

II. Papers

The Scandinavian Connection: The Roots of Darwinian Archaeology in 19th-Century Scandinavian Archaeology

Felix Riede

Department of Archaeology
University of Cambridge, England

Introduction: The Scandinavian Connection

'Evolution' is without doubt one of archaeology's favourite, most used and perhaps most overused words. However, 'evolution' comes in many guises and it is only really in the last ten years that an explicitly Darwinian approach to the archaeological record has begun to emerge. Today, the number of papers using Darwinian Theory grows almost exponentially, reflecting perhaps the current popularity of applying Darwinian Theory to human behaviour, including culture, in more general terms (Aunger 2000; Barrett *et al.* 2002; Laland & Brown 2002; Mesoudi *et al.* 2004; Ziman 2000). The field has developed its own technical jargon (Hart & Terrell 2002) and enjoys increasing public funding. Here is not the place to list, let alone discuss the entire corpus of works (but see <http://cladistics.coas.missouri.edu/pubs.html> and <http://www.ceacb.ucl.ac.uk/resources>). Instead this brief papers attempts to address some historical aspects of Darwinian thinking in archaeology. Although there is considerable diversity within this Darwinian or Evolutionary Archaeology (EA), this paper will focus primarily on its two most vocal American proponents: Michael J. O'Brien and Richard Lee Lyman. In a long series of publications they have not only put forward a "radically empiricist" (Shennan 2002a: 255), yet eminently workable Darwinian approach to artefact analysis, but they have also traced the intellectual ancestry of EA back to a number of key figures in early 20th century Americanist archaeology (Lyman *et al.* 1997b; Lyman & O'Brien 1997, 1999, 2000a, 2001, 2003, 2004; Lyman *et al.* 1997a, 1997b; Lyman *et al.* 1998; O'Brien *et al.* 2005). Despite the impressive amount of scholarship that has gone into these works and the exemplary publication strategy, which has been instrumental in promoting this particular approach, their version of the history of archaeology can be criticised as the writing of "partial histories" (Murray 2002a: 234). As Murray (2002a) has noted such histories are commonly used by archaeologists to justify their particular approach and to lend gravitas to a new method by linking it to some venerable founding father of the discipline.

In this spirit this paper takes issue with O'Brien & Lyman's history of EA, first and foremost on the basis of additional archival evidence that demonstrates that not only vague references to Darwin's theory of descent with modification, but indeed explicit consideration of the application of Darwinian Theory to archaeological material go back as far as 1884 in Europe. In the first part of this paper, it is noted with interest that it was some of the pioneers of institutional archaeology themselves, namely Oscar Montelius (1843–1921; see Gräslund 1999) and his contemporary Hans Hildebrand (1842–1913), who also strongly promoted a Darwinian archaeology (Figure 1). While the quotations presented here to some degree speak for themselves, this paper distances itself from the dubious practice of searching for some intellectual ancestor in archaeology's history (Christenson 1989). It cannot be stressed enough



Figure 1. A commemorative stamp released by the Swedish postal service in honour of Oscar Montelius, after a painting by Emerik Stenberg from 1913. From <http://hem.passagen.se/sedel/Frimarke/Frimarke.htm>.

that although Darwin's *Origin of Species* did contain the seed of modern evolutionary theory, Darwinism as understood today is rather different from Darwinism in the 19th century (Bowler 1989; Mayr 1991; Mayr & Provine 1980). The often arcane language of 19th century academia coupled with the lack of standardised citation conventions make the interpretation of such old texts rather ambiguous, especially when one tries to link documents and ideas across continents. With this caveat in mind, a series of quotations from key texts will be presented. Taken at face value, they demonstrate quite clearly that for some archaeologists at least, Darwinism did play a role in the definition and codification of archaeological practice during the latter half of the 19th century.

Later commentators (Almgren 1967; Gräslund 1987, 1999) have down-played the importance of Darwinian Theory and their objections will be discussed. It emerges that they too perhaps attempted to write partial histories, at that time with a rather less sanguine stance towards Darwinian Theory. It can be argued that there is an important connection between early European archaeology and Darwinian Theory. Here, it will briefly be discussed why the development of EA in Europe has been such an abortive process. Two key events, the premature deaths of first David Clarke in 1976 and Ben Cullen in 1993, are identified as the main causes behind this stunted growth.

Finally, let it be noted that I make no claims here to establishing definitive connections between Darwin's work and early archaeology. Being favourably disposed towards EA, this paper is intended to critique, but primarily to complement the works of Lyman, O'Brien and colleagues. The modest aim is to demonstrate that European archaeologists during the latter half of the 19th century were familiar with Darwin's theory and that some of the methods and ideas they employed conceptually referenced evolutionary theory. This view itself is partial, but it does add another part to the whole that is the history of archaeology.

The Typological Method and Darwinian Theory

In their historical exegesis of Americanist archaeology, O'Brien & Lyman identify two individuals that were instrumental in introducing evolutionary or at least quasi-evolutionary methods into archaeology: the German immigrant Max Uhle (1856–1944) and the Danish immigrant Nels Nelson (1875–1964; Lyman *et al.* 1997a, O'Brien 2003). In the works considered here, neither Uhle nor Nelson really reference European works on typology, seriation or artefact evolution (e.g. Nelson 1910). It might well be the case that they genuinely invented a range of interesting methods for the quasi-evolutionary analysis of artefact

collections (especially seriation; see O'Brien 2003), but there is considerable circumstantial evidence indicating that they in fact imported the key concepts and methods from Europe. Many important developments in the fledgling European archaeology took place in Scandinavia (Daniel 1978; Klindt-Jensen 1975; Schnapp 1996; Trigger 1989), where a more general interest in the past and its remains has been long-standing (Klindt-Jensen 1975; Randsborg 1992, 2000; Schnapp 1996, 2002): "archaeological research in Scandinavia was, for a large part of the nineteenth century, methodologically in advance of its time" (Gräslund 1987: 1). With a strong educated middle-class, relative prosperity and a strongly centralised system of national museums, the conditions were right for Danish and Swedish scholars to categorise and synthesize, much earlier than elsewhere, the plethora of finds that the expansion of agricultural activity brought to the various institutions (Gräslund 1987; Klindt-Jensen 1975; Kristiansen 1981).

Already in the 1820 and 1830, C. J. Thomsen introduced the Three-Age System, laying the foundations for later chronological elaborations within these periods (Daniel 1943; Gräslund 1987; Hildebrand 1886). The antiquity of man in Scandinavia was subsequently established through deliberate and targeted excavations of shell midden deposits by an interdisciplinary team consisting of an archaeologist (J. A. A. Worsaae, later S. Müller), a biologist (J. Steenstrup) and a geologist (E. Forchhammer; see Andersen 2000; Fischer & Kristiansen 2002; Madsen *et al.* 1900). As Gräslund (1987) points out, early archaeologists of Montelius' and Hildebrand's generation (i.e. the latter part of the 19th century) in Scandinavia had also been trained in the natural sciences (e.g. Gräslund 1999; Hegardt 1999; Aaris-Sørensen 1999). Within this well-travelled, letter-writing intellectual community of the 19th century (e.g. Kaeser 2002; Kristiansen 2002, Schnapp & Kristiansen 1999), Darwin's new theory of evolution was being widely discussed. For instance, Steenstrup himself, a zoologist with a strong interest in archaeology (e.g. Steenstrup 1859, 1861, 1886, 1892) was in correspondence with Darwin (Stott 2003; www.lib.cam.ac.uk/Departments/Darwin/), albeit not on archaeological matters (in fact, Steenstrup never accepted Darwin's theory; see Fischer 2002). Neither Worsaae nor Steenstrup ever incorporated Darwinian Theory into their archaeological work. They belonged to a generation influenced primarily by romantic ideas and German scholarship (Bowler 1989; Kristiansen 1981). The publication of Darwin's *Origin* however, and the attendant archaeological discoveries in France and elsewhere had an immediate impact on archaeology (Grayson 1983). It fell to the new generation of archaeologists, operating in a much more science-friendly atmosphere, to comment on the similarities between Darwin's theory of tracing organismal histories and archaeologists' methods of tracing cultural histories (Figure 2).

