

A thesis submitted for the degree of Doctor of Philosophy in Archaeology

The Prehistory of Material Signification

*Tracing the Nature and Emergence of Early Body Ornamentation
through a Pragmatic and Enactive Theory of Cognitive Semiotics*

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Abstract

This thesis explores the nature and emergence of early body ornamentation, which has long been at the forefront of the debate on modern human origins. According to most prehistorians, ornamental shell beads are unequivocal proxies for behavioural and cognitive “modernity”, for they are considered the arbitrary products of symbolically-capable brains. In my dissertation, I argue against the “symbolic” dictum of reducing material signification to linguistic terms, and attributing its creation to a representational mechanism. For one, the significative meaning of material culture is not entirely arbitrary, because concepts can be founded on physical properties and affordances. Moreover, material signification is not the epiphenomenal product of innate cognitive modules, for the mind is not a computational device that processes internal representations before externalising them through behaviour.

I thus suggest that these theoretical fallacies about the nature and emergence of material signification can be overcome by combining a pragmatic semiotic approach with an enactive theory of cognition. Briefly put, a pragmatic semiotic theory describes the nature of material signification by recognising that significative concepts can be founded on physical qualities and relations, whereas an enactive theory of cognition accounts for the emergence of material signification by explaining how significative concepts are brought forth via the constitutive entwinement of mind and matter. Through the synergistic fusion of these theoretical tenets, the origins of early body ornamentation can be examined from a developmental perspective that treats the generation of significative meaning as the emergent product of material engagement. In its light, the preoccupation of most evolutionary archaeologists with the notion of “modernity” appears to be inherently problematic. It is therefore ultimately proposed that the dominant symbolic interpretation of material signification need be replaced with a pragmatic and enactive theory of cognitive semiotics that is suitably geared to trace the evolution of prehistoric material signs.

Preface and acknowledgements

Ornamental shell beads, such as those found at Blombos Cave, have stirred much discussion over the past decade in the debate on modern human origins. For most prehistorians, the discovered beadworks are telling proxies for symbolism and language. On this basis, they confidently purport that Middle Stone Age humans had been behaviourally and, by extent, cognitively modern. However, the theoretical fallacies underpinning this widely accepted argument have gone largely unnoticed. As will be demonstrated in this dissertation, adhering to a strictly symbolic perspective towards signification and cognition is inherently problematic. To this end, we must turn to cognitive and semiotic alternatives that can help address the prevalent theoretical misconceptions. A corollary of this shift in perspective is a terminologically-rich vocabulary, which is however necessary if we are to really appreciate the multi-dimensional nature of meaning. As Colin Renfrew (1982, p.14) recognised in his inaugural lecture at Cambridge, cognitive archaeology and semiotics are ‘destined to tread an uneasy path between the pretentiously jargon-laden and the blindingly obvious.’ The cognitive semiotic theory outlined in this thesis should thus be expected to introduce a wide variety of terms. I posit however, that each one of these concepts is essential in gaining a deeper understanding of meaning-making processes. By bringing them together in a single theoretical framework, I thus hope to advance an evolutionary epistemology that is suitably geared to trace the evolution of prehistoric material signs.

Despite the solitary nature of working towards this goal, the end result has actually been a collective effort. I must thus sincerely thank all those involved in this process in any shape or form. My greatest thanks must rightfully go to my supervisor Dr Lambros Malafouris for his invaluable guidance and support throughout the course of my

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Chapter 1

Introduction: Early shell beads in the debate on modern human origins

Chapter outline

In this chapter, I delve into the archaeological literature on early shell beads, in order to illuminate their place in the broader debate on modern human origins. In doing so, I plan to identify the theoretical lacunae that are currently at the forefront of evolutionary archaeology. To this end, I start by introducing the debate on behavioural and cognitive modernity (section 1.1), and describing the spatiotemporal distribution of prehistoric beads (section 1.2). I then proceed to discuss the composite inference that has been made on the basis of their artefactual, symbolic, and linguistic connotations (section 1.3); and consider the various factors purported to have driven their appearance (section 1.4). Finally, informed by the ongoing dissonance regarding the nature and emergence of early body ornaments, I outline the aims and structure of this thesis (section 1.5).

1.1 Debate on modern human origins

The issue of “modernity” has been at the forefront of evolutionary archaeology since the 1980s (Chase and Dibble 1987; Davidson and Noble 1989; Marshack 1989; Mellars 1989; Mellars and Stringer 1989). While the scope of prehistoric archaeologists has shifted from the Upper Palaeolithic to the Middle Stone Age (MSA) in light of recent findings (Mellars et al. 2007), their approach has remained basically the same – that is, they are generally preoccupied with approximating “cognitive modernity” by studying the material correlates of “behavioural modernity”.

Scholars delving into the origins of our species thus tend to resort to behavioural “trait-lists”, which include proxies that: have left behind durable archaeological evidence,

occur among ethnographic hunter-gatherers, and are not consistently associated with other hominin species (Shea 2011, p.3). The “package” of archaeologically visible traces of “modern human behaviour” is largely dependent on the evolutionary scenario embraced: some archaeologists ascribe the appearance of behavioural and cognitive modernity to a “revolution” (i.e., a sudden break with earlier behaviour) (e.g., Bar-Yosef 2002; Klein 2000; 2009; Mellars 2006; Mithen 1996); others attribute it to “evolution” (i.e., more gradual, mosaic development) (e.g., Marean et al. 2007; McBrearty 2007; McBrearty and Brooks 2000); and still others view it in terms of “saltation” (i.e., innovations are not restricted to our species and appear and disappear in Africa, Europe, and the Near East between 200 and 40 thousand years ago (kya) before becoming fully consolidated) (e.g., Conard 2008; d’Errico 2003; d’Errico and Banks 2013; d’Errico and Stringer 2011; d’Errico et al. 2009; Hovers and Belfer-Cohen 2006; Zilhão 2006). While there may be some disagreement about the proxies of modernity, the constituents of trait-lists usually include: worked bone and antler, blade technology, standardisation of artefact types and artefact diversity, complex hearth construction, organised use of domestic space, expanded exchange networks, effective large-mammal exploitation, seasonally focused mobility strategies, use of harsh environments, fishing, and symbolism (Henshilwood and Marean 2003).

Amidst these traits, symbolic behaviour is of particular significance, as it is considered to be at the crux of modernity (e.g., Chase and Dibble 1987, p.264; d’Errico et al. 2005, p.4; Henshilwood and Marean 2003, p.635; Nowell 2010, p.447; Pettitt 2011, p.142; Shea 2011, p.8). To this extent, the archaeological scope has been primarily focused on symbolic material proxies, such as tool style, ritualistic burials, figurative and abstract representations, ochre pigments, and – most pertinently to our purposes – body ornaments.

1.2 Spatiotemporal distribution of early shell beads

The hallmark of body ornamentation had been associated with the Upper Palaeolithic up until the turn of the millennium (Bar-Yosef 2002; Klein 2000; Kuhn et al. 2001).

However, recent evidence has come to push back the emergence of degradation-resistant ornaments tens of thousands of years, and place it in non-European regions (Figure 1.1).

To this extent, I start this section by outlining the spatiotemporal distribution of the Middle Stone Age/Middle Palaeolithic beads (section 1.2.1), before turning to the Later Stone Age/Upper Palaeolithic beads (section 1.2.2).

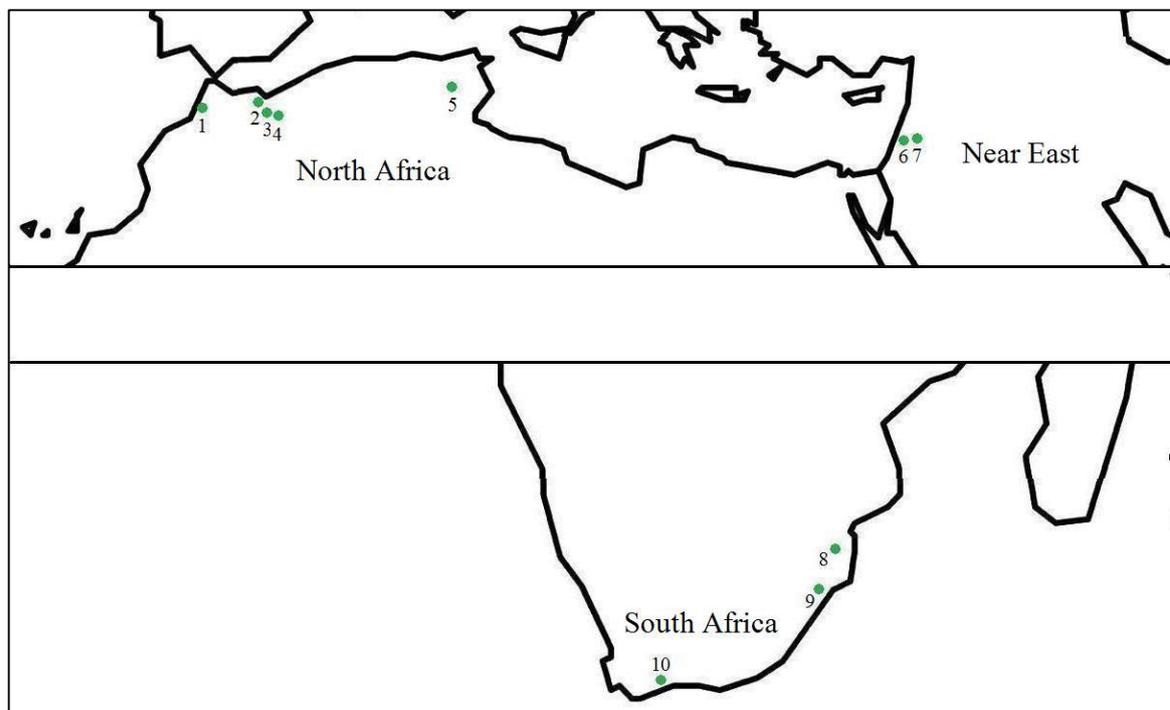


Figure 1.1 Locations of African and Near Eastern archaeological sites that have yielded Middle Stone Age/Middle Palaeolithic beads. 1: Contrebandiers; 2: Ifri n’Ammar; 3: Rhafas; 4: Grotte des Pigeons; 5: Oued Djebbana; 6: Skhul; 7: Qafzeh; 8: Border Cave; 9: Sibudu Cave; 10: Blombos.

1.2.1 Middle Stone Age/Middle Palaeolithic beads

Currently, the Near East has been associated with the earliest instances of ornamentation (Appendix Table 1). Seven naturally perforated *Glycymeris insubrica* valves, which have

been discovered at Qafzeh Cave, Israel, have been dated to c. 92 kya (Bar-Yosef Mayer et al. 2009; Taborin 2003). In addition, two *Nassarius gibbosulus* (*Ng*) shell beads, whose age has been argued to lie within 100 and 135 kya, were unearthed at Es-Skhul, Mount Carmel, Israel (Vanhaeren et al. 2006). However, the exact stratigraphic positions of the beads were not recorded in the original excavation, and hence the artefacts have been dated via their association with the anatomically modern humans found in the same layer (Grun et al. 2005). Thus, due to the controversial dating of these beads, they are not considered the most reliable pieces of evidence (Bouzouggar et al. 2007; Zilhão 2007).

Moving on to the African archaeological record, South Africa has proven particularly fruitful in its yield of MSA beads (Appendix Table 2). In Blombos Cave, a total of sixty-eight *Nassarius kraussianus* (*Nk*) shell beads have been discovered thus far, dated to c. 75 (d'Errico et al. 2005; d'Errico et al. 2015; Henshilwood et al. 2004; Vanhaeren et al. 2013) – an estimate reconfirmed by optically stimulated luminescence (OSL) which indicated with conventional 95% confidence that the Still Bay culture had not appeared before 75.5 kya and had been resorbed by 67.8 kya, with the most plausible start and end dates at 72.2 ka and 71.3 ka, respectively (Jacobs et al. 2013). Three perforated *Afrolittorana Africana* shells older than 70 kya, have also been unearthed at Sibudu Cave (d'Errico et al. 2008). Furthermore, it is worth mentioning a single perforated *Conus bairstowi* discovered at Border Cave (Beaumont et al. 1992; Cooke et al. 1945), whose purported age of 76 ky still remains uncertain due to the problematic context of the human remains with which it has been chronologically associated (Cooke et al. 1945; d'Errico and Stringer 2011; Grün and Beaumont 2001; Millard 2006).

