The term taphonomy is a recent introduction to archaeology, referring to the transformations experienced by those materials which archaeologists consider to form the archaeological record (Bahn 1992–489). As well as ‘primary taphonomy’, such as that related to preservation and deposition, selective recovery and even selective reporting also determine the way in which the ‘archaeological record’ has become distorted over time. The chronological sequence of Australian petroglyph traditions pioneered by McCarthy in the 1960s begins with rock types which are exposed to deep weathering. Inherent characteristics of the petroglyphs themselves also contribute. In particular, the depth of engraved grooves, and the complexity and type of design contribute to survival, and to the likelihood of detection by researchers. A clearly figurative outline motif is easier to detect, while a clearly line go unnoticed, or be interpreted as a natural mark. Deeply engraved petroglyphs survive longer than shallow ones, and petroglyphs on granite survive far longer than equally deep figures on sandstone, other factors being equal. Petroglyphs survive longer in an arid environment than in a humid climate. As well as these biases, there are those of the recorders—probably the single most important factor in determining the survival of petroglyphs. Most petroglyphs are located in areas that are believed to belong to. Although this is almost certainly untrue in all cases of pre-historic art, entire artistic ‘styles’ have been created, and geographical or chronological distributions interpreted as of cultural significance. Petroglyphs have been generally interpreted in terms of distributional, compositional and statistical indices, which are largely taphonomic characteristics of the evidence. The ‘archaeological record’ of petroglyphs is inherently distorted by further sources of subjectivity, among them personal bias, jingoism, and limitations of observer’s relevant knowledge or perception. Models of Pleistocene art are generally more effective in guiding the discipline than those based on more rigorous assessment, and these trends continue to disadvantage the discipline severely (Bednarik 1990/91). In this paper I examine some of the many ways in which taphonomy has resulted in erroneous interpretation of palaeoart, and present some suggestions on how to interpret Pleistocene art data more effectively, through the application of a ‘taphonomic filter’.

How taphonomic effects on petroglyphs create ‘art traditions’

The survival of petroglyphs over long periods, hardly a function of cultural intent, is closely related to geomorphological factors: All petroglyphs outside deep caves are subject to patination and weathering processes, which are determined by rock type and site morphology. All petroglyphs outside deep caves are subject to patination and weathering processes, which are determined by rock type and site morphology. Deeply carved figures may even survive extensive fluvial wear in a creek bed. All these factors are a consequence of the petroglyphs themselves. In particular, the depth of engraved grooves, and the complexity and type of design contribute to survival, and to the likelihood of detection by researchers. A clearly figurative outline motif is easier to detect, while a clearly line go unnoticed, or be interpreted as a natural mark. Deeply engraved petroglyphs survive longer than shallow ones, and petroglyphs on granite survive far longer than equally deep figures on sandstone, other factors being equal. Petroglyphs survive longer in an arid environment than in a humid climate. As well as these biases, there are those of the recorders—probably the single most important factor in determining the survival of petroglyphs. Most petroglyphs are located in areas that are believed to belong to. Although this is almost certainly untrue in all cases of pre-historic art, entire artistic ‘styles’ have been created, and geographical or chronological distributions interpreted as of cultural significance. Petroglyphs have been generally interpreted in terms of distributional, compositional and statistical indices, which are largely taphonomic characteristics of the evidence. The ‘archaeological record’ of petroglyphs is inherently distorted by further sources of subjectivity, among them personal bias, jingoism, and limitations of observer’s relevant knowledge or perception. Models of Pleistocene art are generally more effective in guiding the discipline than those based on more rigorous assessment, and these trends continue to disadvantage the discipline severely (Bednarik 1990/91). In this paper I examine some of the many ways in which taphonomy has resulted in erroneous interpretation of palaeoart, and present some suggestions on how to interpret Pleistocene art data more effectively, through the application of a ‘taphonomic filter’.

The chronological sequence of Australian petroglyph traditions pioneered by McCarthy in the 1960s begins with abraded grooves and outline figures, and ends with the filled in ‘intaglios’. While subsequent writers differ in the interpretation of the survival of petroglyphs, their observations are believed to belong to. Although this is almost certainly untrue in all cases of pre-historic art, entire artistic ‘styles’ have been created, and geographical or chronological distributions interpreted as of cultural significance. Petroglyphs have been generally interpreted in terms of distributional, compositional and statistical indices, which are largely taphonomic characteristics of the evidence. The ‘archaeological record’ of petroglyphs is inherently distorted by further sources of subjectivity, among them personal bias, jingoism, and limitations of observer’s relevant knowledge or perception. Models of Pleistocene art are generally more effective in guiding the discipline than those based on more rigorous assessment, and these trends continue to disadvantage the discipline severely (Bednarik 1990/91). In this paper I examine some of the many ways in which taphonomy has resulted in erroneous interpretation of palaeoart, and present some suggestions on how to interpret Pleistocene art data more effectively, through the application of a ‘taphonomic filter’.