Nelson was a student of the German archaeologist Max Uhle. It is striking that his first excavation project should be on prehistoric shell-middens in California, with the express goal to clarify the antiquity of man in the Americas (Uhle 1907; Nelson 1910). In addition, Nelson was acquainted with important European archaeologists such as the Abbé Breuil, Hugo Obermaier and Pierre Teilhard de Chardin, whose excavations played a key role in providing evolutionary depths to the human lineage (O'Brien *et al.* 2005). Furthermore, Nelson had previously worked on Petrie's excavation project in Egypt (1899), which produced one of the most celebrated early evolutionary artefact series. Both Uhle and in particular Nelson would have been able to read the entire corpus of significant Scandinavian archaeological literature and it is highly likely that they were familiar with Montelius' (1903) *Typological Method*. Although Uhle (1902) refers to the work of Petrie, Nelson did not cite European archaeological works (which in itself is in fact rather strange given his interests, contacts and methods) and it is thus difficult to construct anything but a circumstantial argument. Yet, Nelson's ability to read Danish as well as presumably Swedish (easy for Danes), German (he worked with Uhle) as well as English (he worked with Petrie) suggests that he would have

Axes	Swords	Brooches	Belt boxes
			D VI
F		G	C V
E	D	F E	B IV
C D	C	D C	A III
	B	B A	II
B A	A		I

Figure 2. A typological sequence produced by Montelius 1886 for the Danish Bronze Age, based on axes, daggers, brooches and belt ornaments, demonstrating his typological method based on artefact appearance, stratigraphic excavation as well as co-occurrences of specific artefacts in the same context. While this does not look like the branching mode of evolution of contemporary Darwinian Theory it is very close to the gradual anagenetic evolution popular in Darwin's day and well into the early 20th century (Mayr 1991; Ridley 1986). From Gräslund 1987: 92.

read the contemporary archaeological literature. The debate surrounding the antiquity of man was intertwined with the issue of whether Darwinian evolution was applicable to humans and their ancestors (Bowler 1886). Nelson, through his contacts, had participated in this debate and the decision to excavate a shell-midden to solve the question of the antiquity of man in the Americas seems deliberate. Nelson also followed the stratigraphic methods codified by Müller (1897).

Thus, if one accepts this assumption of familiarity with the pertinent literature, then both workers – as will be demonstrated in the following – were also acquainted with Darwinian Theory and its application to the archaeological record. Darwin is directly referenced in Hans Hildebrandt's 1873 pamphlet *Scientific Archaeology, Its Task, Requirements and Rights* (compare Dunnell 1978b, 1980, 1989, 1995 and Lyman & O'Brien 1998), which according to (Gräslund 1987) also contains the first mention of the term 'typology' (Hildebrandt 1873: 16):

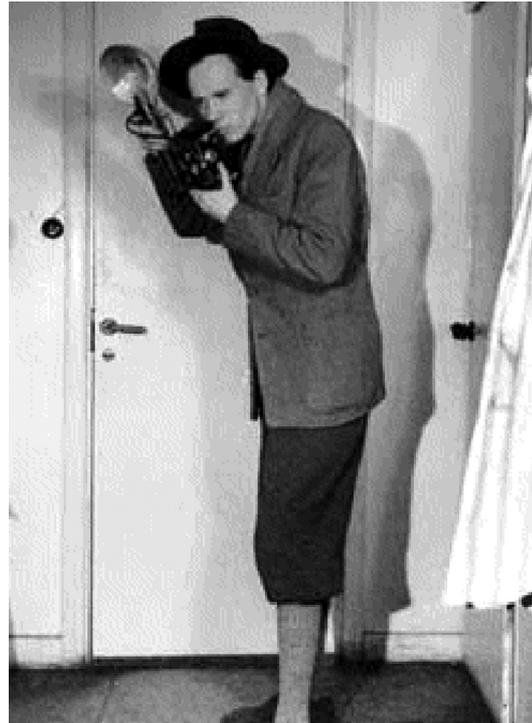
One might call the new stage which archaeology has entered 'the typological stage'. Our next task is to establish the types, to ascertain which of them are characteristic of each region, to search out the type's affinities, and to unfold their history; and the type to be investigated in this sense is both the finished instrument and the smallest ornament which adorns it ... The many similar objects are only ostensibly duplicates, the many axes ... do not have the same importance as number of specimens of an animal species in a zoological museum. Slight differences appear in these axe specimens, and thus they do not in general correspond to specimens of animals but to species and varieties; here, the formation of varieties is greater on account of man's influence on developments ... Under the influence of two factors – the practical need and the craftsman's taste – a great many forms arise, each of which has to struggle for its existence; one does not find what it needs for its existence and succumbs, but the other moves forward and produces a whole series of forms.

As an aside, it is interesting to note that in the same paper Hildebrand also compares archaeological method with that of comparative historical linguistics. This field has also recently begun to look towards phylogenetic techniques as an exploratory tool (Forster & Toth 2003; Rexová *et al.* 2003; Ruvolo 1987; Searls 2003). In fact, phylogenetic reasoning seems to have an independent origin in linguistics, quite unconnected from its use in evolutionary biology (Platnick & Cameron 1977). Hans Hildebrand's father, the numismatist Emil Bror Hildebrand was probably the first scholar to postulate typological seriations, based on "degrees of similarity and dissimilarity" (Gräslund 1987: 7) and they were rapidly adopted for other kinds of artefacts. But it is the years between 1870 and 1900 that are of critical importance in the transformation of archaeology from a descriptive to an evolutionary endeavour. An awareness of chronological differentiation within the various epochs had become obvious and "during the 1850s, stratigraphy appeared as a method used deliberately and systematically in relative chronology" (Gräslund 1987: 114). Darwin's *Origin of Species* and *The Descent of Man* were translated into Swedish and Danish (Darwin 1872, 1874) in 1871 and 1872 and 1872 and 1874 respectively. At around the same time the so-called 'grading-analogy method' and the 'grading-combination method' were introduced (see Gräslund 1987: 6–7). Together these comparative methods turned a previously largely descriptive approach into an evolutionary one. Early in the 1870s, Hans Hildebrandt (1880: 54) makes a direct comparison with palaeobiology:

The stations during this development are the types, which correspond to the species in the organic world, though not the species as they are now, bilaterally ordered, but as they occur in palaeontology, chronologically ordered. However, there is a difference in relation to the palaeontological series in that in the culture-historical series one can more clearly distinguish the rise, the culmination and the fall. From this, it is also clear that the types of cultural objects cannot be so sharply divided as the species in nature at the present day; one finds transitional forms which have become constant, while others show an uncertain fluctuation.