At the northern end of the continent, the archaeological record has proven equally rich (Appendix Table 3). An important set of beads comes from Grotte des Pigeons, Morocco, where a total of twenty-four perforated *Nassarius gibbosulus* shells and three

shells that are most likely *Nassarius circumcinctus* have been unearthed and dated to c. 82.5 kya (Bouzouggar et al. 2007; d'Errico et al. 2009). Three perforated *Nassarius* shells have also been unearthed at Rhafas, Morocco, of which two are of the *gibbosulus* species and one appears to be of the *circumcinctus* species (d'Errico et al. 2009). While an 80–60 kya age range is a conservative estimate of their dating, Mercier and his colleagues (2007) prefer a narrower 80–70 kya estimate. Another Moroccan site, Ifri n'Ammar, has also yielded a perforated *Ng* shell bead (d'Errico et al. 2009; Eiwanger et al. 2012), dated to c. 83.3 kya (Richter et al. 2010). Yet an additional *Ng* shell has been discovered at the Moroccan site of Contrebandiers; it comes though from a disturbed context and is associated with inconsistent age estimates (d'Errico et al. 2009; Daugas 2002). Apart from Morocco, a *Ng* bead has also been unearthed at Oued Djebbana, Bir-el-Ater, Algeria (Vanhaeren et al. 2006). Its stratigraphic position, however, has also been deemed ambiguous (Bouzouggar et al. 2007). Nevertheless, the bead's age has been estimated by means of radiocarbon dating to be greater than 35 ky (Morel 1974); and OSL, thermoluminescence (TL) (Cremaschi et al. 1998) and electron spin resonance (ESR) (Wrinn and Rink 2003) dates for the Aterian technocomplex with which it has been associated, suggest it may be as old as 90 ky. Lastly, it has been recently announced that *Nassarius* beads have also been discovered at the site of Bizmoune (Barton and d'Errico 2012, p.28) – albeit further details have yet to be published regarding the exact findings.

While the extensive spatiotemporal distribution of early beads attests to an undoubtedly well-established practice in Africa, their use inexplicably came to a halt at approximately 70 kya (d'Errico et al. 2009).

1.2.2 Later Stone Age/Upper Palaeolithic beads

The next available ornamental evidence from Africa comes in the form of ostrich eggshell beads 20–30 ky later. Some notable Later Stone Age artefacts have been unearthed at:

Mumba, Tanzania, and dated at c. 49 kya (Gliganic et al. 2012); Border Cave, South Africa, and dated at c. 42 kya (d’Errico et al. 2012a); Boomplaas Cave, South Africa, and dated up to 42 kya (Deacon 1995); Enkapune Ya Muto, Kenya, and dated at c. 40 kya (Ambrose 1998); and White Paintings, Botswana, and dated at c. 26 kya (Robbins 1999). Another type of possible evidence for ornamentation comes from Porc Epic Cave, Ethiopia, in the form of naturally perforated opercula of the terrestrial gastropod *Revoilia guillainopsis* (Assefa et al. 2008).

Significant ornamental artefacts have also been recovered in Oceania. Starting with Western Australia, the earliest evidence consists of 22 *Conus* shell beads dated at 32 kya, which were excavated from the site of Mandu Mandu, Cape Range (Morse 1993). In addition, ten *Dentaliidae* shell beads dated at 30 kya have been discovered at Riwi, Kimberley (Balme 2000; Balme and Morse 2006). *Dentalium* shell beads and fragments of baler shell (*Melo amphora*), which are younger than 40 ky, have also been unearthed from Carpenter’s Gap (O’Connor 1995). Furthermore, Devil’s Lair has yielded three bone beads (Dortch 1979) and a possible marl bead fragment (Dortch 1980) dated to 19–12 kya. Finally, it is worth noting that New Ireland, New Guinea, has also yielded ornamental evidence in the form of a perforated tooth of a tiger shark, whose date has been argued to lie within 39.5 and 28 kya (Leavesley 2006).

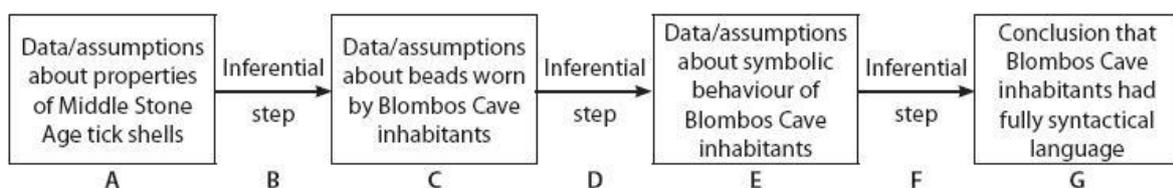
Having left the richest record for last, let us now briefly consider the ubiquity of European ornaments. In their comprehensive study, Vanhaeren and d’Errico (2006, p.1108) identified one hundred and fifty-seven distinct bead types, with the diverse range of materials used for their manufacture including (in order of frequency): shells, teeth,¹ ivory, stone, bone, deer antler, belemnite, nummulite, ammonite, sea urchin, and amber. These findings came from ninety-eight European Aurignacian sites in continental Europe

¹ Only one of twenty-eight was human.

and the Near East. It is worth recognising, at this point, that the Châtelperronian has also been associated, albeit dubiously, with ornamental evidence. Perhaps the most notable site is that of Grotte du Renne at Arcy-sur-Cure, France, as it has yielded thirty-six personal ornaments made of animal teeth, ivory, bone, belemnite, stalactite, and fossil crinoid (d'Errico et al. 1998). However, the association of these discoveries with the unearthed Neanderthal remains has been questioned on the basis of a substantial degree of stratigraphic mixing of the Châtelperronian level with the overlying Proto-Aurignacian level (Bar-Yosef and Bordes 2010; Higham et al. 2010). Subsequent studies, however, have not identified any stratigraphic mixing, thus corroborating the Neanderthal origin of the discovered ornaments (Caron et al. 2011; Hublin et al. 2012). The rockshelter of Quinçay in the Charentes is another major French site that is purported to have yielded Châtelperronian ornaments, in the form of pierced animal teeth (d'Errico et al. 1998; Zilhão and d'Errico 1999). While its stratigraphic integrity has also been questioned, it has been recently determined that it is, in fact, accurate (Roussel and Soressi 2010). It is worth noting here that Neanderthals have also been implicated in the manufacture and use of shell bead ornaments, on the basis of: three umbo-perforated valves of *Acanthocardia* and *Glycymeris* from Cueva de los Aviones, and a perforated pigment-stained *Pecten* shell from Cueva Antón, Spain, which have been dated at c. 50 kya (Zilhão et al. 2010); and an ochered *Aspa marginata* shell from the Fumane Cave, Italy, which has been dated to at least 47.6–45.0 kya (Peresani et al. 2013). While such evidence suggests that ornamentation may not have been an exclusively human practice, Neanderthal ornamentation remains a controversial topic.

1.3 Blombos inference

Out of the aforementioned sites, Blombos Cave holds a particularly prominent place in the on-going discussions on behavioural and cognitive modernity. In fact, when the artefactual evidence was presented, Mithen (2005, p.250) claimed it was ‘the most important currently known archaeological site for understanding the origin of modern thought and behaviour – and, by implication, language.’ Since the mid-2000s, however, abundant and solidly-dated ornamental evidence has also been unearthed at several North African sites. Yet, given that the debate on the behavioural and cognitive connotations of the Blombos beads had already been instigated, they remained in the spotlight, despite the slightly older age of the *Nassarius* beads from Grotte des Pigeons. Accordingly, linguist Rudolf Botha (2010, p.345) used the term ‘Blombos inference’ in order to refer to the series of inferential steps that have led archaeologists to deduce the symbolic and linguistic capacities of the Blombos inhabitants, and consequentially early anatomically modern humans. As can be seen in figure 1.2, three inferential steps (B, D, and F) have been made in order to proceed from the unearthed *shells* (A) to *beads* (C) to *symbols* (E) to *language* (G). Botha (2010) has fittingly termed these steps the ‘shells-to-beads inference’, the ‘beads-to-symbols inference’, and the ‘symbols-to-syntax inference’. In this section, I evaluate their robustness by exploring evidence from Middle Palaeolithic and Middle Stone Age sites (sections 1.3.1–1.3.3), before reaching some conclusions about the symbolic and linguistic nature of early body ornamentation (section 1.3.4).



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Figure 1.2 Structure of the compound inference about the language of Blombos Cave inhabitants (after Botha, 2010, p.346, Fig.2).

1.3.1 Shells-to-beads inference

The inference, according to which the unearthed shells were once used as beads, has not been disputed, as they were shown to meet the following criteria for establishing artefactuality:

*Wear due to the manufacturing process, along with the breakage pattern, can imply artefactuality, as they point towards an intentional, rather than natural or post-depositional, perforation (d’Errico et al. 2005; d’Errico et al. 2008; Vanhaeren et al. 2006) (Figure 1.3). It is interesting to note that, while only one of the perforations exhibited by the *Nassarius gibbosulus* shell beads from the North African and Near Eastern sites appears to have been anthropogenic, experimental methods suggested that the perforations of the *Nassarius kraussianus* shells from Blombos Cave may have been deliberately made by humans (d’Errico et al. 2005; d’Errico et al. 2009; Henshilwood 2012; Vanhaeren et al. 2013).*



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Figure 1.3 Marks produced by stone tools on the dorsal side of a *Nassarius gibbosulus* from Grotte des Pigeons (n° TAF6871) (Scale bar: 1 mm) (cropped after d’Errico *et al.*, 2009 Supporting Information, p.5, Fig.S4.b).

Use-wear suggests long-term wearing of strung beads. It is mostly found on the perforation edge (which is smoothed and sometimes notched due to the thread), the outer lip, and the parietal wall of the perforation (due to rubbing against other beads and clothes) (Figure 1.4). Characteristic examples include beads unearthed at Blombos, Taforalt, and Qafzeh (Bar-Yosef Mayer et al. 2009; Bouzouggar et al. 2007; d’Errico et al. 2005; d’Errico et al. 2009; Henshilwood 2012; Henshilwood et al. 2004). Consistent use-wear patterns attest to the fact that the way the beads were worn did not change over time – which, in turn, suggests that beadworks were not only used regularly, but were also displayed in a consistent manner (d’Errico and Vanhaeren 2009, p.39).



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Figure 1.4 A *Nassarius kraussianus* shell bead from Blombos Cave exhibiting wear facets resulting from the rubbing of the strung beads against one another; and an *Arolittorina africana* shell bead from Sibudu demonstrating a wear pattern on its perforation (Scale bar: 1 mm) (cropped after Henshilwood 2012, p.222, Fig.12).

Similarity in the size, shade, type of perforation and other physical properties of shell beads unearthed from the same contextual vicinity suggests that they probably belonged to the same beadwork item – which, in turn, corroborates artefactuality. For instance, fifty-six of sixty-eight shell beads found at Blombos, were situated in seven groups of two to twenty-four beads (d’Errico et al. 2015, p.53). The shells comprising each group have been recovered within a single square, or in two adjacent sub-squares,

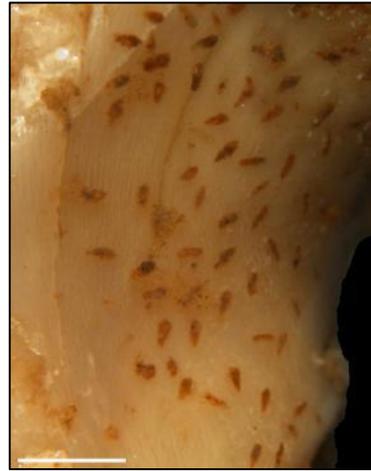
during a single excavation day, and can be distinctly grouped by size, shade, type of perforation and use wear pattern. These facts suggest that each cluster had once been part of the same beadwork item (d'Errico et al. 2005, p.18) (Figure 1.5).



