and India (Bednarik 1994). They are best exemplified at Eliseevichi, Mezin, Kirillovskaya and Mezherich (but also occurring, less pronounced or in smaller numbers, at Mal'ta, Afontova, Kavkaz, Balinkosh, Klinets, Timonovka, Yudinovo, Suponevo, Novgorod-Severskaya, Avdeevo, Gagarino, besides Patne), in the first Palaeolithic art discovered in China (Bednarik 1992b), in several engraved objects from the Levant (especially an Upper Besor 6 ostrich eggshell fragment and the Urkan e-Rub II stone plaque; Fig. 31), and in the 134 engraved plaques from the Gault site, Texas (Fig. 32) (Collins 2002; Collins et al. 1991, 1992; Robertson 1999). Finally, there is that massive corpus of Pleistocene palaeoart from Australia, no doubt the largest surviving regional body of this phenomenon, which is entirely non-iconic and formed by rock art (Bednarik 2010).

In the context of global Pleistocene palaeoart, the perceived iconic 'enclave' of western Europe presents an anomaly; on present

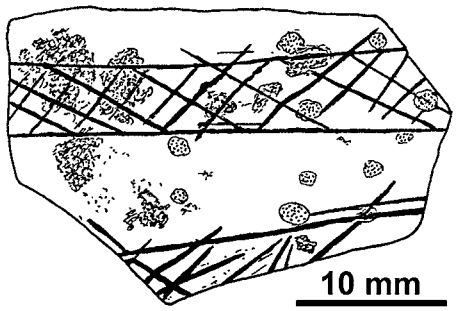

Figure 29. *Engraved pattern on ostrich eggshell fragment, Patne, India, Upper Palaeolithic.*

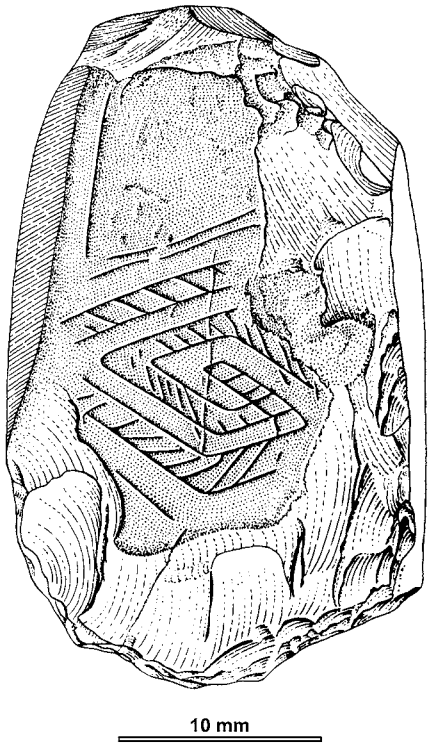

Figure 30. *Engraved pattern on cortex of chert core, Chandravati, India, perhaps early Mesolithic.*

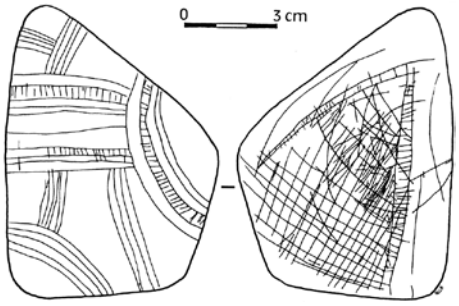

Figure 31. *Engravings on cobble, Urkan e-Rub, Israel, Final Upper Palaeolithic.*