He (Hildebrandt 1873: 17) also asserts that "if any science at present needs its Darwin, it is comparative archaeology" and in many ways, Hildebrand's plea found its answer in the Swede Oscar Montelius. His pupil Nils (Åberg 1966: 86, Figure 3) later describes Montelius as "archaeology's Linné", but that honour should better fall to the Swedish zoologist and archaeologist Sven Nilsson (1787–1883; see Hegardt 1999) who attempted to adapt Linné's (in any case not very Darwinian; see Ghiselin 1974) classification system to archaeological materials (Nilsson 1872). This attempt was again repeated later by others (Colton & Hargrave 1937; Oswalt 1976). Montelius himself was far more committed to solving archaeology's rapidly increasing chronological challenges. He codified the 'typological method' and his papers contain explicit references to Darwinian evolutionary theory as early as 1884

Figure 3. Montelius' student Nils Åberg (1888–1957), educated at Uppsala University, taught Nordic and Comparative Prehistory first in Uppsala and later at Stockholm. His “views constitute a sharpening of Montelius' typological theory” (Gräslund 1987: 101) and was the most fervent supporter of Darwinian approaches to archaeology in the early 20th century in Europe. From www.dalarnasmuseum.se/.



(Montelius 1884: 1–2, original emphasis):

The methodology of prehistoric archaeology has long been like that of natural science. Like the latter, the former has also entered a new stage. The natural scientist is no longer content to describe the different species and to study their lives. He tries to find out the internal connection that binds them together and to show how one species has developed from the other. What the species is to the natural scientist, the type is to the archaeologist. The productions of nature which resemble each other in all essentials and which have a common origin are considered to belong to the same species. When it is a question of the productions of human labour, the same definition can be used of the type. The prehistoric archaeologist no longer regards it as his task to describe and compare the antiquities from different countries and to investigate life in these countries in bygone days. He now tries to trace the internal connection between the types and to show how one has developed from the other. We call this *typology*. Before one has become familiar with the history of human culture, one is apt to consider individual freedom as so great that the types in the world of human labour cannot play the same part as the species play in the world of nature. However, one soon finds that they really do so and that the types of human works, like the animal and plant species, obey laws in the evolution.

Some years later, at the pinnacle of his career, Montelius (1899) published a paper that cannot make the intimate connection between his typological method and Darwinian thinking any clearer. It is titled *Typologien eller utvecklingsläran tillämpad på det menskliga arbetet – Typology or the Theory of Evolution Applied to Human Labour*. Openly, he declares his allegiance to a Darwinian view of the archaeological record (Montelius 1899: 237, original emphasis):

What the species is to the natural scientist, the type is to the prehistoric archaeologist, and the latter ... no longer regards it as his only task to describe and compare the antiquities from different countries in bygone days. He now tries to trace the internal connection which exists between the types and to show how one type, like one species, has developed from the other. We call this *typology*.

Later in the same paper (Montelius 1899: 267–268) he restates his main point:

That I wish to speak at a conference of natural scientists about the typological method is not, however, due so much to the great importance of this method to the archaeologist as to the possibility that it may be of interest to the natural scientist to see, on the one hand, how we use, generally speaking, the same method as he does – in that we collect as large a material as possible and arrange it so that the results are immediately obvious – and, on the other, how we stand, in respect to the theory of evolution, on a purely Darwinian ground. That, as regards the productions of nature, it is possible to follow the evolution of one form or one species from the other has, of course, as we are all aware, long been known. But it is only recently that we have discovered, in the way that I have just shown, that a quite similar development can actually also be shown as regards that productions of human labour. This should interest the natural scientist so much the more as man is, of course, in himself, regarded as a production of nature, also an object of his studies.

It is interesting to note that the contribution of Darwinian Theory to early Scandinavian archaeology is often downplayed. In particular, Gräslund (1987, 1999) claims typology developed first amongst numismatists and archaeologists and that a link with Darwinism was only forged later, namely in the 1870s. He contends that Montelius only paid lip-service to the increasingly popular Darwinism. Gräslund's (1987: 104) own attitude towards Darwinian archaeology is less than positive: "As is evident, Montelius – unlike Hildebrand – never referred to the theory of natural selection, the actual explanatory theory in Darwinism. Without this theory, i.e. the theory of 'the struggle for existence', which gives rise to the natural selection which is the real driving force in evolution, little remains of the special character of Darwinism". Yet, many of the papers quoted by him in fact seem to imply that Darwinism played a very strong role indeed.

Vulgar Darwinism can perhaps be reduced to the idea if natural selection, but to strictly equate Darwinian Theory with the mechanical notion of natural selection severely underestimates and under-appreciates the scope of Darwinian Theory (e.g. Ridley 2004). In other words, reducing Darwinism to natural selection is a misunderstanding. Much modern evolutionary archaeology actually makes relatively little reference to natural selection, but rather focuses on other features of the theory (e.g. Bentley *et al.* 2004; Bentley & Shennan 2003; Neiman 1995; Shennan & Wilkinson 2001). To a modern reader acquainted with Darwinian Theory, Montelius' emphasis seems to have been on 'descent with modification' (see especially Montelius 1899, 1903) rather than selection. The fact that Montelius' translation of his theoretical work into an operational Darwinian archaeological practice was not entirely satisfactory, has perhaps more to do with fundamental conceptual problems of typological thinking for any evolutionary field of study than the fact that Darwinian thinking is generally inapplicable to culture change. The vital distinction between materialist 'population' thinking and essentialist 'typological' thinking was only noted by biologists in the 1950s (Hull 1965; Mayr 1957) and only very much more recently by archaeologists (O'Brien & Lyman 2000a; Rodden 1981).

However, there is also ground for reconciliation here: Gräslund's main argument is that Darwinism was not the initial inspiration for either typology or seriation. Given that both concepts appeared first among numismatists and in the contexts of ordering context-less finds for museum exhibits and were only later adapted for other kinds of artefacts – and given that one of the scholars instrumental in this shift was the numismatist's son Hans Hildebrand – Gräslund is likely to be correct: The initial impetus for ordering artefacts based on similar characteristics might well be unconnected with Darwinism (Almgren 1967, Gräslund 1987). However, it was coincident with the translation of Darwin's main works into Danish and Swedish that references to Darwinian Theory became common in Hildebrand's and Montelius' writings. Gräslund argues that given Montelius' humanistic sensibilities it is surprising that he allied himself with Darwinian Theory at the height of his career. It is

Montelius (1899: 268) himself who provides a clue to why it was so relatively late that he fully realised the applicability of evolutionary theory to archaeology:

It is in actual fact rather amazing that Man in his labours has been and is subject to the very same laws of evolution. Is human freedom indeed so limited as to deny him the creation of any desired form? Are we forced to go, step by step, from one form to the next, be they ever so similar? Prior to studying these circumstances in depth, one can be tempted to answer such question with 'no'. However, since one has investigated human labours rather more closely, one finds that clearly, the answer has to be 'yes'. This evolution can be slow or fast, but at all times Man, in his creation of new forms, needs to conform to the very same principles that hold sway over the rest of nature.