Figure 1.5 The homogeneity of the *Nassarius kraussianus* shell beads unearthed at Blombos Cave in the same phase, level, square, and on the same day (16/2/2000) (cropped after d'Errico et al. 2005, p.8, Fig.2).

Pigmentation residues on a bead may also attest for its artefactuality (Figure 1.6), because petrographic and geographic analyses suggest that ochre² had been mined for its colour (Hovers et al. 2003). Ochre-stained beads have been found at Blombos Cave, Contrebandiers, Grotte des Pigeons, Ifri n'Ammar, Qafzeh Cave and Rhafas (Bar-Yosef Mayer et al. 2009; Bouzouggar et al. 2007; d'Errico et al. 2005; d'Errico et al. 2009). Yet while they may have been deliberately coloured, they could have also been accidentally stained by rubbing against ochre-stained hides, skin, or ochre-impregnated thread (Bouzouggar et al. 2007; d'Errico and Vanhaeren 2009; d'Errico et al. 2009). Unfortunately, taphonomic processes preclude us from detecting any form of intentionality behind the pigment residues. It is also worth noting, at this point, that the beads' colour could have been changed in another way – heating. Dark grey to black coloured shell beads have in fact been found at Grotte des Pigeons, Rhafas, and Ifri n'Ammar, Morocco (d'Errico et al. 2009), and at Sibudu (d'Errico et al. 2008) and Blombos Cave (d'Errico et al. 2005), South Africa. According to a recent experimental study though, while some of the Blombos shell beads had indeed been heated, the heat treatment does not appear to have been intentional (d'Errico et al. 2015).

² “Ochre” is a generic term used by archaeologists to denote any rock, earth, or mineral that produces a reddish or yellowish streak when abraded (Watts 2009, p.63).



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Figure 1.6 Red pigment filling the pits of a *Nassarius gibbosulus* from Rhafas (n° 145) (Scale bar: 1 mm) (cropped after d’Errico et al. 2009, Supporting Information, p.4, Fig.S3.f).

Deliberate *selection, transport, and accumulation* by humans have proven equally useful indicators of artefactuality. While in sites relatively close to the sea, as in the case of Sibudu (15km), the chances of accidental transport by way of natural agents or humans carrying prey, cannot be confidently excluded (d’Errico et al. 2008), most of the sites are located numerous kilometers away from the sea. Great distances would have precluded natural phenomena and animal predators from transporting shells, which means that the shells had been collected by humans (Bar-Yosef Mayer et al. 2009; Bouzouggar et al. 2007; d’Errico et al. 2009; Vanhaeren et al. 2006). The most distinctive example comes from Oued Djebbana, which had never (during the Upper Pleistocene) been closer than 190 km from the sea (Vanhaeren et al. 2006). While the transportation of shells may have indeed been deliberate, it could be argued that they were accumulated for subsistence purposes. For instance, Marean and his colleagues (2007) suggested that shellfish may have constituted part of human diet at Pinnacle Point, South Africa (c. 164 kya). Contrastingly though, Vanhaeren and her colleagues (2006) proposed that the Es-Skhul shells must not have been food leftovers due to the only 4.84 g of dry soft tissue (~20 kcal) they yield per 100 specimens. Along similar lines, the negligible calorific payoff of

Nassarius kraussianus and *Afrolittorana africana* provides for an even more confident exclusion of their consumption, as they contain considerably less meat, at 0.814 g and ~0.4 g per 100 specimens respectively (d'Errico et al. 2005; d'Errico et al. 2008).

Lastly, the association of unearthened beads with an *anthropogenic context* can also be taken to point towards artefactuality, because the probability of finding an “artefact” within such a context must indeed be greater than finding one in complete isolation. Indeed, the African and Near Eastern archaeological record is clearly anthropogenic, as it includes: subsistence leftovers (e.g., faunal remains), artefacts (e.g., stone and bone tools), engraved ochre and bone, and human remains (in Es-Skhul and Qafzeh) (Bar-Yosef Mayer et al. 2009; Bouzouggar et al. 2007; d'Errico et al. 2005; d'Errico et al. 2009; Grun et al. 2005; Vanhaeren et al. 2006).

1.3.2 Beads-to-symbols inference

Having established that the artefactual nature of shells suggests they are beads, let us proceed to the next inference. Early beads are commonly perceived to be inherently symbolic and are thus taken as evidence for “modern human” behaviour and cognition (Álvarez Fernández and Jöris 2008; Barton and d'Errico 2012; Bednarik 2008a; Bouzouggar et al. 2007; Byers 1994; d'Errico et al. 2003; d'Errico et al. 2005; d'Errico and Henshilwood 2011; d'Errico and Vanhaeren 2009; d'Errico et al. 2009; d'Errico et al. 2008; Henshilwood 2012; Henshilwood et al. 2004; Henshilwood and Dubreuil 2009; 2011; Henshilwood and Marean 2003; Klein 2000; Klein and Edgar 2002; Kuhn 2014; Kuhn and Stiner 2007a; b; Mellars 2005; 2006; Sterelny 2014; Stiner 2014; Vanhaeren and d'Errico 2006; Vanhaeren et al. 2013; White 1989a; b; 1993a; 2007). In fact, this view has been so entrenched in archaeological thinking that, according to Wadley (2001, p.203): ‘Probably all archaeologists are agreed that the presence of...personal ornaments represents symbolic and therefore culturally modern behaviour.’ In order to examine

whether this inference is problematic, I follow Botha's (2008, p.204) lead and break down this composite inference into its constituents: i) early beads are ornaments, ii) ornaments are symbolic.

1.3.2.1 Beads-to-ornaments sub-inference

I first examine whether beads are justifiably considered ornamental by taking into account, and subsequently dismissing, two other (improbable) potential uses of early beads. Starting with the most inauspicious scenario, it has been argued that the perforated Qafzeh Cave *Glycymeris* valves had functioned as recipients for ochre (Valladas et al. 1988; Zilhão 2007). However, their natural perforations cast doubt on this interpretation. According to a taphonomic study by Sivan and her colleagues (2006), approximately half of the valves are naturally perforated. Hence, since all seven (intact or nearly intact) shells from Qafzeh exhibit a natural perforation in the umbo, they must have been deliberately targeted – which would have been counterintuitive had they been destined to function as containers (Bar-Yosef Mayer et al. 2009, p.311). Moreover, four of them exhibit a notch indicative of threading (ibid.). Taken in combination, these facts suggest that the shells had been used as ornaments. This is not surprising, considering that naturally perforated objects have been used for ornamental purposes throughout the world (Francis 1989).

Lately, it has been speculated that early beads, such as the ones unearthed at Blombos Cave, could have constituted tallying devices used to keep track of quantities or sequential phenomena, as in abaci and rosaries (Coolidge and Wynn 2011; Overmann et al. 2011; Wynn and Coolidge 2011). While Carey (2011, p.159) suggested that ethnographically abundant finger tallying systems would have predated the purported bead tallying systems, Karenleigh Overmann and her colleagues (2011, p.144) evoked the superiority of tallying devices over body counting systems on the grounds that they possess ordinality (i.e., invariant sequence on a string) and the natural $N + 1$ (i.e., every

added unit increases the quantity of units by the same number). While a scenario worth examining, the use of early beads as personal ornaments is more reasonable due to its ubiquity among foragers – contrastingly to tallying devices (Henshilwood and Dubreuil 2011, p.391). In fact, in her ethnographically-informed study, Overmann (2013, p.21) acknowledged that, while bead-dependent numeration systems have only been used by materially complex cultures, ornamental beads are characteristic of materially simpler cultures as well.

On these grounds, it is reasonably safe to conclude that the earliest beads from the Middle Stone Age/Palaeolithic must not have primarily functioned as containers or tallying devices, and that they appear to have been justifiably recognised as ornaments by the overwhelming majority of scholars. Such a conclusion is further corroborated considering that Upper Palaeolithic beads have also been confidently associated with wearing (White 1989b).

1.3.2.2 Ornaments-to-symbols sub-inference

As has been claimed by Robert Bednarik (2008b, p.94), believing that beads functioned simply as body adornments is almost certainly an oversimplification, while in a similar vein Mithen (1996, p.174) has argued that it risks belittling their role in sending social messages. On this note, let us now delve into the second constituent of the beads-to-symbols inference, according to which personal ornaments are inherently symbolic because they represent coded information. In the characteristic words of literary critic Brian Boyd (2002, p.142, my emphasis): '[B]ody decoration is seen as part of a representational formulation of the body. Decorative elements *symbolically represent* particular ideas, particular subjective meanings, which are materially 'inscribed' on the body in order to convey those ideas and meanings.'

The work of archaeologist Randall White (1992) on the Aurignacian ornaments of the Upper Palaeolithic provides a distinctive example of such a view, as he adopted the conceptualisation of personal adornment that had been forwarded by anthropologist Terence Turner (1980). Focusing upon the ornamental practices of the Kayapo, a native tribe at the southern borders of the Amazon forest, Turner had introduced the concept of 'the social skin'. As he put it: 'The surface of the body, as the common frontier of a society, the social self, and the psycho-biological individual becomes the symbolic stage upon which the drama of socialization is enacted, and bodily adornment (in all its culturally multifarious forms, from body-painting to clothing and from feather head-dresses to cosmetics) becomes the language through which it is expressed' (Turner 1980, p.112, cited in White 1992, p.359). According to a recent literature review, this linguistic approach towards ornamental symbolism has been firmly established in cognitive archaeology (Abadía and Nowell 2014).

While attention has been shifted during the past decade towards the newly-discovered Middle Palaeolithic shell beads, their alleged communicative and symbolic function has remained at the forefront. For instance, Henshilwood and his colleagues (2004, p.404), who reported the shell beads unearthed at Blombos Cave, briefly mentioned that all functions of beads in human societies are eminently symbolic. Along similar lines, d'Errico and his colleagues (2005), who presented a more detailed examination of the Blombos shell beads, ratified their inherently symbolic nature. Drawing their definition from Chase and Dibble's (1987) landmark paper, they professed that '[a] key characteristic of all symbols is that their meaning is assigned by arbitrary, socially constructed conventions' (d'Errico et al. 2005, p.4). Reporting on the subsequently discovered North African Middle Stone Age shells beads, Bouzouggar and his colleagues (2007) shared this view. The symbolic nature of ornamental symbols has

been deciphered from their standardisation and redundancy, as the information represented by symbols can only be propagated through repetition (Kuhn and Stiner 2007b, p.44; White 1989b, p.225). It therefore becomes clear that the prominent figures reporting on these new ornamental findings have argued in favour of their symbolic nature based on their imbuelement with meaning that is arbitrary and collectively shared. For most prehistorians, symbolism is an all-encompassing stage that includes all kinds of communicative meaning. Yet according to Pettitt (2011, p.148), prehistoric archaeology can perhaps benefit by making a distinction between different levels of symbolic use: decoration, enhancement, accessorisation, full symbolism, and time/space-factored symbolism. Since personal ornaments are considered to have communicated simple or complex messages, Pettitt (2011, p.149) suggested that they should be subsumed under the levels of accessorisation or full-symbolism. To this extent, it becomes evident that regardless of whether one adopts an all-or-nothing or a multi-level approach to symbolism, most archaeologists treat ornamentation as inherently symbolic. For them, the view 'that beads are regarded as symbolic is undisputed' (Henshilwood 2009, p.43).