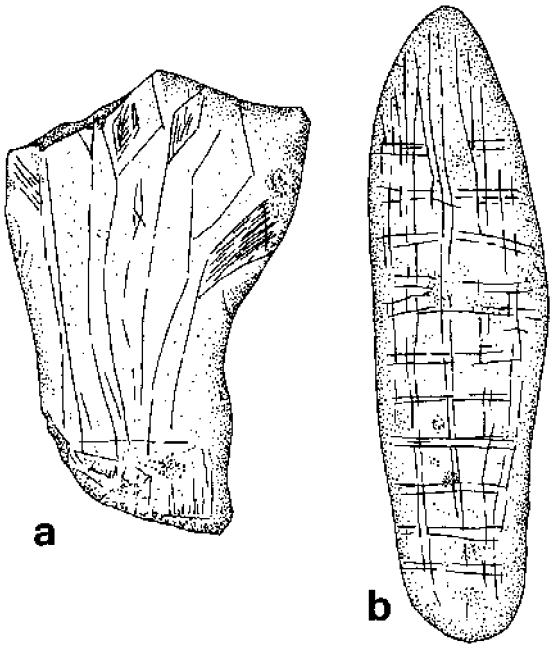

Figure 32. *Two of the Final Pleistocene engraved plaques from the Gault site, U.S.A.*

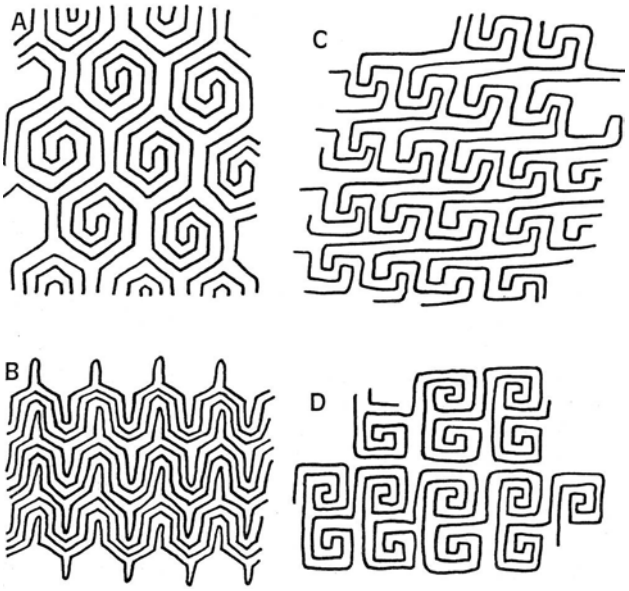

Figure 33. *Examples of 'intricate pattern' rock paintings from central India.*

indications it is not repeated elsewhere, nor is it the numerically dominant art form of the period in that region. The very rare occurrence of apparently iconic forms elsewhere, and as far back as, in one instance, the Micoquian (Bednarik 2006), presents a tantalising possibility: that some or many, perhaps even all, of these Pleistocene traditions were by people who did have the ability to draw figuratively, but for some reason largely eschewed the practice in favour of non-iconic traditions.

It seems useful to the authors to, in investigating this puzzle, draw on one of the very few ethnographic parallels we have. The principal rationale of this paper is to propose that, despite being a recent, indeed current, tradition, the intricate geometric designs comprising Jarawa art could help in the quest of understanding the geometrical genres of palaeoart. The authors emphasise that they are not proposing that the culture of the Jarawas is a Final Palaeolithic or Mesolithic tradition. It is self-evident that ancient palaeoart can only provide markings on hard and deterioration-resistant surfaces that remain as archaeological residues of taphonomic processes, and in that sense it contrasts sharply with anthropological observations: Jarawa art forms occur exclusively on perishable surfaces. Therefore if this were a palaeoart tradition — belonging to an ancient culture — not a trace of it would survive today. Consequently the earliest available record must be seen as being highly untypical, as being a taphonomic residue that has been so severely truncated by preservation bias that any simplistic interpretation of it would be doomed to failure (Bednarik 1995b). Indeed, we should assume that nothing at all could have survived until art-like production became capable of creating extremely deterioration-resistant forms that had a remote chance of surviving hundreds of millennia. The authors suggest that an archaeological proposition about early palaeoart be subjected to anthropological testing. Our key proposition to be tested is this: that the absence or near-absence of iconic graphic art in most traditions of the Pleistocene is not necessarily an indication that these people lacked the ability to draw figuratively, or that most of them did so; the authors propose that in some, many, or even all cases, it is the result of cultural preferences.