Thus, the alternative interpretation for the reasons and the timing of the emergence of Darwinian thinking in Scandinavia offered here is that during the 1870s Montelius realises in what way cultural evolution presents a *parallel* field of application for Darwinian Theory and that with typology they had already come upon a means for defining their units of selection (Schoch 1997). This realisation on the part of Hildebrand and, in particular, of Montelius (Åberg 1943) is facilitated on the one hand by the publication of Darwin's work in Danish and Swedish as well as by the immense first-hand archaeological experience that both workers had acquired throughout their earlier professional careers. The exact circumstances are likely to be more complicated however: Montelius' archaeology was under constant attack by the ambitious and protective Sophus (Müller 1876, 1884: 162) who derisively referred to Montelius' approach as "the Swedish typology" and this discussion forced him to clarify his position. Equally, the tensions – professional and national – between Denmark and Sweden ran high at the time and academics were eagerly trying to stake intellectual claims for themselves and their countries (Kristiansen 1981, 2002; Schnapp & Kristiansen 1999). It is thus argued that the explicit linking of typology to Darwinism was not (or at least not just) a public relations manoeuvre (*contra* Gräslund 1987), nor merely a "tool of instructive comparison" (Gräslund 1999: 160), but rather reflects a sincere and significant intellectual insight on the part of Oscar Montelius. Contemporary Darwinism provided the necessary and, at the time, sufficient *theoretical* framework for typological research (Almgren 1967), an aspect that for instance Müller's strictly empirical work did not address. In addition, it can be noted that a more balanced application of Darwinian Theory to the study of human past behaviour is not at all incongruent with a more humanistic understanding of human society (Shennan 2004b, 2005). Despite his less than sanguine personal opinion of the usefulness of Darwinian Theory in archaeology, Gräslund (1987: 116) concedes that

[t]he significance of Darwinism for archaeology is to be found in the fact that it offered a striking parallel to the process of change in material culture. For this reason, it also came to be regarded as an explanatory model. As Darwinism emerged during the formative period of archaeology, when the evolutionary connection between artefact types was becoming clear on purely archaeological evidence, it became involved as a catalyst of this observation. In this way, Darwinism doubtlessly stimulated the further study of problems related to the inner evolutionary connections between artefacts.

If one were to seriously indulge in looking for an intellectual ancestor for Darwinian archaeology, it would have to be Oscar Montelius. In 1903 he publishes what is probably the very first stand-alone textbook on archaeological theory and method – and it is Darwinian. 34 years after completing his doctorate, he (Montelius 1903) publishes, in German, with an eye towards maximum impact, his conviction that evolutionary forces, namely selection, drift and what Ben Cullen (Cullen 1993a: 3) later called "heritage constraint" act on the development of material culture (see also Malmer 1995).

As Europe began to move towards WW I, archaeology as well as Darwinism were

appropriated for political causes (e.g. Kossinna 1911, 1912) and ultimately fell into disrepute among social scientists (Bowler 1983; Trigger 1998). At the same time, biology experienced a re-orientation away from the fossil record so fashionable in the 19th century towards cell-biology and genetics (e.g. Huxley 1943). Increasingly, the two subjects became separated by an institutional chasm that could not be bridged by individual researchers. The popularity of Darwinian Theory in archaeology waned and it was only Nils Åberg, the disciple of Oscar Montelius, who continued to promote the earlier tradition of applying Darwinian principles to archaeological material. As late as 1929 he writes (Åberg 1929: 508): “Typology is the application of Darwinism to the products of human labour” and that “the typological method has been instrumental in turning prehistoric archaeology into a scientific discipline”. These words read rather fresh and topical in relation to more recent rallying-calls by, for example, Dunnell (1978a, 1978b, 1980, 1982, 1986, 1988, 1989, 1992, 1995) and others (Leonard & Jones 1987; O’Brien & Lyman 2000a, 2002).

Conclusion: Partial Histories and Darwinian Archaeology in Europe

From the above, it should have become clear that at the time of their fieldwork projects, Uhle and Nelson had at their disposal a fully articulated theory of cultural change. In fact, at times the language of Montelius, Hildebrand and Åberg is much stronger vis-à-vis Darwinism than that of early American archaeologists. It is not possible to conclusively demonstrate in how far Uhle and Nelson were acquainted with the pertinent literature in Europe, but it is more than likely that they in fact imported many ideas, inspirations and methods from Scandinavia. The aim of this paper is not to indulge in the dubious practice of searching for some intellectual ancestor in the murky disciplinary history of archaeology. As Hildebrand (1886: 357), addressing the origin of the Three Age System reminds us, this is difficult at best: “Finding the inventor of a particular system is almost never easy ... I can only accept as inventor of a scientific system the person who, without having borrowed this system from others, has not only clearly grasped it, but also expressed it in such a manner that others are convinced by his views and carry them on”. Darwinism itself has a complex history, fraught with many unconscious misunderstandings as well as deliberate appropriations (Bowler 1989; Mayr 1991; Trigger 1998). Equally, the works of 19th century archaeologists are not always unambiguous – there are for instance many misunderstandings about stratigraphic methods and seriation in the Americas, (Lyman, R. L. *et al.* 1998; O’Brien 2003) – and contrary interpretations of the same texts, such as the one presented by Gräslund (1987) compared to the one favoured here, are revealing. The status of Darwinian archaeology in 1987 was very different from the one it enjoys today. Many of texts referred to in this paper, notably Montelius’ (1903) *Typologische Methode*, are key publications not only for EA, but for archaeology per se. Besides complementing O’Brien, Lyman & Dunnell’s (Lyman & O’Brien 1997, 1999, 2000a, 2000b, 2001, 2003, 2004; Lyman *et al.* 1997a, 1997b; Lyman *et al.* 1998; O’Brien & Lyman 1999, 2000a, 2000b, 2001, 2002, 2003, 2004; O’Brien *et al.* 2003; O’Brien *et al.* 2005) partial history of EA with a European perspective, the main implication of the research presented here seems to be that indeed no general history of late 19th and early 20th century archaeology can afford to ignore the contribution that Darwin’s theory of descent with modification had on a number of key concepts and methods in archaeology.

References to Darwinian evolution in the writings of Hildebrand and Montelius are by now means common. Yet, they do become more noticeable and more strongly worded after the publication of Darwin’s works in Swedish (interestingly, Montelius did not own works by Darwin; he did however own other key texts such as that by Lyell (1863; see Lundqvist 1943). Interestingly, Åberg who was a student of Montelius continues to maintain and teach a Darwinian archaeology, despite the decreasing popularity of Darwinian Theory in biology as well as in the public sector – Huxley’s (1943: 22) “eclipse of Darwinism” (Bowler 1983;