The study of symbolic behaviour should be based on a taphonomy of symbolic production. Yet most studies of petroglyphs have been exercises in naive empiricism. Pre-historic corpora of art are described quantitatively and assessed statistically (Bednarik 1990/91), when all they can do is to define a taphonomic remnant. The ‘archaeological record’ is no accurate reflection of an early tradition: many extant cultural traditions produce no graphic art at all, while others make no use of media that would survive into an archaeological record. The distorting effect of taphonomic processes is more potent in respect of symbolic production of the Pleistocene, than in any other ‘cultural’ evidence of such antiquity. Nearly all symbolic production is eliminated; the minute remains of complex and numerous fact that it is lumped into the nonsensical category of ‘taphonomic loss’ without extensive recourse to taphonomic logic. However, most interpretations of petroglyphs have been conducted with an implicit assumption that the surviving remnants are a representative sample of the culture or period they are believed to belong to. Although this is almost certain to not true in all cases of pre-historic art, even artistic ‘styles’ have been created, and geographical or chronological distributions interpreted as of cultural significance. Petroglyphs have been generally interpreted in terms of distributional, compositional and statistical indices, which are largely taphonomic characteristics of the evidence. The ‘archaeological record’ of petroglyphs is inherently distorted by further sources of subjectivity, among them personal bias, jingoism, and limitations of observer’s relevant knowledge or perception. Models of Pleistocene art are generally more effective in guiding the discipline than those based on more rigorous assessment, and these trends continue to disadvantage the discipline severely (Bednarik 1990/91). In this paper I examine some of the many ways in which taphonomy has resulted in erroneous interpretation of palaeoart, and present some suggestions on how to interpret Pleistocene art data more effectively, through the application of a ‘taphonomic filter’.

The symbolic productions of human beings are almost without exception ephemeral: language, gesture, mimetic behaviour, ritual, or indeed any symbolic creation has only the tiniest chance of surviving even for a short period—days, years or decades—such as symbolic productions on paper, textiles, bark or dwelling walls, to name just a few. Nevertheless, a few of these manage to survive for centuries, even millennia. But for a symbolic product to have any real prospect of surviving for millennia, it needs to be of a durable material such as stone, ivory, bone, antler, egg shell, metal or ceramic. The survival of petroglyphs over long periods, hardly a function of cultural intent, is closely related to geomorphological factors: All petroglyphs outside deep caves are subject to patination and weathering processes, which are determined by rock type and site morphology. Deeply carved figures may even survive extensive fluvial wear in a creek bed. All these factors are a consequence of the petroglyphs themselves. In particular, the depth of engraved grooves, and the complexity and type of design contribute to survival, and to the likelihood of detection by researchers. A clearly figurative outline motif is easier to detect, while a clearly line go unnoticed, or be interpreted as a natural mark. Deeply engraved petroglyphs survive longer than shallow ones, and petroglyphs on granite survive far longer than equally deep figures on sandstone, other factors being equal. Petroglyphs survive longer in an arid environment than in a humid climate. As well as these biases, there are those of the recorders—probably the single most important factor in determining the survival of petroglyphs. Most petroglyphs are located in areas that are believed to belong to. Although this is almost certainly untrue in all cases of pre-historic art, entire artistic ‘styles’ have been created, and geographical or chronological distributions interpreted as of cultural significance. Petroglyphs have been generally interpreted in terms of distributional, compositional and statistical indices, which are largely taphonomic characteristics of the evidence. The ‘archaeological record’ of petroglyphs is inherently distorted by further sources of subjectivity, among them personal bias, jingoism, and limitations of observer’s relevant knowledge or perception. Models of Pleistocene art are generally more effective in guiding the discipline than those based on more rigorous assessment, and these trends continue to disadvantage the discipline severely (Bednarik 1990/91). In this paper I examine some of the many ways in which taphonomy has resulted in erroneous interpretation of palaeoart, and present some suggestions on how to interpret Pleistocene art data more effectively, through the application of a ‘taphonomic filter’.

The complexity of the issue is perhaps best illustrated by example. We could consider the many factors that contribute to the relative over-representation of, say, gold objects in the archaeological record. Apart from the obvious advantage in preservation of a noble metal, gold objects are far more likely to be collected, noticed, salvaged, recorded or sought with detecting than other remains. Moreover, they are more likely to occur in select places—tumuli, shipwrecks, pyramids or hoards—especially likely to attract the interest of archaeologists, who prefer not to dig in places without promise. Even the preoccupations of archaeologists become taphonomic factors, and are decisive in determining what we innocently call the ‘archaeological record’. Once found, a gold object is more likely to be mentioned in a publication than, say, a bone object. The observation that there are x times more bone objects than gold objects in the ‘archaeological record’, without further qualification, is meaningless.