6. Jarawa 'art' in context

Genetically as well as linguistically the Jarawas may be regarded as one of the surviving remnants of the Negritoid substratum of southern Asia. In view of their late Holocene isolation and significant aversion to external contact, remnants of earlier mainland traditions may well have been preserved in the patterns of their culture — just as the traditions of Pleistocene Australia were largely preserved in Tasmania for 12000 years after its sunderance from the mainland (Sims 1977; Bednarik et al. 2007). In the context of available Pleistocene and early Holocene graphic evidence of the wider region of southern and eastern Asia — however limited it is at present — it is therefore important to observe the striking resemblances between its marking strategies and those seen in Jarawa art. They include:

1. *The reticulate arrangement of elements*: a most prominent aspect of Jarawa art is that patterns are generally arranged according to spatial canons of demarcation and continuity; they are not distributed randomly (as they appear, for instance, in the Franco-Cantabrian art). This regimented use of space is also evident in mainland arts of the final Pleistocene/early Holocene, such as the rock art

and portable art attributed to the very final Pleistocene/early Holocene of India, particularly the distinctly reticulate and geometric 'intricate patterns' of rock art (Tyagi 1988) (Fig. 33) and in many other final Pleistocene palaeoarts.

2. *The enclosed spaces aspect*: even more typical is the use of surrounds to delineate squares or bands of patterning, the tendency to create arbitrary spatial entities and 'fill' them. Such fixed spatial boundaries are evident in all three designs on the Longgu Cave antler fragment from China (Fig. 34), of the final Late Pleistocene (Bednarik 1992b); in the Late Pleistocene Urkan e-Rub cobble from Israel (Fig. 31); and in the Late Pleistocene Patne ostrich eggshell engraving (Fig. 29), clearly bearing part of a band with lozenge infill, and very similar even to the significantly older Blombos Cave pattern.
3. *The repertoire of elemental forms*: the lozenge patterns and crosshatching, the sets of parallel lines, zigzags and fishbone patterns, as well as circles and crosses defining Jarawa art can all be found widely in the graphic traditions of Pleistocene palaeoarts, not just in Asia, but also in Europe, Africa and Australia, and they often seem to constitute their principal elemental forms.
4. *The use of the guilloche*: apparently absent in much Pleistocene art, this highly specific and certainly elaborate design does occur on the 13 000-year-old Longgu Cave object (Fig. 34). The most economical explanation for this same motif in Jarawa art is a former connection with a pan-south-Asian tradition, found also in the genetic and linguistic evidence.
5. *The exclusive use of non-iconic forms*, although it is now evident that the society in question has access to iconic depiction and recall. We know this to be the case for the Jarawas, and we have reason to believe that it was also the case for some, many or even all of the Mode 4 traditions, as well as for some early Holocene societies.

The authors therefore submit that the non-iconic tradition of the Jarawas should be regarded as a part of the non-iconic ensemble of the rest of the world, and not as some isolated fluke development. There are two possibilities of explaining the notable similarities between the Andamanese art and that of palaeoart traditions elsewhere, but particularly in Asia: either Jarawa art, and that of the other Andamanese, developed independently after the islands became increasingly isolated by the rising sea-level, as a form of autonomous parallelism; or it has its roots in earlier mainland traditions. The evidence, the authors believe, overwhelmingly supports the latter option. Various of the features of Jarawa 'art' are duplicated in known non-iconic Pleistocene and early Holocene traditions, despite the significant differences in the media used and the very certainly sporadic nature of the available archaeological record. The linguistic and genetic evidence noted above supports this proposition, whereas the alternative proposition has no tangible support and is of low logical probability.