Nordenskiöld 1926). Åberg's insistence can perhaps be seen to indicate that Montelius' and Hildebrand's evolutionary thinking went beyond public relations. The history of Darwinian archaeological thinking in Europe after Åberg becomes difficult to trace. WW II seems to have caused a significant rupture and into the 1960s, explicit considerations of Darwinism are rare (e.g. Gandert 1950). In the 1960s, evolutionary approaches again emerged, such as David Clarke's (1968) epic *Analytical Archaeology* (see Shennan 1989a, 2004a) and André Leroi-Gourhan (1964) *La Geste et Parole*. Historically linked to the humanities rather than biological anthropology (Trigger 1989), very few archaeologists in Europe ever became familiar enough with biological theory and method to forge significant links; the increasing disciplinary scope and specialisation on both sides inhibited a fruitful exchange of ideas. The early 1990s saw a brief "Darwinian Resurgence" (Cullen 1993b: 179) in the form of Ben Cullen's (1993a) *Cultural Virus Theory*. While Leroi-Gourhan's work was quickly appropriated for patently non-evolutionary applications (e.g. Bodu *et al.* 1990; Karlin *et al.* 1993; Dobres 2000; Karlin & Julien 1994; Pigeot 1990; but see Shennan 1989b, 2004b, 2005 for an evolutionary viewpoint), the careers of both Clarke as well as Cullen were cut short by their premature deaths in 1976 and 1993 respectively. Their careers were too short for making a lasting impact through, for example, teaching. The task of reviewing contemporary Darwinian archaeologies in Europe would go far beyond the remit of this brief paper (but see, for example, Leonard 2001; Shennan 2002b). The jury is still out on the merits of Darwinian approaches to archaeology (Murray 2002b; Collard *et al.* 2006; Collard *et al.* in press) and all that was attempted here was to demonstrate that Darwinian thinking among European archaeologists goes back almost to the birth of prehistoric archaeology itself. The implication is that those early American archaeologists that are said to have played a key role in laying the foundations for evolutionary culture histories had grown up in an intellectual environment in which these ideas were not uncommon. It is hoped that Lyman *et al.*'s (1997b) partial history now is a little bit more complete.

Acknowledgements: The initial impetus of this research was my MPhil dissertation (2002–2003) at the University of Cambridge, which was generously supported by the AHRC, the Cambridge European Trust, Pembroke College, the Dept. of Anglo-Saxon, Norse & Celtic and, of course, the Dept. of Archaeology, all at Cambridge. Later research in the wake of my doctoral research, in particular the consultation of much of the original literature, was done at Københavns Universitet and would not have been possible without the help and hospitality Peter Vang Petersen (Nationalmuseet) and Hampus Cinthio (Lunds Universitets Historiska Museum) as well as the numerous library staff at the fantastic Royal Danish Library. The translation of most of the Swedish passages leans heavily on the work of Bo Gräslund (1987). His work was inspiring, challenging and helpful and is duly acknowledged. The critical comments of the two anonymous reviewers are much appreciated and made this a much better paper.

References

- Aaris-Sørensen, K. 1999. *Danmarks Forhistoriske Dyreverden*. Copenhagen: Gyldendahl.
- Åberg, N. 1929. Typologie. In M. Ebert (ed.) *Reallexikon der Vorgeschichte. Band 13*, pp. 508–516. Berlin: Verlag Walter de Gruyter & Co.
- Åberg, N. 1943. Oscar Montelius as an Investigator. In M. Lundqvist (ed.) *Bibliotheca Monteliana. Catalogue of Oscar Montelius' Collection of Books Included in the Library of the Kungli. Vitterhets Historie och Antikvitets Akademien, Stockholm*, pp. IX–XLVII. Uppsala: Almqvist & Wicksell.
- Åberg, N. 1966. Oscar Montelius, arkeologiens Linné. *Industria* 11: 86–87, 114, 116, 118.
- Almgren, B. 1967. Das Entwicklungsprinzip in der Archäologie – eine Kritik. *Tor* 11: 15–38.
- Andersen, S. H. 2000. 'Køkkenmøddinger' (Shell Middens) in Denmark: A Survey. *Proceeding of the*

- Prehistoric Society* 66: 361–384.
- Aunger, R. (ed.) 2000. *Darwinizing Culture: The Status of Memetics as a Science*. Oxford: Oxford University Press.
- Barrett, L., Dunbar, R. & Lycett, J. 2002. *Human Evolutionary Psychology*. Basingstoke: Palgrave.
- Bentley, R. A., Hahn, M. W. & Shennan, S. J. 2004. Random Drift and Culture Change. *Proceeding of the Royal Society of London, Series B* 271: 1443–1450.
- Bentley, R. A. & Shennan, S. J. 2003. Cultural Evolution and Stochastic Network Growth. *American Antiquity* 68: 459–485.
- Bodu, P., Karlin, C. & Ploux, S. 1990. Who's Who? The Magdalenian Flintknappers of Pincevent, France. In E. Cziesla, S. Eickhoff, N. Arts and D. Winter (eds.) *The Big Puzzle: International Symposium on Refitting Stone Artefacts, Monrepos, 1987*, pp. 143–163. Bonn: Holos.
- Bowler, P. J. 1983. *The Eclipse of Darwinism: Anti-Darwinian Evolution Theories in the Decades around 1900*. Baltimore: Johns Hopkins University Press.
- Bowler, P. J. 1986. *Theories of Human Evolution: A Century of Debate, 1844–1944*. Baltimore: Johns Hopkins University Press.
- Bowler, P. J. 1989. *Evolution: The History of an Idea*. Berkeley: University of California Press.
- Christenson, A. L. (ed.) 1989. *Tracing Archaeology's Past*. Carbondale: Southern Illinois University.
- Collard, M., Shennan, S. J. & Tehrani, J. J. 2006. Branching versus Blending in Macroscale Cultural Evolution: A Comparative Study. In C. P. Lipo, M. J. O'Brien, M. Collard and S. J. Shennan (eds.) *Mapping Our Ancestors. Phylogenetic Approaches in Anthropology and Prehistory*, pp. 53–65. New Brunswick: Aldine Transaction.
- Collard, M., Shennan, S. J. & Tehrani, J. J. in press. Branching, Blending, and the Evolution of Cultural Similarities and Differences among Human Populations. *Evolution and Human Behaviour* in press.
- Colton, H. S. & Hargrave, L. L. 1937. *Handbook of Northern Arizona Pottery Wares*. Museum of Northern Arizona Bulletin.
- Cullen, B. S. 1993a. *The Cultural Virus*. Unpublished Ph.D. dissertation, University of Sydney, School of Archaeology, Classics, and Ancient History.
- Cullen, B. S. 1993b. The Darwinian Resurgence and the Cultural Virus Critique. *Cambridge Archaeological Journal* 3: 179–202.
- Daniel, G. E. 1943. *The Three Ages. An Essay on Archaeological Method*. Cambridge: Cambridge University Press.
- Daniel, G. E. 1978. *A Hundred and Fifty Years of Archaeology*. London: Duckworth.
- Darwin, C. 1872. (translated by J. P. Jacobsen) *Om Artenes Oprindelse ved Kvalitetsvalg eller ved De Heldigst Stillede Formers Sejr i Kampen for Tilværelsen*. Copenhagen: Gyldendalske Boghandel.
- Darwin, C. 1874. (translated by J. P. Jacobsen) *Menneskets Oprindelse og Parringsvalget*. Copenhagen: Gyldendalske Boghandel.
- Dobres, M.-A. 2000. *Technology and Social Agency*. Oxford: Blackwell.
- Dunnell, R. C. 1978a. Archaeological Potential of Anthropological and Scientific Models of Function. In R. C. Dunnell and E. S. Hall (eds.) *Archaeological Essays in Honour of Irving B. Rouse*, pp. 41–73. The Hague: Mouton Publishers.
- Dunnell, R. C. 1978b. Style and Function: A Fundamental Dichotomy. *American Antiquity* 43: 192–202.
- Dunnell, R. C. 1980. Evolutionary Theory in Archaeology. *Advances in Archaeological Method and Theory* 3: 35–99.
- Dunnell, R. C. 1982. Science, Social Science, and Common Sense: The Agonizing Dilemma of Modern Archaeology. *Journal of Anthropological Research* 38: 1–25.
- Dunnell, R. C. 1986. Methodological Issues in Americanist Artifact Classification. *Advances in Archaeological Method and Theory* 9: 149–207.
- Dunnell, R. C. 1988. The Concept of Progress in Cultural Evolution. In M. H. Nitecki (ed.) *Evolutionary Progress*, pp. 169–194. Chicago: University of Chicago Press.
- Dunnell, R. C. 1989. Aspects of the Application of Evolutionary Theory in Archaeology. In C. C.