Despite the strong conviction of its proponents, this communicative approach to material symbolism has been recently critiqued. For one, in their comment to Henshilwood and Dubreuil (2011), Coolidge and Wynn (2011, p.381) have argued that this approach excludes any private meanings for the creator. They argued that cave doodles, which might have held personal meanings, are excluded by a communicative approach to symbolism because they lack collectively shared meaning. Furthermore, in response to Henshilwood and d'Errico (i.e., d'Errico et al. 2005; Henshilwood et al. 2004; Henshilwood and Marean 2003), Botha (2008, p.203) has argued that considering the beads symbolic requires identifying: i) the meaning that these beads had for their wearers, ii) the social conventions by which they acquired this meaning, and lastly iii) the

information stored and displayed in the beads – in case that it differed from the aforementioned meaning. However, as noted by the same author, d’Errico and Henshilwood have indeed recognised in earlier work (d’Errico et al. 2001, p.317) that the regional data available for a time period as distant as the South African MSA is very limited and insufficient for reconstructing symbolic meaning. Yet despite acknowledging this, they later perceived beads to have been symbolic (d’Errico et al. 2005, p.2; Henshilwood et al. 2004, p.404; Henshilwood and Marean 2003, p.635). This is why Botha (2008, p.204) speculated that Henshilwood and d’Errico must have reached such a deduction by considering beads a special kind of artefact – an ornament – which is by its very nature symbolic.

This interpretation has been recently challenged by some scholars who resorted to the semiotic theory of the polymath Charles Sanders Peirce. In order to characterise the way in which ornamental beads would have conveyed their messages, they employed his most rudimentary and popular triad, which distinguishes symbolic from non-symbolic modes of signification: symbols are based on purely arbitrary convention, whereas *icons* are connected with what they stand for by way of similarity, and *indices* are linked with it through spatiotemporal contiguity, correlation, or causality. The start was made by an evolutionary psychologist, Matt Rossano (2010, p.S92), in his semiotic review of the archaeological record, where he suggested that beads are indexical artefacts. His speculation is merely the output of their function as indicators of social affiliations. While such a function has been characterised as symbolic by others, he implicitly appears to have suggested that they are in fact indices due to their acquisition of meaning (e.g., denoting membership to a certain group) via means of a spatiotemporal connection to the wearer – a postulation which he made explicit in his comment (Rossano 2011) to Henshilwood and Dubreuil’s (2011) paper. In fact, Rossano (2011, p.387, my emphasis)

introduced his own terminology in order to describe the indexical nature of an ornamental bead, for he referred to it as an “*artificially constructed index*”, which he claimed differs from a naturally occurring index (e.g. smoke–fire), in that its link to the signified object is *arbitrary*, given that someone had to decide whether a certain bead would serve as an indicator of a certain group, before it could be spatiotemporally reinforced in order to maintain the connection. On the other hand, Coolidge and Wynn (Coolidge and Wynn 2011) did not construct such an intermediary link between indices and symbols in their comment to Henshilwood and Dubreuil’s (2011) paper. While they did not deny that ornamental artefacts could have signified a symbolic concept such as high status or motherhood, they argued that they need not have done so. Using the ornaments worn by their students as a source of inspiration, they suggested that ornaments could not have had any particular meaning, in which case they would have solely functioned as indices of membership.

Let us now turn to the antilogy, by examining Henshilwood and Dubreuil’s (2011) reply. While recognising the usefulness of the Peircean distinction between index and symbol, they found its interpretation at the cognitive level to be tricky (*ibid.*, p.389). The reason they failed to see the usefulness of Peirce’s semiotic theory in studying cognitive evolution is because they drew their definitions of indices and symbols from an influential treatise on the evolution of the symbolic mind by the biological anthropologist and neuroscientist Terrence Deacon (1997). In his Peircean account, Deacon treated indices as simple associations. In fact, even single words are indexical in his view. Symbolism on the other hand is the ability to recognise a higher-order regularity in the mess of associations (*ibid.*, p.89). However, as Henshilwood and Dubreuil (2011, p.389) pointed out, according to Peirce, indices such as guideposts and pronouns imply more at the cognitive level than simple associative learning because they entail the use of causal

knowledge in order to read the referential intentions of others.³ In this light, they do not see why indices should be seen as precursors to symbols (as Deacon has it). To them, both indices (as they see them – i.e., requiring prior knowledge) and symbols (as Deacon sees them – i.e., belonging in systems) require a higher order capacity – in the former case, it is higher theory of mind,⁴ whereas in the latter, it is higher-order regularities between associations.

Faced with the ineffectiveness of Peirce's triptych, Henshilwood and Dubreuil (2011, pp.389–390) upheld in their reply to the received comments the view that symbolic material culture is characterised by its imbuelement with shared beliefs and meanings. In doing so, they embraced the definition of symbolism advanced by the linguist Ferdinand de Saussure, according to whom a symbol is an arbitrary association between a sound and a thought. To this extent, they suggested that apes are not symbolically-capable like humans, because they are not able to share their attention and intentions with conspecifics. They thus proposed that evidence of increased co-operation in the archaeological record should be taken as evidence of the ability to share meanings that were arbitrary.

In this light, Henshilwood and Dubreuil (2011) argued that ornamental shell beads might be indicators, but they did not point to something found in the physical world – they pointed to an abstract and socially shared standard. So even if they did not have a specific meaning, they would have been used to allude, arbitrarily and conventionally, to a notion such as “coolness”, in a manner akin to modern day jewellery, piercings, and

³ As we shall see in chapter 4, Henshilwood and Dubreuil (2011) are right in refuting Deacon's (1997) definition of indices. Deacon's approach is in fact closer to Saussure's structural linguistics than Peirce's semiotic theory (Sonesson 2006).

⁴ The cognitive capacity generally known as *full-fledged* (Henshilwood and Dubreuil 2009)/*higher* (Henshilwood and Dubreuil 2011)/*true* (Wynn and Coolidge 2007) *theory of mind* pertains to the understanding of false beliefs and other abstract mental states (e.g. higher-order desires), and differs from the capacity of apes and young children to read intentions (Henshilwood and Dubreuil 2011, p.390).

tattoos. Having treated the conventional link between an abstract property (i.e., coolness) and an artefact (i.e., personal ornaments) as symbolic, they concluded that ‘this use is in line with the Peircean notion of symbol, although maybe not with any understanding of it’ (ibid., p.391). As they explicated, they find no difference in the cognitive capacities required to understand the conventional connection between an artefact and an abstract property (e.g., beads and being cool) and those involved in understanding the link between an artefact and an event (e.g., the cross and crucifixion). Both behaviours require higher theory of mind and level-2 perspective-taking⁵ because [i]n both cases, it is insufficient to see *that* people see things: one must see *how* people see things’ (ibid.).

The argument that ornamental shell beads had an emblematic socio-cultural function (Henshilwood and Dubreuil 2011) has been met with support by Hodgson (2014). In his view, the Blombos shell beads were emblematic signallers of group identity due to: i) the inherently social nature of ornaments; ii) their potential coloration with ochre; and iii) the ensuing discovery of ornamental shell beads in many sites. As he put it, while these would have initially functioned as indexical signs, they would have subsequently become fully fledged symbols ‘signalling the nuances of group identity’ (ibid., p.62).

Garofoli (2015), on the other hand, disagreed with Henshilwood and Dubreuil’s (2011) claims. He suggested that aesthetically-pleasing materials used for ornamentation are in fact iconic, as they become meaningful by eliciting an emotional response to the observers due to their rarity and desirability. However, when worn as ornamental beads, they become indexical of their wearer’s capacity to find such rare and desirable items. There is thus no need for the observers to resort to an abstract and shared theoretical

⁵ *Level-2 or higher perspective-taking* is the ability to inhibit one’s own perspective and comprehend how an object looks from another person’s perspective (Henshilwood and Dubreuil 2009, 2011).

system such as that dictating coolness in order to make sense of them. On this basis, Garofoli argued that ornamental shell beads cannot be used as a proxy for abstract social standards, and thus symbolic systems.

Based on the above, it becomes clear that there is much dissonance regarding the preferred method towards symbolism, and significative meaning in general. Many archaeologists, including the scholars reporting on the new discoveries, adopt a linguistic approach to the symbolic nature of shell beads, for they have treated them as arbitrary artefacts whose meaning is collectively shared. Although this is usually an all-or-nothing approach to symbolism, a multi-level perspective has also been advanced by Pettitt (2011). Recently however, a small number of authors have challenged the symbolic notion by drawing from Peirce's semiotic theory, and identifying ornaments as indices. Resolving this dissonance is a task that is undertaken later in this thesis. For now, let us suppose that ornamental beads are indeed symbols, and consider the final inferential step of the 'Blombos inference'.

1.3.3 Symbols-to-syntax inference

Due to their allegedly symbolic nature, ornamental shell beads are generally treated as proxies for the linguistic ability of their manufacturers and wearers (d'Errico et al. 2005; d'Errico and Henshilwood 2011; d'Errico and Vanhaeren 2009; Henshilwood 2007; 2009; Henshilwood et al. 2004; Henshilwood and Dubreuil 2009; Kuhn 2014; Mithen 2005; Vanhaeren and d'Errico 2006). As characteristically proposed by Henshilwood and his colleagues (2004, p.404), when they first reported on the Blombos beads: 'Fully syntactical language is arguably an essential requisite to share and transmit the symbolic meaning of beadworks'.⁶ Yet, like the previous inferential step, the symbols-to-syntax

⁶ In fact, a 'complex form of language-as-we-know-it' had been associated many years earlier with the production of Aurignacian ornaments (White 1989a, p.375).

inference has also been heavily critiqued. For one, the authors failed to define what a “fully syntactical language” actually is, and whether it differs from the “syntactical language” mentioned in a subsequent publication (d’Errico et al. 2005, pp.17–18). Most importantly though, inferring the presence of modern language from material symbols falls short in two other ways:

For one, Botha (2008, p.206) explained that symbolic behaviour and “fully syntactical” language do not necessarily co-occur. Great apes and African Grey parrots, for example, are capable of using symbols without being able to use language. Or, to limit our arguments to humans alone, Botha urged us to consider the use of non-linguistic symbols, such as street-signs or the symbols found in map legends. In fact, humans are capable of communicating through completely non-linguistic communicative gesturing acts that are able to stand on their own, such as: a) pointing, which humans use to ‘direct the attention of a recipient spatially to something in the immediate perceptual environment (deictically)’ and b) pantomiming, which humans use to ‘direct the imagination of a recipient to something that, typically, is not in the immediate perceptual environment by behaviorally simulating an action, relation, or object (iconically)’ (Tomasello 2008, p.61). It thus seems perfectly reasonable to suggest that symbolic meanings could have been shared and transmitted through these two kinds of non-linguistic acts, instead of relying on “fully syntactical” language. Finally, it is worth recognising that even if language had been necessary, it need not have been “fully syntactical”, for Botha (2008, p.206) pointed out that linguistic symbols can be successfully employed in utterances with minimal or lack of syntactic structure altogether.

The second reason why the symbols-to-syntax inference was deemed unwarranted is because it has not been supported by way of a detailed theoretical argument. The

inferential step from symbols to syntax has been merely founded on the bare assumption that language is an essential requisite for the sharing and transmission of the early shell beads' allegedly symbolic meaning. According to Botha (2008, p.207; 2009, p.109; 2010, p.348), a sufficiently warranted inference would have accounted for the specifics of the meanings shared and transmitted, as well as for the reasons that “fully syntactical” language would have been necessary, instead of a less evolved stage or some non-verbal means of communication. Moreover, it would have pinpointed the cognitive processes involved in the linguistic sharing and transmission of the symbolic meanings.

Despite these criticisms, d'Errico and Vanhaeren (2009, p.36) remained firm in their initial approach, for they purported that cognitive structures need not be identified in order to bridge communication skills with material culture. Unlike d'Errico though, Henshilwood constructively employed Botha's aforementioned criticisms in order to develop and justify his originally rudimentary claims in a later theoretically-oriented paper (i.e., Henshilwood and Dubreuil 2009). In his collaboration with philosopher Benoît Dubreuil, the two scholars aimed not only to define the type of language inferred from the allegedly symbolic ornaments, but also to provide a framework justifying their inference. Let us first consider the validity of their definition.