Figure 34. *Part of a complex guilloche pattern on antler fragment from Longgu Cave, China, Final Upper Palaeolithic.*

7. Children's palaeoart production

It is obvious that Jarawas have no difficulty recognising iconicity in an image, and we may safely assume the same for all hominins of the last few million years. Several non-human animals possess the same ability (Fig. 35), which demonstrates decisively that iconic art is more 'primitive' than non-iconic art. It is considerably more difficult to pin down when, in hominin history, the ability of *creating* iconic imagery commenced. One possibility arising from a review of Jarawa graphic art and its probable historical context is that non-iconic art could have been the 'proper' or 'mature' way of 'artistic expression', whereas iconic production was considered a playful, ludic form, for which there was limited practical use in mature cultural life. The respective roles of the two art forms in the Jarawa's world have yet to be conclusively established, but this kind of scenario is a realistic possibility. It is possible that, as typically in recent Australian Aboriginal art, iconicity plays a subordinate role to the often more formal, more sacred and more profound non-iconic. What renders this relevant for palaeoart research is that it might help explain why there are so few iconic motifs in the surviving Pleistocene art of the world, i.e.

Figure 35. *Painting elephant (web image).*

less than 1% of the total. If there were none at all, their absence could easily be explained by assuming there was no ability to draw figuratively. But as soon as even just a few iconic images are known from a period or region, we are tempted to ask why this form, which most modern humans mistakenly regard as 'superior', was not introduced more widely.

Three-dimensional Pleistocene palaeoart is a widespread phenomenon and has some very early precursors, in the form of proto-sculptures (Goren-Inbar 1986; Bednarik 1998, 2003a). But as noted, the only Pleistocene tradition comprising a significant proportion of two-dimensional figurative art is that of the caves and portable plaques of UP western Europe. The question arising from the above considerations is: to what extent could this regional tradition be an art of children?

This question may sound almost sacrilegious to the traditional scholar of Franco-Cantabrian art, but surprisingly there is in fact literally no evidence that any major portion of this celebrated corpus is the work of adults, while there is sound evidence that juveniles created much of it (Bednarik 1986, 2002, 2008b; Guthrie 2005). Although most rock art or other palaeoart cannot be securely attributed to specific age groups, there are some types of art-like remains that present adequate forensic evidence to permit such attribution securely. Most important and unambiguous among these, in the context of European Pleistocene palaeoart, are (1) finger flutings on soft wall deposits in caves; (2) prints and stencils of body parts; and (3) the fingertip stamp marks made with paint on certain portable objects. There are other situational conditions (e.g. aperture size of only available access to a site, or widths of wet-applied pigment lines drawn with fingers) that may permit limited deductions concerning body size, but they are less persuasive or reliable. However, there is also a good deal of information available, concerning the age of cave visitors, from impressions of feet, hands and other body parts, on clay floors and on soft wall deposits (Bednarik 2008b).

Quantified forensic evidence shows that the finger flutings of the caves of Europe and Australia, most of which are of the Pleistocene, are overwhelmingly made by children or teenagers (Bednarik 1968; Sharpe and Van Gelder 2006). Prints and stencils of body parts, notably hands, in the Franco-Cantabrian traditions are entirely the work of young people (Guthrie 2005). The finger stamp marks commonly found on plaques of the UP Magdalenian tradition were also made by children, perhaps six to ten years old (Bednarik 2002). Finally, the overwhelming majority of the hundreds of human tracks found in no fewer than eleven Palaeolithic art caves of Europe, certainly well over 90% of them, are by juveniles, some as young as three, most falling between the ages of nine to fifteen (Clottes 1985, 1986, 1997: 31; Clottes and Courtin 1995: 175; Duday and Garcia 1983, 1985, 1990; Garcia 2003; Garcia and Duday 1993; Pales 1954, 1960, 1976; Roveland 2000).

Therefore the available record indicates a distinct bias in favour of children's markings, among those types of surviving palaeoart that permit reliable determination, mirrored in the ages indicated by the surviving human tracks. While it is obvious that none of the footprints on cave floors need to necessarily relate to any of the cave art of such sites, it is equally obvious that there would be expected to be a much greater number of adult footprints if adults had significantly contributed to the 'art'. It appears therefore extremely unlikely that the pattern is merely a sampling phenomenon. Unless we were to postulate that *only* those forms of palaeoart permitting age estimates of the artists were for some cultural reason made by children and adolescents — which logically seems to be beyond reasonable probability — we need to accept that there is a very high probability that other palaeoart forms of these traditions were also often the work of young people. This would be supported by the sizes of footprints observed on cave floors. The alternative hypothesis, that all or most other Pleistocene palaeoart in Europe is the preserve of adults simply has no empirical support.