Schematic of relative taphonomic effects on deep and shallow petroglyphs as a function of time, in a population of initially equal proportions.

It is either the depth of the relief, or the colour difference which renders a petroglyph visible, or both properties. Sgraffiti may be so shallow that specialists have mistaken them for rock paintings on occasion, by example. We could consider the many factors that contribute to the relative over-representation of, say, gold objects in the archaeological record. Apart from the obvious advantage in preservation of a noble metal, gold objects are far more likely to be collected, noticed, salvaged, recorded or sought with detecting than other remains. Moreover, they are more likely to occur in select places—tumuli, shipwrecks, pyramids or hoards—especially likely to attract the interest of archaeologists, who prefer not to dig in places without promise. Even the preoccupations of archaeologists become taphonomic factors, and are decisive in determining what we innocently call the ‘archaeological record’. Once found, a gold object is more likely to be mentioned in a publication than, say, a bone object. The observation that there are x times more bone objects than gold objects in the ‘archaeological record’, without further qualification, is meaningless.
which varies according to the hardness of the rock. Rock hardness has a dual effect: it is reflected in the rate of physical weathering, and petroglyphs on hard rock tend to be relatively shallow and thus much harder to detect, particularly if petrified. The subject of rock hardness raises another question of relevance to dating. There is no great technical or economical incentive in producing a deep relief petroglyph on petrified rock, where visibility relies mostly on colour contrast. One can therefore argue that fully varnished deep petroglyphs are likely to have been made before the rock panel itself became varnished—particularly where the rock is hard. If varnished, these art forms are subject to selective removal (Bennett and Crockford 1964; Vinnicombe 1987: 29) it would follow that patination is not so much a function of age, but of groove depth and thickness of crust. But rock varnish, in particular, is extremely thin, and its rate of re-forming does not seem related to groove depth.

It was once perceived in Australia—deeply carved linear designs followed by filled-in motifs, of relevance to dating. There is no great technical or economical incentive in producing a deep relief petroglyph on petrified rock, where visibility relies mostly on colour contrast. One can therefore argue that fully varnished deep petroglyphs are likely to have been made before the rock panel itself became varnished—particularly where the rock is hard. If varnished, these art forms are subject to selective removal (Bennett and Crockford 1964; Vinnicombe 1987: 29) it would follow that patination is not so much a function of age, but of groove depth and thickness of crust. But rock varnish, in particular, is extremely thin, and its rate of re-forming does not seem related to groove depth.

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In my graph, the ratio \( r = \frac{x}{y} \), so all ordinates must inevitably increase from right to left, beginning with \( r = 1 \) at \( y \). It cannot decrease at any stage, even though the increase will progressively diminish from right to left, until \( \beta \) approaches the x-axis without reaching it, in which case the curve must run almost parallel to the abscissa, because the population remaining at that age would be approaching equilibrium status within its environment, i.e. every little further loss is conceivable (Bednarik 1990b), and the probability of survival can never be nil.

Two quantitative approaches are now possible. Firstly, we can estimate the initial local rate from the observation of recent trends or from qualified assumptions and thus tentatively determine \( \phi \). It is obvious that \( tan(\theta) \) is likely to be almost parallel to the ordinate.) Secondly, if we make the reasonable assumption that the extant record is an accurate reflection of the symbolic production that has actually survived (an assumption that is not beyond taphonomic criticism, but is nevertheless much more sound than conventional archaeological deduction), we can see that the point \( D \), at which \( \beta \) approaches the x-axis without reaching it, represents the final Pleistocene. This would suffice to determine the approximate time at which the production of symbolic artefacts must have commenced in order to have resulted in the extant record (ignoring here the paucity of empirical data required for actual quantification).

Bednarik (1992h) constructs a speculative curve \( \beta \) for a different purpose, using current information and ‘educated guesswork’ tentatively to apportion rock art to age groups. Even the most imprecise attempt at quantifying taphonomic logic as presented here underlines the ‘educated guesswork’ tentatively to apportion rock art to age groups. Even the most imprecise attempt at quantifying taphonomic logic as presented here underlines the

The crucial factor determining this ratio is the angle \( \phi \) formed by the parabolic tangents \( tan(\theta) \) and \( tan(\alpha) \), immediately adjacent to \( C \), so greater the angle, so greater the ratio \( R \). The actual course of \( \beta \) is determined by a second approach, which assumes that \( \phi \) is an approach, the curve must run almost parallel to the abscissa, because the population remaining at that age would be approaching equilibrium status within its environment, i.e. every little further loss is conceivable (Bednarik 1990b), and the probability of survival can never be nil.

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