Henshilwood and Dubreuil (2009, p.41) specified that the terms used by archaeologists to refer to “modern language” – namely, “syntactic” (Barham 2002), “symbolic” (Wurz 2000), “modern, complex” (Mellars 2006), and “phonemic” (Klein and Edgar 2002) – ‘are understood to mean the ideas or emotions that were communicated by means of symbolic elements, for example vocally, by gesture, or by marks, and that these elements can be recombined according to systematic conventionalized criteria to create meaning.’ Again however, Botha (2010, p.352) challenged Henshilwood's definitional approach to language. For one, the ideas and emotions communicated by language are not

a constitutional part of it – language is merely the means for communicating them. Secondly, the authors appear to be conflating diverging definitions of language in their attempt to yield a compound notion. How can a “syntactic” language be equated to a “symbolic” language, which does not necessitate syntax when it is based on syntactically unstructured strings of symbols? Or for that matter, how can it be paralleled with a ‘phonemic’ language, given the fact that syntax can unfold in writing rather than utterances? By failing to account for these issues, Henshilwood’s definition of language remains problematic. Having recognised this insufficiency, let us now consider the cognitive justification Henshilwood and Dubreuil advanced in order to explain language’s connection to ornamentation.

In their view, ornamentation clearly involves meta-representations that can only be articulated by way of syntactic language. Consider for instance the following examples: ‘Fred sees that I wear the beads’ and ‘Fred knows that I am the chief.’ (Henshilwood and Dubreuil 2009, p.59). These sentences involve the embedding of clauses, which is a defining characteristic of linguistic recursion (Suddendorf and Corballis 2007). To this extent, Henshilwood and Dubreuil (2009) purported that syntactic language would have evolved along with modern cognitive capacities, such as level-2 perspective-taking and theory of mind. In support of their view, the authors drew upon ontogenetic data, and argued that linguistic recursion develops prior to level-2 perspective-taking and full-fledged theory of mind, is a good predictor of these abilities, and provides scaffolding for their meta-representations (*ibid.*, p.59). It is not clear though why the meta-representations constructed by these cognitive capacities must have been constituted by linguistic elements (Botha 2010). Consider the following: While chimpanzees do not have a solid comprehension of false beliefs, they are capable of understanding the knowledge and intentions of others, as well as their perceptions (Call

and Tomasello 2008). While they do not exhibit full-fledged degrees of theory of mind and level-2 perspective-taking (i.e., they do not comprehend false-beliefs), they are able to demonstrate these capacities at a basic degree. It thus follows, that a language-lacking human should also be able to demonstrate them at a basic degree. In fact, such a human should be able to exhibit the full-fledged versions of theory of mind and level-2 perspective-taking, because, as has been acknowledged by Henshilwood and Dubreuil themselves in a later paper, the temporoparietal junction – that is, the main cortical area implicated in both capacities – underwent functional reorganisation within our lineage (Henshilwood and Dubreuil 2011, p.367). Hence, from a strictly neurological point of view, the aforementioned language-lacking human should be able to engage in full-fledged theory of mind and level-2 perspective-taking, even without being able to linguistically articulate their meta-representations.

But even if the linguistic articulation of meta-representations is accepted for the sake of argument, Botha (2010, p.350) argued that recursive syntax would still not have been required, as a juxtaposition of two clauses would have been equally successful in conveying meaning: ‘Fred sees this. I wear the beads.’ instead of the recursive sentence ‘Fred sees that I wear the beads.’ In fact, he presented a varied literature that reveals the absence of clausal embedding by restricted linguistic systems, such as: (i) systems acquired by adults who naturally assimilate a second language (Klein and Perdue 1992; Klein and Perdue 1997); (ii) homesign systems created by hearing-impaired children of hearing parents (Heine and Kuteva 2007, p.202); and (iii) twins’ languages (Bakker 1987; Heine and Kuteva 2007, p.202). Botha (2010, pp.350–351) also recounted two modern-day examples of recursion-lacking languages: the Pirahã language of Amazonia (Everett 2005; 2009), which uses recursive groupings ‘of ideas rather than sentences’ (Everett 2009, p.436), and the Riau Indonesian (Gil 2008), which fulfils the demands of a complex

populous society, despite its very simple syntax. On these grounds, it becomes clear that recursive syntax is not a necessary prerequisite for the meta-representations generally associated with early body ornamentation.

To this extent, it can be safely concluded that the use of ornamental beads as a proxy for language is deeply unfounded. Mere reliance on ambiguous terms such as “fully syntactical” language in lieu of a concrete linguistic framework cannot provide the confidence required for such an ambitious inference. Besides the definitional level, proponents of the symbols-to-syntax inference fall short in another important respect. As we saw, the argument advanced to link ornamentation and language has been built upon frail foundations.

1.3.4 Conclusions about the nature of early body ornamentation

In light of the above it appears that the inferences, according to which early beads are symbols and proxies for language, have been based on a series of theoretical pitfalls. According to Botha (2008; 2009; 2010), the development of valid arguments requires adhering to three conditions:

Firstly, an inference must be *grounded* on empirical data about the phenomenon from which it starts (Groundedness Condition). The meticulousness with which the unearthed perforated shells have been treated does not raise any reason for concern regarding their function as ornamental beads; hence, the beads-to-symbols inference is properly grounded. However, the symbols-to-syntax inference is not properly so, due to the fact that the beads-to-symbols inference is unwarranted since shells beads were not adequately demonstrated to have been symbolic.

This brings us to the second of Botha’s conditions, according to which an inference must also be *warranted* by being based on solid bridge theory that explicates how the data are suitably licensed to lead to the inference (Warrantedness Condition).

Besides the beads-to-symbols inference, the symbols-to-syntax inference also did not fulfil this condition, despite accepting for the sake of argument that the grounds on which it is based (i.e., beads are symbols) are solid. For the inferential step to have been warranted, it should have been solidly demonstrated that “fully syntactical” language is an essential requisite for the creation and transmission of “symbolic” meaning.

Lastly, an inference must be *pertinent*, in being about, and in clearly defining, (a) the “right thing” and (b) the “right process” (Pertinence Condition). Again, both the beads-to-symbols inference and the symbols-to-syntax inference failed to fulfil this condition, for in order to constitute pertinent the conclusions that the Blombos Cave inhabitants exhibited “symbolism” and “fully syntactical” language, these terms should have been explicitly defined. Failing to do so, cannot but detract from the validity of the argument being built. Moreover, archaeologists should have presented evidence that corroborated the view that the Blombos Cave inhabitants must have used a type of syntax that can be referred to as “full”, rather than a more rudimentary type. In this light, Botha (2010, p.352) suggested that ‘the symbols-to-syntax inference needs to be underpinned by a principled conception of language as well as empirically adequate theories of linguistic structure, meaning, and use.’

Evidently, only the shells-to-beads inference appears to be valid at the moment. The other two inferences remain at the centre of much debate. In addressing this issues, it appears logical to first resolve the dissonance regarding the beads-to-symbols inference, because if it is proven to be unwarranted, the symbols-to-syntax inference is left ungrounded, and is thus not worth investigating at the context of this thesis. For this reason, it is imperative that the semiotic nature of early body ornaments be illuminated first.

1.4 Prime movers of ornamentation

Having discussed the theories advanced to explain the significative nature of early body ornamentation, I now turn to an overview of the three theories that have been put forth in order to explain its emergence. To this end, I start by presenting a sociodemographic approach that has been defended by archaeologists Steven Kuhn and Mary Stiner (Kuhn 2014; Kuhn and Stiner 2007a; b; Stiner 2014) (section 1.4.1). I then consider the neural implications of the cognitive approach advanced by Henshilwood and Dubreuil (2009; 2011) (section 1.4.2). Finally, I outline an approach based on material engagement and social perception, which has been defended by the cognitive archaeologists Lambros Malafouris (2008b) and Duilio Garofoli (2015) (section 1.4.3).

1.4.1 Sociodemography

Most prehistorians would accept that early body ornamentation is a visual communication technology that was naturally selected for the purpose of addressing social problems, such as the coordination of action and the resolution of conflicts, which arose in the increasingly large and internally differentiated societies of the Late Pleistocene (Kuhn 2014; Kuhn and Stiner 2007a; b; Stiner 2014). Seen from the biological perspective of signalling theory, adornment is a cultural adaptation involved in the transmission of social information to strangers occupying the ‘middle distance’ in the continuum of social relations – that is, those who had a similar cultural background and were able to appropriately interpret the encoded messages, but were not close enough to the wearer to have already been familiar with the presented message (Kuhn and Stiner 2007b, p.43).

In tracing the evolution of ochred and beaded ornamentation, Kuhn (2014) made a distinction between costly signals and cheap-but-honest signals. In evolutionary biology, the costliness of a signal depends on the toll it has on an organism’s fitness. According to Amotz Zahavi’s (1975) handicap principle, some signal traits are elaborated to such a

degree that they become costly for the animal's survival, and therefore serve as honest marks of its quality (e.g., strength, speed, genes). The idea behind this theoretical statement is that it would be adaptively counterintuitive for a low-quality organism to develop such an expensive signal, as its fitness would be severely hampered. As it cannot therefore reap the benefits that a false signal would confer, the high-quality organism is left as the sole reliable signaler. Nevertheless, cheap-but-honest signals can also evolve, but they do not function in the same circumstances as costly signals (Smith 1991; 1994). While costly signals are likely to arise in situations where the sender's and the receiver's interests are not aligned, cheap-but-honest signals emerge when both parties' interests are in agreement.

Given that costly signaling theory has been employed in the study of human sociality (Bliege Bird and Smith 2005; Hawkes and Bliege Bird 2002), Kuhn (2014) set out to evaluate the ornamental record in terms of costliness. Pigments, which made their appearance around 250 kya, were relatively low-cost, because, while colorful metallic oxides may have been hard to find, they were not extremely rare. Moreover, pigments applied on bodies were not particularly useful in conveying cost, for, according to Kuhn (2014, p.43), a human body is constrained in terms of its capacity to absorb and display added colour. On the other hand, the beads appearing around 90 kya were better at conveying both of these factors (Kuhn and Stiner 2007a). Yet according to Kuhn (2014, p.45), beads from the late Middle Stone Age and early Upper Palaeolithic were simply made from local materials, such as shells, and have not been found in large concentrations or purposive caches such as burials. This led him to conclude that they were not particularly valuable from a social point of view. However, the beads appearing after 30 kya are more elaborate, as evidenced by the Aurignacian "basket-shaped" beads that were made of ivory and stone (White 1993b; 1995). In addition, Aurignacian beads

have been found in large and varied concentrations, such as that found within a ring of stones at Klissoura Cave, Greece (Stiner 2010). In fact, according to White (1995), the thousands of ivory beads unearthed from the burials at Sungir, Russia, translate to thousands of hours of labor. On these grounds, Kuhn (2014) observed an evolutionary trend of increasing costliness being signaled through ornamentation. He argued that the earliest ornaments (i.e., pigments) assisted in the coordination of tasks carried out through cooperation within small groups, the members of which tend to have common interests. The early MSA beads followed when making social messages more permanent became advantageous. Their durability and transferability allowed the message to escape the single encounter into the broader social networks that came with an increasing population. Finally, the latter-appearing Upper Palaeolithic beads are speculated to have addressed issues arising from the congruent interests of members or sub-groups of even-larger populations. In these contexts, their costliness would have functioned as honest signals that helped resolve disputes with minimum confrontation. In brief, Kuhn (2014) suggests that the three shifts were instigated by the need to address issues arising from the increase in the scale and complexity of social interactions that came with larger and more densely connected human populations.