8. Discussion

This is not intended to exclude the possibility that adults *did* create a certain portion of Palaeolithic rock art; there is certainly no proof that it is exclusively the work of young people. But what this discussion does bring into focus is that most of the explanatory endeavours offered for this famous European corpus, since the late 19th century, have in recent years had to be rejected in favour of more realistic, and scientifically better based notions:

- The UP cave art of Europe *is not* an art form endemic to caves — its location is merely a product of taphonomic processes.
- It *is not* a record of the 'origins of art' — much earlier palaeoart exists elsewhere, and mostly outside Europe.
- In fact there is far more MP rock art surviving in the world than UP, and most of it occurs in Australia.
- There is *no* proof that this corpus is entirely the work of 'anatomically modern humans': Protsch's (1975) out-of-Africa hypothesis is as much refuted as his carbon isotope determinations have been decisively falsified (Bednarik 2008a, 2011a, 2011b).

Archaeology's concepts of Pleistocene palaeoart are marred by a series of misconceptions. For instance it is widely believed that such art consists largely of semi-naturalistic megafauna images in caves. In fact there are only a few thousand such motifs known, whilst over 99% of surviving Pleistocene art consists of non-figurative or geometric patterns. Even in the relatively small corpus of Franco-Cantabrian cave art, most motifs are apparently non-iconic. There are almost no figurative graphic images available from the Pleistocene outside of western Europe, and this massive remaining corpus has received almost

no sustained attention by comparison. Whereas thousands of books and articles have been published on the small body of south-western European cave art, only two papers have ever addressed the Pleistocene palaeoart of Australia (Bednarik 2010a, 2010b); one the pan-continental counterpart of Asia (Bednarik 1994); and there is only one attempt to summarise the Pleistocene palaeoart of Africa (Beaumont and Bednarik 2010). Because of this massive distortion in research intensity many scholars assume that most surviving rock art of the Ice Ages occurs in the Franco-Cantabrian region of Europe; yet this phenomenon is in fact far more common in Australia. It is also widely unknown that there is much more surviving MP rock art in the world than UP, and most commentators believe such traditions began with the latter period, commencing with the Aurignacian and the 'anatomically modern humans' (AMHs). This, more than any other factor, provides an indication of the profound level of misinformation currently existing in Pleistocene archaeology. The fable of the origins of these AMHs in Africa, and their arrival in western Europe with the advent of Aurignacian implement types is a classical case of the effects of piling misinformation upon more misinformation (Bednarik 2008a). Continuing the Eurocentric and 'iconocentric' (Montelle 2007) research tradition established by over a century of archaeological attention will not improve the understanding of Pleistocene palaeoart, or the processes documenting the development of human cognition and symbolling ability.

The mental construct of most commentators, of 'art' beginning with animal figures, has not only prompted the historical neglect of most of the world's Pleistocene art; it has even led to the pronouncement of many sites of such zoomorphs as Palaeolithic in the absence of any corroborating evidence — and even when these bodies of rock art are in fact only a few centuries old. In some parts of Eurasia, such as the Iberian Peninsula, the southern Caucasus region, central Siberia and Mongolia, practically any zoomorph in rock art that resembles a bovid is described as an aurochs and attributed to the Pleistocene (even in regions where that species did not exist in the final Pleistocene), and any equine petroglyph is regarded as Palaeolithic. When scientific dating evidence shows that these rock arts can only be a few centuries old, this is ignored by practically all archaeologists, partly because some of these sites have been nominated for World Heritage listing on the basis of their supposed Palaeolithic provenance, and because numerous archaeologists have staked their reputations on these fabrications. Thus the entire subject of Pleistocene palaeoart has become such an academic farce that it has lost most credibility.