- Lamberg-Karlowski (ed.) *Archaeological Thought in America*, pp. 34–49. Cambridge: Cambridge University Press.
- Dunnell, R. C. 1992. Is a Scientific Archaeology Possible? In L. Embree (ed.) *Metaarchaeology: Reflections by Archaeologists and Philosophers*, pp. 75–91. London: Kluwer Academic.
- Dunnell, R. C. 1995. What is It That Actually Evolves? In P. A. Teltser (ed.) *Evolutionary Archaeology: Methodological Issues*, pp. 33–50. Tucson: The University of Arizona Press.
- Fischer, A. 2002. Introduction to Chapter 5: Steenstrup 1859. In A. Fischer & K. Kristiansen *The Neolithisation of Denmark. 150 Years of Debate*, p. 58. Sheffield: J. R. Collins Publications.
- Fischer, A. & Kristiansen, K. 2002. *The Neolithisation of Denmark. 150 Years of Debate*. Sheffield: J. R. Collins Publications.
- Petrie, W. M. F. 1899. Sequences in Prehistoric Remains. *The Journal of the Anthropological Institute of Great Britain and Ireland* 29: 295–301.
- Forster, P. & Toth, A. 2003. Toward a Phylogenetic Chronology of Ancient Gaulish, Celtic, and Indo-European. *PNAS* 100: 9079–9084.
- Gandert, K.-H. 1950. Typologie und Typostrophismus. In H. Kirchner (ed.) *Ur- und Frühgeschichte als Historische Wissenschaft. Festschrift zum 60. Geburtstag von Ernst Wahle*, pp. 43–48. Heidelberg: Carl Winter Universitätsverlag.
- Ghiselin, M. T. 1974. A Radical Solution to the Species Problem. *Systematic Zoology* 23: 536–544.
- Gräslund, B. 1987. *The Birth of Prehistoric Chronology. Dating Methods and Dating Systems in Nineteenth-Century Scandinavian Archaeology*. Cambridge: Cambridge University Press.
- Gräslund, B. 1999. Gustaf Oscar Augustin Montelius 1843–1921. In T. Murray (ed.) *Encyclopaedia of Archaeology. The Great Archaeologists*, pp. 155–163. Oxford: ABC-Clio.
- Grayson, D. K. 1983. *The Establishment of Human Antiquity*. New York: Academic Press.
- Hart, J. & Terrell, J. E. (eds.) 2002. *A Handbook of Concepts in Modern Evolutionary Archaeology*. Westport: Bergin and Garvey.
- Hegardt, J. 1999. Sven Nilsson 1787–1883. In T. Murray (ed.) *Encyclopaedia of Archaeology. The Great Archaeologists*, pp. 65–78. Oxford: ABC-Clio.
- Hildebrand, H. 1886. Zur Geschichte des Dreiperiodensystems. *Zeitschrift für Ethnologie* 18: 357–367.
- Hildebrandt, H. 1873. *Den vetenskapeliga fornsforskningen, hennes uppgift, behof och rätt*. Stockholm: L. Norman.
- Hildebrandt, H. 1880. *De förhistoriska folken I Europa. En handbok i jämförande fornunskap*. Stockholm: Jos. Seligmann & Co. Förlag.
- Hull, D. L. 1965. The Effect of Essentialism on Taxonomy – Two Thousand Years of Stasis. *British Journal for the Philosophy of Science* 15: 314–326.
- Huxley, J. 1943. *Evolution. The New Synthesis*. London: Allen & Unwin.
- Kaaser, M.-A. 2002. On the International Roots of Prehistory. *Antiquity* 76: 170–177.
- Karlin, C. & Julien, M. 1994. Prehistoric Technology: A Cognitive Science? In C. Renfrew and E. B. W. Zubrow (eds.) *The Ancient Mind. Elements of Cognitive Archaeology*, pp. 152–164. Cambridge: Cambridge University Press.
- Karlin, C., Ploux, S., Bodu, P. & Pigeot, N. 1993. Some Socio-economic Aspects of the Knapping Process among Groups of Hunter-gatherers in the Paris Basin Area. In A. Berthelet and J. Chavaillon (eds.) *The Use of Tools by Human and Non-human Primates*, pp. 318–340. Oxford: Blackwell.
- Klindt-Jensen, O. 1975. *A History of Scandinavian Archaeology*. London: Thames & Hudson.
- Kossinna, G. 1911. *Herkunft der Germanen: Zur Methode der Siedlungsarchäologie*. Würzburg: C. Kabitzsch Verlag.
- Kossinna, G. 1912. *Die deutsche Vorgeschichte: eine hervorragend nationale Wissenschaft*. Würzburg: C. Kabitzsch Verlag.
- Kristiansen, K. 1981. A Social History of Danish Archaeology (1805–1975). In G. Daniel (ed.) *Towards a History of Archaeology*, pp. 20–44. London: Thames & Hudson.
- Kristiansen, K. 2002. The Birth of Ecological Archaeology in Denmark. In A. Fischer and K. Kristiansen