1.4.2 Neurocognition

The proponents of neurocognitive explanations are much in line with the sociodemographic argument, for they too treat symbolic and aesthetic material culture, such as body ornamentation, as a selective response that enabled humans to communicate information or amplify their emotional relationships (Gowlett et al. 2012; Henshilwood and Dubreuil 2009; 2011; Wynn and Coolidge 2007). However unlike the proponents of the sociodemographic paradigm, they place greater emphasis on identifying the neurocognitive prerequisites of modern human behaviour. For them, ornaments need not

have stood for anything at all, because they argue that the capacity to put oneself in perspective involves the same cognitive abilities as those required in transforming an object into a symbol. Delving in the domains of paleoneurology, comparative neuropsychology, and developmental neuropsychology, the proponents of the neurocognitive approach suggest that higher theory of mind and level-2 perspective-taking would have been required regardless of whether the ornaments were imbued with meaning or were simply products of peoples' concern for their appearance, because they purport that both aesthetic and symbolic functions implicate the same neural substrates.

Having attributed the capacity for ornamentation to the human brain, they thus focused on outlining the modern cognitive capacities bestowed upon humans through the evolution of three cortical regions: the temporal, the parietal, and the prefrontal cortex. The temporal area is activated in tasks such as semantics and concept formation, visual and phonological working memory⁷ and theory of mind (Henshilwood and Dubreuil 2011). However, theory of mind and level-2 perspective-taking also depend on the parietal and prefrontal areas, which support a variety of other pertinent cognitive capacities. For instance, the parietal cortex is implicated in: attention, eye movement, motion processing, stereo vision, spatial and non-spatial working memory, mental imagery and mental rotation, response inhibition and alertness (Wynn et al. 2009, p.75); while the prefrontal cortex is involved in: problem solving, planning, concept formation, strategy development and implementation, inhibitory control⁸ and working memory (Ardila 2008). Regarding the latter pair of executive functions, it is interesting to note that inhibitory control, which has been implicated in both, theory of mind (Wynn and Coolidge 2007) and level-2 perspective-taking (Henshilwood and Dubreuil 2009), can be

⁷ This is the capacity to temporarily hold in attention information so that it is kept available for further processing.

⁸ This is the capacity to suppress unwanted thoughts in order to focus on the mental processes of attention and memory (Marton et al. 2007).

neurally pinpointed to both the parietal and the prefrontal cortex; while working memory, which has also been deemed essential for these capacities (Henshilwood and Dubreuil 2009; Wynn and Coolidge 2007), can be located in all three cortical areas (i.e., the temporal, parietal, and prefrontal cortex).

According to Henshilwood and Dubreuil (2011), the temporal area enlarged recently, whereas the parietal and prefrontal areas appear to have expanded and functionally reorganised prior to our species' appearance. Nevertheless, the authors find it safe to conclude that theory of mind, perspective taking, and attentional flexibility were underpinned by the expansion and functional reorganisation of cortical areas that took place within our lineage. This is why the neurocognitive hypothesis they put forth 'implies that both the capacity to engage in symbolically mediated culture and concern for the appearance of things evolved as a consequence of one and the same cognitive and neural change' (ibid., p.380).

1.4.3 Material Engagement Theory

Unlike the proponents of the previous approaches, a small number of scholars do not treat ornamentation as a selective response to sociality that was aided by a pre-existing cognitive capacity. As Malafouris (2011b) pointed out in his comment to Henshilwood and Dubreuil's (2011) paper, prioritising brain reorganisation over behavioural or material changes is problematic, because the flow of cause and effect between brain and material culture is in fact bidirectional. In recognising the "active" role of material culture, Malafouris (2008b) advanced the Material Engagement Theory (MET), which posits that ornamental artefacts would have actually effected an extended reorganisation of the human cognitive system. Specifically, he argued that they provided the scaffolding required for the transition from a *noetic* to an *autonoetic* sense of the self. Originally coined by Tulving (1983; 2002), Malafouris uses these terms in a slightly different sense.

As he explained, the former term refers ‘to the basic sense of oneself as acting in and on the environment at a time according to one’s first person perspective (1PP)’, and the latter term refers ‘to sense of oneself as a unique individual persisting over time able not only to interact with objects and others according to one’s first person perspective (1PP) but also to reflect on one’s perspective’ (Malafouris 2008b, p.407). In his view, ornaments functioned as social and cognitive prostheses that enabled people to view their phenomenological self-as-subject as a social self-as-object. Yet as Malafouris (2008b, p.408) noted, not only did they become a ‘second’ or ‘social’ skin for the wearer, but they also extended his/her ‘peripersonal space’. By cross-cutting the conventional ‘body image’/‘body schema’ distinctions, ornaments underpinned some of the first instances of what Malafouris (2008c) has termed an *extended self*. Otherwise put, they enabled the abstraction of the wearers’ selves and their enchainment into the social environment. However, he suggested that this enchainment need not have relied on symbolic means. Since early humans might not have possessed the capacity for reflexive self-awareness and self-other distinction, Malafouris (2008b) proposed that we focus primarily on engagement. For as he put it: ‘Material engagement comes before symbol and is the key to understanding the diverse ways in which agency can emanate from things’ (ibid., p.408).

In exploring how material engagement could have enabled early body ornaments to be viewed as meaningful objects without evoking symbolism, Garofoli (2015) put forth a hypothetical narrative based on situated cognition. As he suggested, some natural materials would be gathered for their aesthetically-pleasing qualities. Upon sharing the findings with others, one would receive positive reinforcement. After noticing the relation that a finding has with the favourable effects it induces, she would then attempt to attach it upon herself with hafting materials in order to prolong reaping its social benefits – thus

initiating the practice of bodily adornment. Others would then come to experience and understand the extended version of the wearer, which Garofoli treats as iconic. They would have then attempted to recreate such positive icons, forming over time social norms, which would have been passed on to subsequent generations, maintaining hence the practice. Upon encountering such a wearer, the ornaments would then be interpreted as a testament of their ability to find such rare and desirable items. In other words, they would have functioned as indices.

In none of the above steps would one have to possess the capacity to cognise about the mental states of others, or create a theoretical framework that defines an abstract social concept and ascribe it to the artefact. Early humans could have just observed actions and their effects, and act accordingly. On the other hand, understanding ornaments, such as those typical of punk subculture, requires resorting to an abstract social theory, which in turn allows one to mentalise the beliefs of their wearer. Garofoli thus postulated that symbolic ornaments require high-level theory of mind in order to be comprehended as such. Yet as he argued, early ornaments need not have been symbolic. Their iconic and indexical meanings could have in fact been situated directly in the perception of actions and reactions instigated by the ornaments. Therefore, instead of relying on an advanced level of social cognition, early users could have relied on social perception, which is much less costly in terms of cognitive requirements. On this basis, Garofoli concluded that the early pigments and shell beads reported in the archaeological literature cannot be considered as evidence of abstract social standards (which he tied to symbolism) and high-level theory of mind (which he linked to cognitive modernity).

1.4.4 Conclusions about the emergence of early body ornamentation

The above overview of the methodologies, advanced to explain the origins of early body ornamentation, reveals a fundamental epistemic difference between them: while the

sociodemographic and the neurocognitive doctrines subscribe to the dominant neo-Darwinian perspective on evolution, the proponents of material-engagement approach defend a developmentally-informed take on the generation of biocultural phenotypes. Mainly seen from the perspective of evolutionary biology, ornaments are generally conceived as cultural adaptations invented to address social issues stemming from the changing sociodemographic conditions. For these cultural adaptations to have emerged, it is held that they must have been computationally supported by neurocognitive adaptations, such as theory of mind and level-2 perspective-taking. In this regard, ornamentation is seen as the epiphenomenal product of both biological and cultural evolution. Although these processes are conceived as interacting, they are essentially taken to deterministically unfold upon their own distinct linear trajectories. Contrastingly, Malafouris (2008b) and Garofoli (2015) seem to conceive the interaction between biological and cultural phenotypes at a more dynamic level, for they attribute the creation of ornamental practices and meanings to a complex developmental process that entails bidirectional coalitions between brains, bodies, and things.

This radical difference in the way these two schools of thought treat evolution has its roots in a rudimentary theoretical issue – namely, the nature of the human mind and its relation to material culture. The supporters of the neo-Darwinian dictum tend to conceptualise cognition as a brainbound process consisting of mental representations, which are then projected into the material world by means of agentive behaviour. In this regard, ornaments were allegedly imbued with representational meaning through the externalisation process that archaeologists generally take to characterise symbolism. Contrastingly, the proponents of the MET conceive the mind as the emergent and relational product of an inextricable enfoldment between mind and matter. In their view, the meanings of ornaments were not predefined, but emerged through long-term material

engagement with the objects themselves. Faced with these dissenting views, it becomes clear that the actual nature of cognition and its relation to material culture need be illuminated if we are to understand the evolutionary origins of prehistoric material signification.

1.5 Structure of the thesis

In this chapter, it became evident that the behavioural and cognitive implications of early body ornamentation have placed it at the forefront of the debate on modern human origins. While behaviour and cognitive modernity had been generally associated with the European Upper Palaeolithic, the discovery of shell beads in Middle Palaeolithic and Middle Stone Age layers has come to push back the appearance of the modern human mind. Of the various ornamental shell beads discovered in the Near East, north and South Africa, the Blombos beads have received most of the spotlight. For the majority of archaeologists, their evidently ornamental use presents undisputed evidence for the appearance of symbolism and, by extension, language. Yet as has been demonstrated by Botha (2008; 2009; 2010), these claims have yet to be supported by a solid inferential framework. It thus becomes clear that before postulating that the Blombos inhabitants had been using syntactical language, one must confidently demonstrate that the shell beads had been symbolic. While the reporting archaeologists consider all ornaments as inherently symbolic, some scholars have raised concerns regarding this conventional assumption, for the earliest ornaments might have functioned as indices. Another closely-related issue of dispute pertains to the origins of ornaments. For the majority of scholars, ornamental symbols are the external manifestations of internal representations preconceived by a modern neurocognitive apparatus, in order to address the social problems caused by increasing sociodemographic complexity. On the other hand, the

material-engagement approach posits that the significative meanings associated with early body ornaments were brought forth by way of social perception. In this regard, the signified concepts did not pre-exist to material signs – instead, the two co-emerged through the constitutive entwinement of mind and matter.

Evidently then, we are faced with two important issues that need be methodically addressed, if we are to illuminate the evolution of material signification and its implications for the human condition. The first issue concerns the theoretical approach employed in studying the nature of material signs. Is the linguistic idiom adequate or should we opt for a more informative semiotic approach? The second main issue pertains to the theoretical notions adopted in explaining the emergence of material signification. Are material signs the epiphenomenal products of a representational mechanism, or are they the emergent and relational products of complex developmental processes?

In order to shed light on these questions, I structure the main body of this thesis into two parts – each of which entails searching, outlining, and applying an appropriate theoretical framework to material signs. In the first of these parts, I focus on the nature of material signification. Specifically, I start by considering the notion of symbolism as viewed by prehistoric and theoretical archaeologists, in order to identify the optimal theory for describing past material signs (chapter 2). I then present a detailed account of the preferred semiotic framework (chapter 3), before applying it to ornamental shell beads, in order to illuminate their significative nature and thus re-evaluate the Blombos inference (chapter 4). Having described the nature of material signification, I then turn my attention to the issue of its emergence. I thus start the second part of this thesis by evaluating the evolutionary epistemologies that have already been advanced in the archaeological literature in order to explain the evolution of the human mind, and identify the optimal theory for studying the evolution of past material signs (chapter 5). I then

integrate it with the optimal semiotic theory for the purpose of developing a theory of cognitive semiotics that is suitably geared to trace the evolution of prehistorical material signification (chapter 6). By subsequently applying this composite theoretical framework to early body ornamentation, I attempt to trace the emergence of ornamental signification (chapter 7). Finally, I evaluate its implications for the notion of “modernity”, and propose that a semiotically-informed theoretical shift need be made in the debate on human origins if we are to properly appreciate the evolution of prehistoric material signs (chapter 8).