Here, the authors have presented a model that is at considerable odds with the dominant paradigm. They have proposed that the traditional understanding of iconic and non-iconic graphic palaeoart needs to be significantly revised. By showing that the ethnographic art of the Jarawas may provide unexpected insights into ancient palaeoart systems, the authors arrived at rudimentary explanations inviting a very different paradigm of palaeoart origins, of the role of iconicity and of the involvement of children in palaeoart production. If this model appears controversial then this is not because it is without supporting evidence; it is because it clashes severely with the existing dogma.

The model the authors favour suggests that a seafaring group or groups bearing a culture and technocomplex then common across southern and eastern Asia colonised the Andamans in the final Pleistocene. Their technology included the production of 'Mesolithic'-type ceramics, which had been established in eastern Asia by that time. The visual palaeoart of these colonisers would have been dominated by the patterns we find in the mainland's final Pleistocene and very early Holocene traditions. As the sea level rose towards the end of the Pleistocene, the Andamanese became progressively isolated and separated into tribal groups. Like other insular populations, such as the Tasmanians or the Tierra del Fuegans, they preserved many of their cultural practices due to the lack of exposure to 'cultural memes' from contiguous populations, as is always the case with mainland populations. This research with the Jarawas suggests that the Andamanese, like any other humans or hominins, and even certain other animals, have no difficulties perceiving iconicity in an image. Their culture does not, apparently, encourage them to also create such images, but that does not mean that they lacked this ability. Nearly all cultural traditions of the Pleistocene, and many more of the Holocene, have not made any use of this ability, although we can safely assume that all of the societies concerned would have possessed the faculty of recognising iconicity.

That is where the empirical evidence stands. The explanation the authors have offered here is that the Jarawas have not exapted iconic depiction into adult semiotic use, but it remained a 'juvenile' form of expression. The main strength of this hypothesis is that it can explain a major conundrum in global palaeoart research: why is it that some, perhaps even most, Pleistocene traditions offer only tantalisingly few instances of iconic depiction among vast numbers of non-iconic motifs? These do indicate that the ability itself was there, but also that almost no use was made of it. There are some possible explanations, especially the taphonomic elucidation: most iconic imagery may have been limited to impermanent media. However, the hypothesis of it having been regarded as 'immature' enjoys considerable support from other quarters. For instance, the domination of the only major iconic tradition of the Pleistocene, in the caves of south-western Europe, by evidence ascribing a significant portion of its production to young people provides clear support. But perhaps more importantly, the neotenisation of the human species over the past

40 000 years, which is accelerating exponentially and represents the most distinctive evolutionary feature of modern hominins (Bednarik 2008a, 2008c, 2011a, 2011b), renders the explanation offered here particularly relevant. The most consequential development in recent human phylogeny is the species' degeneration since the times of the robust *Homo sapiens* subspecies, such as the so-called Neanderthals. This is a biological oxymoron, because evolution is dysteleological, yet it is phylogenetically obvious that the human genome is degenerating. Changes include the loss of 13% brain volume, skeletal robusticity (especially of the cranium), and as much as one half of physical strength. They also include the introduction of literally thousands of genetic disorders not found in other primates, and very probably not in previous hominins. Modern humans suffer from numerous neurodegenerative diseases, mental illnesses, Mendelian disorders and many other detrimental conditions (ranging from demyelinisation of axons to almost countless genetically based syndromes), the ascendancy of which is the 'side effect' of domestication (Bednarik 2007, 2008a, 2008c, 2011a, 2011b; Bednarik and Helvenston 2011; Helvenston and Bednarik 2011). Once encoded genetically, but not moderated by natural selection, the human neural system lacked the Darwinian defence system and detrimental alleles developed. Modern humans are somatically and anatomically most similar to foetal chimpanzees; they are, undeniably, a neotenous form of ape. But the academic gatekeepers of human history have favoured the self-idolising mantra of human greatness: 'modern humans' are the teleological pinnacle of evolution — which is in fact a dysteleological process. The scientific position, that humans are neotenous apes with oversized brains that are genetically degenerating, is unacceptable to this humanistic stance.

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