- (eds.) *The Neolithisation of Denmark. 150 Years of Debate*, pp. 9–32. Sheffield: J. R. Collins.
- Laland, K. & Brown, G. R. 2002. *Sense & Nonsense. Evolutionary Perspectives on Human Behaviour*. Oxford: Oxford University Press.
- Leonard, R. D. 2001. Evolutionary Archaeology. In I. Hodder (ed.) *Archaeological Theory Today*, pp. 65–97. Cambridge: Polity.
- Leonard, R. D. & Jones, G. T. 1987. Elements of an Inclusive Evolutionary Model for Archaeology. *Journal of Anthropological Archaeology* 6: 199–219.
- Leroi-Gourhan, A. 1964. *Le Geste et la Parole I: Technique et Langage*. Paris: Michel Albin.
- Lundqvist, M. (ed.) 1943. *Bibliotheca Monteliana*. Uppsala: Almqvist & Wiksell.
- Lyell, C. 1863. *The Geological Evidences and the Antiquity of Man with Remarks on Theories of the Origin of Species by Variation*. London: John Murray.
- Lyman, R. L. & O'Brien, M. J. 1997. The Concept of Evolution in Early Twentieth Century Americanist Archaeology. In C. M. Barton and G. A. Clark (eds.) *Rediscovering Darwin: Evolutionary Theory and Archaeological Explanation*, pp. 21–48. *Archaeological Papers of the American Anthropological Association*, No.7.
- Lyman, R. L. & O'Brien, M. J. 1998. The Goals of Evolutionary Archaeology. History and Explanation. *Current Anthropology* 39: 615–652.
- Lyman, R. L. & O'Brien, M. J. 1999. Americanist Stratigraphic Excavation and the Measurement of Culture Change. *Journal of Archaeological Method and Theory* 6: 55–108.
- Lyman, R. L. & O'Brien, M. J. 2000a. Chronometers and Units in Early Archaeology and Palaeontology. *American Antiquity* 65: 691–707.
- Lyman, R. L. & O'Brien, M. J. 2000b. Measuring and Explaining Change in Artifact Variation with Clade-Diversity Diagrams. *Journal of Anthropological Archaeology* 19: 39–74.
- Lyman, R. L. & O'Brien, M. J. 2001. The Direct Historical Approach, Analogical Reasoning, and Theory in Americanist Archaeology. *Journal of Archaeological Method and Theory* 8: 40.
- Lyman, R. L. & O'Brien, M. J. 2003. Cultural Traits: Units of Analysis in Early Twentieth-Century Anthropology. *Journal of Anthropological Research* 59: 225–250.
- Lyman, R. L. & O'Brien, M. J. 2004. A History of Normative Theory in Americanist Archaeology. *Journal of Archaeological Method and Theory* 11: 369–396.
- Lyman, R. L., O'Brien, M. J. & Dunnell, R. C. 1997a. *Americanist Culture History: Fundamentals of Time, Space, and Form*. New York: Plenum.
- Lyman, R. L., O'Brien, M. J. & Dunnell, R. C. 1997b. *The Rise and Fall of Culture History*. New York: Plenum.
- Lyman, R. L., Wolverton, S. & O'Brien, M. J. 1998. Seriation, Superposition, and Interdigitation: A History of Americanist Graphic Depictions of Culture Change. *American Antiquity* 63: 239–261.
- Madsen, A. P., Müller, S., Neergaard, C., Petersen, C. G. J., Rostrup, E., Steenstrup, K. J. V. & Winge, H. 1900. *Affaldsdynger fra Stenalderen i Danmark Undersogte for Nationalmuseet*. Copenhagen: C. A. Reitzel.
- Malmer, M. 1995. Montelius on Types and Find-Combinations. In P. Åström (ed.) *Oscar Montelius 150 Years*, pp. Stockholm: Almqvist & Wiksell.
- Mayr, E. 1957. Species Concepts and Definitions. In E. Mayr (ed.) *The Species Problem*, pp. 1–22. Washington, DC: American Association for the Advancement of Science.
- Mayr, E. 1991. *One Long Argument. Charles Darwin and the Genesis of Modern Evolutionary Thought*. London: Penguin.
- Mayr, E. & Provine, W. B. (eds.) 1980. *The Evolutionary Synthesis. Perspectives on the Unification of Biology*. Cambridge, MA.: Harvard University Press.
- Mesoudi, A., Whiten, A. & Laland, K. 2004. Is Human Cultural Evolution Darwinian? Evidence Reviewed from the Perspective of *The Origin of Species*. *Evolution* 58: 1–11.
- Montelius, G. O. A. 1884. Den förhistoriska fornforskarens metod och material. *Antikvarisk Tidskrift för Sverige* 3: 1–28.

- Montelius, G. O. A. 1899. Typologien eller utvecklingsläran tillämpad på det menckliga arbetet. *Svenska Fornminnesföreningens Tidskrift* 10: 237–268.
- Montelius, G. O. A. 1903. *Die Typologische Methode*. Stockholm: Almqvist & Wicksell.
- Montelius, G. O. A. 1986. *Dating in the Bronze Age with Special Reference to Scandinavia*. Stockholm: Royal Academy of Letters, History and Antiquities.
- Müller, S. 1876. Bronzealderens Perioder. En Undersgelse i Forhistorisk Archaeologi. *Aarbøger* 1876: 13–309.
- Müller, S. 1884. Mindre Bidrag til den Forhistoriske Archaeologis Methode. *Aarbøger* 1884: 11–216.
- Murray, T. 2002a. Epilogue: Why the History of Archaeology Matters. *Antiquity* 76: 243–248.
- Murray, T. 2002b. Evaluating Evolutionary Archaeology. *World Archaeology* 34: 47–59.
- Neiman, F. D. 1995. Stylistic Variation in Evolutionary Perspective: Inferences from Decorative Diversity and Interassemblage Distance in Illinois Woodland Ceramic Assemblages. *American Antiquity* 60: 7–36.
- Nelson, N. 1910. Shellmounds of the San Francisco Bay Region. *University of California Publications in American Archaeology and Ethnology* 7: 309–356.
- Nilsson, S. 1872. *Skandinaviska Nordens Ur-Invånare, ett försök till människosläktets utvecklings historia*. Lund: Berlingska Boktrykeriet.
- Nordenskiöld, E. 1926. (translated by G. Schneider) *Die Geschichte der Biologie. Ein Überblick*. Jena: Verlag von Gustav Fischer.
- O'Brien, M. J. 2003. Nels Nelson and the Measure of Time. In J. Truncer (ed.) *Picking the Lock of Time: Developing Chronology in American Archaeology*, pp. 64–87. Gainesville: University Press of Florida.
- O'Brien, M. J. & Lyman, R. L. 1999. *Seriation, Stratigraphy, and Index Fossils. The Backbone of Archaeological Dating*. New York: Kluwer Academic/Plenum Publishers.
- O'Brien, M. J. & Lyman, R. L. 2000a. *Applying Evolutionary Archaeology: A Systematic Approach*. New York: Kluwer Academic/Plenum.
- O'Brien, M. J. & Lyman, R. L. 2000b. Evolutionary Archaeology. Reconstructing and Explaining Historical Lineages. In M. B. Schiffer (ed.) *Social Theory in Archaeology*, pp. 126–142. Salt Lake City: University of Utah Press.
- O'Brien, M. J. & Lyman, R. L. 2001. *Setting the Agenda for American Archaeology: The National Research Council Archaeological Conferences of 1929, 1932, and 1935*. Tuscaloosa: University of Alabama Press.
- O'Brien, M. J. & Lyman, R. L. 2002. Evolutionary Archaeology: Current Status and Future Prospects. *Evolutionary Anthropology* 11: 26–36.
- O'Brien, M. J. & Lyman, R. L. 2003. Resolving Phylogeny: Evolutionary Archaeology's Fundamental Issue. In T. L. VanPool and C. S. VanPool (eds.) *Essential Tensions in Archaeological Method and Theory*, pp. 115–135. Salt Lake City: University of Utah Press.
- O'Brien, M. J. & Lyman, R. L. 2004. History and Explanation in Archaeology. *Anthropological Theory* 4: 173–197.
- O'Brien, M. J., Lyman, R. L., Glover, D. S. & Darwent, J. 2003. *Cladistics and Archaeology*. Salt Lake City: University of Utah Press.
- O'Brien, M. J., Lyman, R. L. & Schiffer, M. B. 2005. *Archaeology as a Process: Processualism and Its Progeny*. Salt Lake City: University of Utah Press.
- Oswalt, W. H. 1976. *An Anthropological Analysis of Food-Getting Technology*. New York: John Wiley & Sons.
- Pigeot, N. 1990. Technical and Social Actors: Flinknapping Specialists at Magdalenian Etiolles. *Archaeological Review from Cambridge* 9: 126–141.
- Platnick, N. I. & Cameron, H. D. 1977. Cladistic Methods in Textual, Linguistic, and Phylogenetic Analysis. *Systematic Biology* 26: 380–385.
- Randsborg, K. 1992. Antiquity and Archaeology in 'Bourgeois' Scandinavia 1750–1800. *Acta Archaeologica* 63: 209–233.