Part 1

The nature of material signification

Chapter 2

Search for the optimal semiotic theory

Chapter outline

It became evident in the previous chapter that there is disagreement regarding whether ornamental shell beads should be treated in linguistic or semiotic terms. In this chapter, I examine the forms these perspectives have taken in the broader debate on modern human origins and in theoretical archaeology, in order to identify the optimal theory for studying the nature of past material signification. To this end, I thus start by outlining the allegedly symbolic types of material culture discussed in the literature on modern human origins, for the purpose of gleaning the implicit theoretical perspectives through which they have been approached (section 2.1). Subsequently, I broaden my scope and explore how the linguistic and pragmatic notions have been manifested in theoretical archaeology (section 2.2). Based on this overview of evolutionary and theoretical archaeology, I finally identify the preferred approach for studying the nature of material signification (section 2.3).

2.1 The nature of material signification in evolutionary archaeology

According to most archaeologists, it is not just early body ornaments, but all significant artefacts that carry a predefined coded message. In their view, arbitrary meanings had been purposively imbued into material culture for the purpose of exchanging internally generated symbolic representations. According to Terry Hopkinson (2013), this preoccupation with symbolism has its roots in the neo-evolutionary ideas of the cultural anthropologist Leslie White (1949; 1959), who suggested that symbolism is what makes us human since it supports the emergence of culture. As he had put it: '*Culture...is a class*

of things and events, dependent upon symboling, considered in an extrasomatic context' (White 1959, p.234, emphasis in original). Decades later, evolutionary archaeologists striving to discover what sets us apart from ancestral hominins, embraced his views by conceiving symbolism as a mental phenomenon that takes place outside the human brain. According to the archaeological consensus over the past three decades, symbols are external storage media for codified information that were displayed and hence communicated to others (Bednarik 2008b; Chase 1991; 1994; 2006; Chase and Dibble 1987; 1992; Chazan and Horwitz 2009; Conard 2008; Conkey 1978; d'Errico 1998; 2003; d'Errico et al. 2003; d'Errico et al. 2005; d'Errico and Henshilwood 2011; d'Errico and Stringer 2011; Deacon 1997; Donald 1991; Duff et al. 1992; Gamble 1982; Habgood and Franklin 2008; Henshilwood and Dubreuil 2009; 2011; Henshilwood and Marean 2003; Henshilwood and Sealy 1997; Hodgson 2014; Kuhn and Stiner 2007b; Lindly and Clark 1990; Marshack 1981; 1989; McBrearty 2007; McBrearty and Brooks 2000; Mellars 1991; Mithen 1988a; b; 1998b; Noble and Davidson 1991; 1993; 1996; Nowell 2010; Renfrew 1998b; Schepartz 1993; Wadley 2001; Wobst 1977; Zilhão 2007; 2011). As characteristically stated by d'Errico and his colleagues (2003, p.31) in their extensive overview of the archaeological evidence on symbolism: 'A fundamental turning point in the evolution of human cognitive abilities and cultural transmission was when humans were first able to store concepts with the aid of material symbols and to anchor or even locate memory outside the individual brain.'

Given that their symbolic meaning is purported to have been created and shared through language, material symbols are entirely the product of shared conventions, and

are therefore arbitrary.⁹ This notion is evident in Henshilwood and d’Errico’s (2011, p.76, emphasis in original) definition of a symbolically mediated culture as ‘*one in which individuals understand that artefacts are imbued with meaning and that these meanings are construed and depend on collectively shared beliefs.*’ As they argue, ‘[t]his criterion is crucial’ because ‘[i]t explains how human norms and conventions differ from the ritualized behaviours found in nonhuman primates.’ This then raises a fair question: how is arbitrariness and shared conventionality gleaned from the prehistoric archaeological record? In addressing this issue about the nature of symbolism, I start this first part of the chapter on evolutionary archaeology by focusing on arbitrariness (section 2.1.1), before turning to shared conventionality (section 2.1.2). Through an overview of the literature on modern human origins I intend to ultimately identify the implicit theoretical methodologies that have been thus far adopted when studying symbolic artefacts (section 2.1.3).

2.1.1 Arbitrariness

As is demonstrated in this section, the symbolic quality of arbitrariness (i.e., the imbuelement of an object with predefined meaning) is generally deciphered from the *non-utilitarian* function of material culture. This term has been used in contradistinction to the term *utilitarian*, for while the former refers to practices and artefacts that possess a ‘communicative’ (and thus symbolic) function, akin to that of language, the latter concerns non-communicative artefacts that pertain to subsistence and settlement, and therefore have a readily apparent “practical” function (e.g., Bednarik 1992; 1995; Chazan

⁹ An important distinction made by Chase (1991, p.196) need be recognised here in that the arbitrariness in the “arbitrary relationship between a symbol and its referent” is quite different from that involved in the “imposition of arbitrary form” – the former pertains to the coded information an artefact holds and transmits during its use, whereas the latter refers to the conventionalised patterning of an artefact during its production. While both conceptualisations have been implicated in the detection of symbolism, it is the communicative functionality of the relation between a symbol and its referent that makes the former conception of arbitrariness so important to evolutionary archaeologists (e.g., Chase and Dibble 1987; d’Errico et al. 2005; Henshilwood and Marean 2003).

and Horwitz 2009; d'Errico et al. 2003; d'Errico and Nowell 2000; Henshilwood and d'Errico 2011; Marshack 1989; 1990; Mellars 1989). Unlike practical artefacts, symbolic objects enable humans to break the stranglehold of the material world. As has been fittingly put by the evolutionary archaeologist Philip Chase (1994, p.628, emphasis in original): 'Symbolic culture...requires the invention of a whole new *kind* of things, things that have no existence in the "real" world but exist entirely in the symbolic realm. Examples are concepts such as good and evil, mythical inventions such as gods and underworlds, and social constructs such as promises and football games.' It follows from these examples that a practice or an artefact must be taken to reveal the existence of past ideational worlds in order to be considered symbolic. With this criterion in mind, archaeologists focus their attention on artefacts and practices that are clearly detached from the basic needs of hominins. Such non-utilitarian evidence typically includes ritualistic burials, figurative representations, abstract representations, and ornaments. However, given that the last two types of artefactual evidence cannot be confidently interpreted as symbolic when idiosyncratically manifested, they are separately discussed in the subsequent section on shared conventionality. I thus focus here only on the first two types of artefactual evidence: ritualism (section 2.1.1.1) and figurative representations (section 2.1.1.2).

2.1.1.1 Ritualism

Most firmly inferred from burials, ritualism has been associated with symbolism on the basis of its communicative and ideational nature (Barton and d'Errico 2012; Belfer-Cohen and Hovers 1992; Chase and Dibble 1987; d'Errico 2003; 2007; d'Errico and Stringer 2011; Gargett 1999; Kozłowski and Sacchi 2007; Lindly and Clark 1990; Marshack 1989; McBrearty and Brooks 2000; Mellars 1989; 1991; Zilhão 2000; 2007). Burials are deemed to have been symbolic when they demonstrate ritualistic evidence

such as grave goods that ‘must exhibit some special characters beyond those seen in other contexts in the site’ (Chase and Dibble 1987, p.274). For instance, the mandible of a large boar found enclosed in the arms of the anatomically modern male unearthed at Skhul, Israel, is currently considered the earliest symbolic burial at 100–130 kya (d’Errico and Stringer 2011; Grun et al. 2005). Having said this, according to d’Errico (2007, p.214), grave goods need not be found in order to identify an internment as symbolic, for ‘[i]n many present-day societies individual burials without funeral offerings are carried out but cannot be said to have less symbolic meaning.’ This makes detecting the presence of ritualism from burials particularly challenging.

Conveniently though, ritualism can also be inferred from other kinds of non-utilitarian practices. One example is the allegedly purposeful arrangement of bear bones in Upper Palaeolithic caves, such as Drachenloch, Switzerland (Bächler 1923) and Regourdou, France (Bonifay and Vandermeersch 1962), considered to have been deposited by the Neandertal “Cult of the Cave Bear”. However, the poor documentation of these discoveries and the involvement of non-anthropogenic factors (i.e., hibernating habits of the bears, carnivore activity, underground streams and a cave-in) seem to suggest a natural, rather than ritualistic, deposition of the bones (Chase and Dibble 1987; Jéquier 1975; Leroi-Gourhan 1964). Another example of ritualistic evidence worth noting consists of the allegedly cannibalistic practices performed at sites such as Krapina, Croatia, and Monte Circeo, Italy (Blanc 1961; Gorjanović-Kramberger 1906; Roper 1969). Again however, issues such as doubtful provenience, poor recovery techniques, and possible misinterpretation of natural phenomena, have cast doubts regarding the ritualistic nature of these practices (Chase and Dibble 1987). These unconvincing examples of ritualism reveal the considerable degree of ambiguity involved in extracting the presence of symbolic narratives from the archaeological record.

2.1.1.2 Figurative representations

Figurative representations such as figurative drawings and carved figurines are also taken to have communicated a cultural message, and have thus been largely treated as symbols (Barton and d'Errico 2012; Chase 1991; 1994; Chase and Dibble 1987; 1992; Conard 2003; 2009; d'Errico 2003; d'Errico and Nowell 2000; Davidson and Noble 1989; Duff et al. 1992; Klein 2009; Marshack 1976; 1997; McBrearty and Brooks 2000; Mellars 1989; Mithen 1996; Noble and Davidson 1991; 1993; Soffer et al. 2000).

Some figurative drawings could have been portable, as may have been the case with the c. 28 kya black drawing of a feline animal on two fitting slabs from Apollo 11 Cave, Namibia (Wendt 1976). More often than not though, drawings are manifested as parietal art. A wide variety of figurative representations has been located on cave walls, with depictions representing humans, animals, as well as human-animal hybrids. Notable examples of such “therianthropes” include: the lion-headed hybrid from Salzofenhöhle, the bird-headed human from Lascaux, and the deer-human sorcerer from Les Trois Frères (Breuil 1952; Ucko and Rosenfeld 1967). As Chase and Dibble (1987, p.282) have put it: ‘[T]here are many reasons for believing that [art] had a symbolic and ritual aspect: the hidden and even hard-to-reach location of much cave art, the nonrandom distribution of different signs or different species of animal, the superposition of figures, and representations of beings that do not exist’. For these reasons, the visual record of the European Upper Palaeolithic is unambiguously considered to have been symbolic.

Another type of figurative art associated with symbolism involves carved figurines. Earlier examples include the c. 400 kya Tan-Tan proto-figurine from Morocco (Bednarik 2003) and the c. 233kya Berekhat Ram proto-figurine from Israel (d'Errico et al. 2003; d'Errico and Nowell 2000; Goren-Inbar 1986; Marshack 1997); while later findings include the c. 35 kya Venus figurine unearthed at the Hohle Fels Cave, Germany

(Conard 2003; 2009), and the c. 32 kya Hohlenstein-Stadel lion-headed figurine from Germany (Hahn 1986). In fact, their number from the Gravettian alone is well over two hundred, according to Olga Soffer and her colleagues (2000, pp.514–515), who believe that ‘each type of figurine had its own symbolic meaning, conveyed by the pose and accentuation of the female body parts.’

Finally, it is worth noting that, while figurative representations are usually seen as inherently symbolic, some scholars have employed Peirce’s icon-index-symbol triptych in order to better appreciate their semiotic nature (Chase 1991; Chase and Dibble 1992; d’Errico and Nowell 2000; Rossano 2010). According to Chase and Dibble (1992), figurative artefacts, such as the deer-human hybrid ‘sorcerer’ from Les Trois Frères, were symbolic due to exhibiting a communicative nature beyond the iconic representation itself. As had been put by Chase (1991, p.200) a year earlier, such discoveries ‘imply symboling because, although the representations themselves are icons, their referents seem to be symbols.’ A similar opinion was expressed by d’Errico and Nowell (2000) about the Berekhat Ram figurine, whose grooves they deemed to have been of anthropogenic origin. Although they did not refute its iconic function, they were keener to the possibility that it had functioned as a symbol by holding some kind of additional meaning. Rossano (2010, p.S91) on the other hand, postulated that the Berekhat Ram figurine, as well as the Tan-Tan figurine, were likely iconic. In his view, symbolism arrived much later with items that possess elements that can be wholly understood only from within the cultural context of their creation, as in the case of the sorcerer image of Les Trois Frères and the other therianthrope images of European cave art. Regardless though of whether the earlier figurines were simply iconic or also symbolic, it is safe to suggest that figurative representations are generally identified as symbolic through both the linguistic and Peircean canon, on the count that they communicated arbitrary

messages that were not directly perceptible, and were therefore properly understood only within the context of broader symbolic systems.