- Randsborg, K. 2000. National History, Non-National Archaeology: The Case of Denmark. *Oxford Journal of Archaeology* 19: 211–222.
- Rexová, K., Frynta, D. & Zrzavý, J. 2003. Cladistic Analysis of Languages: Indo-European Classification based on Lexicostatistical Data. *Cladistics* 19: 120–127.
- Ridley, M. 1986 *Evolution and Classification: The Reformation of Cladism*. Harlow: London.
- Ridley, M. 2004. *Evolution*. Oxford: Blackwell.
- Rodden, J. 1981. The Development of the Three Age System: Archaeology's First Paradigm. In G. Daniel (ed.) *Towards a History of Archaeology*, pp. 51–68. London: Thames & Hudson.
- Ruvolo, M. 1987. Reconstructing Genetic and Linguistic Trees: Phenetic and Cladistic Approaches. In H. M. Hoenigswald and L. F. Wiener (eds.) *Biological Metaphor and Cladistic Classification. An Interdisciplinary Perspective*, pp. 193–216. London: Frances Pinter (Publishers).
- Schnapp, A. 1996. *The Discovery of the Past*. London: British Museum Press.
- Schnapp, A. 2002. Between Antiquarians and Archaeologists – Continuities and Ruptures. *Antiquity* 76: 134–140.
- Schnapp, A. & Kristiansen, K. 1999. Discovering the Past. In G. Barker (ed.) *Companion Encyclopaedia of Archaeology*, pp. 3–47. London: Routledge.
- Searls, D. B. 2003. Linguistics: Trees of Life and of Language. *Nature* 426: 391–392.
- Shennan, S. J. 1989a. Archaeology as Archaeology or as Anthropology? Clarke's Analytical Archaeology and the Binford's New Perspectives in Archaeology 21 years on. *Antiquity* 63: 831–835.
- Shennan, S. J. 1989b. Cultural Transmission and Cultural Change. In S. van der Leeuw and R. Torrence (eds.) *What's New? A Closer Look at the Process of Innovation*, pp. 330–346. London: Routledge.
- Shennan, S. J. 2002a. Archaeology Evolving: History, Adaptation, Self-organization. *Antiquity* 76: 253–256.
- Shennan, S. J. 2002b. *Genes, Memes and Human History: Darwinian Archaeology and Cultural Evolution*. London: Thames and Hudson.
- Shennan, S. J. 2004a. Analytical Archaeology. In J. Bintliff (ed.) *A Companion to Archaeology*, pp. 3–20. Oxford: Blackwell.
- Shennan, S. J. 2004b. An Evolutionary Perspective on Agency in Archaeology. In A. Gardner (ed.) *Agency Uncovered: Archaeological Perspectives on Social Agency, Power, and Being Human*, pp. 19–32. London: UCL Press.
- Shennan, S. J. 2005. Culture, Society and Evolutionary Theory. *Archaeological Dialogues* 11: 107–114.
- Shennan, S. J. & Wilkinson, J. R. 2001. Ceramic Style Change and Neutral Evolution: A Case Study from Neolithic Europe. *American Antiquity* 66: 577–593.
- Steenstrup, J. J. S. 1859. Om Hr Prof. Worsaae's Tvedeling af Steenalderen. *Oversigten over Videnskabernes Sleskabs Forhandling* 1859: 171–191.
- Steenstrup, J. J. S. 1861. *Imod Hr Prof. Worsaaes Tvedeling af Stenalderen: Et Bidrag til Forstaaelsen af Stenalderens Kultur her i Norden*. *Oversigten over Videnskabernes Sleskabs Forhandling* 1861: 305–376.
- Steenstrup, J. J. S. 1886. *Kjøkken-møddinger: eine gedrängte Darstellung dieser Monumente sehr alter Kulturstadien*. Kopenhagen: H. Hagerup.
- Steenstrup, J. J. S. 1892. *Fra Fortid og Nutid: historiske skildringer for alle*. Copenhagen:
- Trigger, B. G. 1989. *A History of Archaeological Thought*. Cambridge: Cambridge University Press.
- Trigger, B. G. 1998. *Sociocultural Evolution*. Oxford: Blackwell.
- Uhle, M. 1902. Types of Culture in Peru. *American Anthropologist* 4: 753–759.
- Uhle, M. 1907. The Emeryville Shellmound. *University of California Publications in American Archaeology and Ethnology* 7: 1–107.
- Ziman, J. (ed.) 2000. *Technological Innovation as an Evolutionary Process*. Cambridge: Cambridge University Press.

Online Sources

www.lib.cam.ac.uk/Departments/Darwin

www.ceacb.ucl.ac.uk/resources

<http://cladistics.coas.missouri.edu/pubs>

<http://hem.passagen.se/sedel/Frimarke/Frimarke.htm>

www.dalarnasmuseum.se/

'We Would Never Have Thought to Go There' – The Changing Definitions of a Site in Central Italian Archaeology

Ulla Rajala

University of Cambridge, UK/University of Oulu, Finland

Introduction

A 'site' is one of the key concepts in archaeology, and is not specific to central Italian archaeology. Archaeologists have tried to define what constitutes a site and how it can be measured. One definition of a site is 'as places where significant traces of human activity are identified' (Renfrew & Bahn 1994: 42).

Essentially, a 'site' has to be distinguished from a 'non-site' and the boundary between the two has to be drawn (Carman 1999). These definitions made in the field are archaeological decisions, not observations (Dunnell and Dancey 1983). Our practice is a pragmatic act of constructing boundaries on the basis of the density of finds and/or features. The definition of a specific site is subject to evaluation of the archaeological criteria used to define it. However, it is clear that the concepts behind those criteria have changed over time. In central Italian archaeology, the scholars have moved from the topographical archaeology of the 19th century to the GIS-assisted landscape studies of the 21st century and their definitions have evolved similarly. Central Italy is relevant as an example since Italian studies have contributed fundamentally to the developments in field archaeology.

Italian archaeology as such has two different meanings. Firstly, it refers to the archaeology done by Italian scholars, and secondly, it refers generally to all archaeological research undertaken in Italy. The relationship between these two spheres is symbiotic and so it can be difficult to treat them separately. However, due to the sheer volume of regional studies, the focus of this article is on central Italy – Lazio is, after all, the core area of the ancient Latins, Etruscans and Romans. In addition, many of the most influential schools in Italian archaeology originate from Rome (cf. Guidi 1988, 2000; Loney 2002; Peroni 1992; Vanzetti 2002). Many different traditions come together in Italian archaeology, a fact readily induced from recent Italian literature (cf. Guidi 1994, 2000; Barbanera 1998), especially in landscape archaeology (e.g. Bernardi 1992; Cambi & Terrenato 1994). This exchange of ideas has continuously transformed the concept of the 'site' (cf. Attema *et al.* 2002; Francovich & Patterson 2000; Patterson 2004).