2.1.2 Shared conventionality

Having identified the arbitrariness of symbolic meaning as inherently communicative, it seems intuitive that this meaning must be collectively understood in order to fulfil its purpose. In the case of figurative representations, the conventional understanding of their meaning is considered inherent in the process of representation itself. As Chase and Dibble (1992, p.40) characteristically argued: ‘The image [of the deer-human ‘sorcerer’] contains within itself evidence for the making or use of symbols, and the fact that it is unique in no way detracts from this.’ However, in order to detect the shared conventionality behind some kinds of non-utilitarian artefacts, such as abstract representations and ornaments, prehistoric archaeologists have focused on their standardisation, because their function is not as clearly communicative as that of figurative representations and ritualism (e.g., Bouzouggar et al. 2007; d’Errico et al. 2005; Henshilwood and d’Errico 2011; Henshilwood and Dubreuil 2011; Holloway 1981; Kuhn and Stiner 2007b; Vanhaeren et al. 2013; White 1989a; b). For most scholars, the repetition of artefact form in multiple locales attests to the collectively shared meanings transmitted by non-utilitarian (but not clearly representational) artefacts. In order to demonstrate how the ‘consistent behaviour’ argument (Henshilwood and d’Errico 2011, p.91) has been applied to the archaeological record, I shall now consider two types of non-utilitarian artefacts associated with repetition of form: body ornamentation (section 2.1.2.1) and abstract representations (section 2.1.2.2) – before considering the symbolic repetition of form in utilitarian artefacts, such as tools (section 2.1.2.3).

2.1.2.1 Pigment-based body ornamentation

Besides ornamental shell beads, which were thoroughly discussed in the previous chapter, ochre pigments have also been traditionally considered symbolic on the count of their communicative function (Barham 1998; 2002; d'Errico 2003; d'Errico et al. 2003; Henshilwood and Marean 2003; Hovers et al. 2003; Knight et al. 1995; Marean et al. 2007; Marshack 1981; 1989; McBrearty and Brooks 2000; Mellars 1989; Watts 2002; 2009). As has been proposed by ochre expert Ian Watts (2002, p.10), 'the vast majority of [ochre] materials was collected for visually salient properties of redness and brilliance and used accordingly as pigments, in the first instance in 'skin-changing' collective ritual performances.' The earliest ostensible evidence to date, may perhaps place the use of ochre as early 280 kya (McBrearty and Brooks 2000), while a more conservative estimate would suggest its regular use later in the MSA at ~170–150 kya (Marean et al. 2007; Watts 2009). On the other hand, the practice may have appeared in Europe as early as ~500–300 kya, and more certainly by ~250 kya (Watts 2009, p.74). However, as we shall see in a subsequent chapter, concerns have been raised regarding the ornamental use of powdered ochre, with some scholars advocating in favour of utilitarian uses. To this extent, the spatiotemporal origins of pigment-based practices remain more ambiguous than bead-dependent ornamentation, which is why ornament-based symbolism is typically associated with the later appearing shell beads.

2.1.2.2 Abstract representations

Ambiguity regarding the communicative use of abstract engraved motifs forced archaeologists to look for symbolism beyond their non-utilitarian nature and towards their standardisation (Barton and d'Errico 2012; Chase 1991; Chase and Dibble 1992; Davidson and Noble 1989; Henshilwood and d'Errico 2011; Henshilwood et al. 2009). In a recent paper, Henshilwood and d'Errico (2011) set out to identify evidence of

symbolically-purposed ‘consistent behaviour’ in the production of Middle Stone Age engravings. Some of the notable artefacts comprising the rich South African record include: the pieces of ochre unearthed at Klein Kliphuis (Mackay and Welz 2008), at Klasies River Cave 1 (d’Errico et al. 2012b), and at Blombos Cave (d’Errico 2003; Henshilwood and d’Errico 2011; 2009; Henshilwood et al. 2002), the bone fragments from the same site (d’Errico and Henshilwood 2007; d’Errico et al. 2001; Henshilwood and Sealy 1997), and the ostrich eggshells from the Diepkloof Rock Shelter (Henshilwood and d’Errico 2011; Texier et al. 2010; 2013). Based on an overview of these abstract engravings, Henshilwood and d’Errico (2011, p.89) outlined the following telling characteristics of consistent behaviour: ‘(ii) consistencies in the media on which the engravings are made;...(vii) the consistent organisation of the sequence of motions articulating the marking action;...(viii) the regularity of the resultant pattern;...(ix) the presence of engravings on a number of objects rather than on a single one; (x) the repetition of the same motif on more than one object, (xiii), temporal continuity in the production of engravings on the same media;...(xv), production of similar engravings on the same media at a number of sites; and (xvi), similarity in the media used for engraving by prehistoric, extant and/or historically known groups.’ For evolutionary archaeologists, this extensive form of standardisation in the production of engravings was an essential requirement for establishing the shared conventions that allowed MSA humans to appropriately interpret symbolic messages, whatever those may have been.

2.1.2.3 Stylised tools

Having established that the standardisation of non-utilitarian artefacts is generally taken to reveal the shared conventionality required for the communicative function of symbolism, it is worth recognising at this point that a particular kind of utilitarian objects has also been seen through such a perspective. While tools are normally utilitarian

artefacts, some scholars have taken their imbue with stylised material patterning to have had symbolic connotations. For instance, a stylistic characteristic of Aterian, Still Bay, and Solutrean stone tools often linked to symbolism is their thinness, which is considered counter-productive should they have held a purely utilitarian role (Chase 1991). Along similar lines, the bone projectiles unearthed at Blombos Cave have also been associated with symbolism, albeit on the basis of their final polishing, which is believed to have conferred them with an “added value” (Henshilwood et al. 2001a).

Unpersuaded by such a reference-based outlook on style, the archaeologist Martin Byers (1992; 1994; 1999a; b) introduced his own action-constitutive approach. In his view, style is the symbolic medium that allows users to instill upon artefacts a form of derived Intentionality,¹⁰ which in turn confers them with pragmatic power. For instance, consider how the “style” of a passport can afford its bearers with distinct powers, allowing them to fulfill their intent to enter a country. Style imbues a passport with the expressive meaning that constitutes it; making it what Byers (1994; 1999b) has termed the “iconic warrant” required to cross a border. Functioning as such, meaning is not referential, but a constitutive part of the passport. In fact, Byers (1999b, p.275, emphasis in original) maintained that ‘material styles have primarily or possibly *only* expressive moments.’ Yet, given that they function within cultural milieux and are dictated by cultural standards, he posited that styles (and all other forms of rule-governed behaviour) are symbolic. For Byers, symbolism is not based on the arbitrariness of reference, but on the arbitrariness of the systemic beliefs, rules, and values that imbue all things and actions with symbolic cultural meaning.

In order to avoid the conflation between these two conceptualisations of symbolism, Chase (1994, p.627) employed term “referential symbolism” to denote the

¹⁰ Byers capitalised “Intentionality” in order to denote the mental property of an artefact user.

referential use of conventional signs, and termed the phenomenon described by Byers as “symbolic culture”. As he pointed out, the former kind of symbolism cannot be deduced from the stylised tools, because it is impossible to access past minds in order to decipher whether the links between signs and their referents are symbolic (Chase 1991). For Chase (2003), symbolism can only be reflected in tools when their patterns and meanings have been dictated by a complex cultural system. However, this can also be impossible for archaeologists to confidently establish, because the material patterning of stone tools may have been the result of a mimetic tradition, rather than cultural symbolism. Given the evident difficulties in discerning symbolic culture from tools, Chase (2003, p.34) concluded that ‘the archaeological correlates of style alone are probably not a very useful tool.’

It is thus not surprising that most efforts to detect the origins of symbolism have been focused on newly-discovered non-utilitarian artefacts, such as shell beads and engraved pieces of ochre. In tools, style seems to be best associated with non-symbolic forms of meaning. For instance, tools might have had a visual appeal for hominins’ senses. As speculated by Clark (1975, p.190): ‘The symmetry and refinement of some of the earlier Acheulian handaxes, which surely go beyond the basic utilitarian need, may reflect the first appearance of an aesthetic appreciation of form.’ In fact, besides iconicity, tools have also been linked to indexicality in that they could have functioned as indicators of cultural groups (Chase 1991, 2003, Rossano 2010). It thus seems safe to say that non-symbolic forms of meaning may be easier to identify from the standardisation of stylised tools, than symbolic kinds of meaning (i.e., referential and cultural).

2.1.3 Gleaning the semiotic tendencies in the debate on human origins

The above overview of symbolic material culture reveals that evolutionary archaeologists have approached the nature of past material signs from three distinct perspectives: the

linguistic idiom, Peirce's semiotic theory, and Byers' symbolic pragmatics. In order to illuminate their main theoretical assumptions, I shall now consider where they stand on three basic issues: Do they consider significative meaning to be reified in the mental domain or emergent through the entwining of mind and matter? Do they reduce significative meaning to the arbitrariness between sign and referent or do they recognise non-arbitrary (i.e., iconic and indexical) modes of meaning as well? And finally, do they conceive significative meaning as simply referential or do they draw attention to its constitutive dimension?

Most archaeologists adopt what Malafouris (2013, p.95) has termed the *linguistic idiom*. Its proponents maintain that significative meaning is a mental snippet of information that is stored in the external world through its imbueing into non-utilitarian artefacts. As the product of the mind alone, this meaning is purely arbitrary and therefore entirely the product of human convention. These conventions dictate the referential function of the material symbol – therefore fulfilling its role as communication technology.

A small number of scholars drew upon Peirce's approach in order to account for types of significative meaning that are not arbitrary, as in the case of iconic and indexical signs (e.g., Chase 1991; Chase and Dibble 1992; d'Errico and Nowell 2000; Hodgson 2014; Hovers et al. 2003; Rossano 2010). However, they maintained a largely linguistic mode of thinking, for they still treated significative meaning as mental – even in the case of icons and indices. To them, their depictive and denotative meanings had been predefined in the makers' minds before being expressed in material culture. In a manner akin to symbols, they too are generally taken to have represented meanings – with the only difference being that, unlike symbols, iconic and indexical meanings would have

allegedly been readily perceptible by others, and would thus not have required prior cultural knowledge.

According to Byers (1994) though, neither the strictly symbolic nor the semiotic approach is correct. In his opinion, '[t]he meaning resides not in things as indexes, icons, or symbols but in the intentionality of the users' (ibid., p.377). While he too sees meaning as mental, he locates it in the intentions of the artefact users, rather than in the artefacts themselves. Moreover, unlike the Peircean approach, Byers (1999a; b) focused exclusively on symbolism – or to be more accurate, on what he called *symbolic pragmatics*, for he mandated that all rule-governed artefacts enabling social action be considered symbols. However, these are not the same kind of symbols as those conceived by the aforementioned doctrines, because in his view, advocates of the communicative approach to significative meaning commit 'the referential fallacy, i.e. meaning equals reference and the meaning of a reference equals the object referred to' (Byers 1999b, p.26). Aiming to bring attention to the active use of meaning, Byers (1991; 1992; 1994; 1999a; b) has theorised about symbolic meaning in action-constitutive terms.

Having described the three different perspectives on material signification that have been involved in the debate on modern human origins, I would like to place them in contradistinction to the theory of material semiotics advanced by the prehistorian (at the time) Paul Graves-Brown (1995). Unlike the aforementioned approaches, he did not consider meaning to have been entirely mental. In evading the reification fallacy, he argued that 'meaning is not simply something we 'read *into*' the world *out of* a representation in our heads. Rather, it is something that exists in the relationship between actors and their material context' (ibid., p.92, emphases in original). Moreover, he critiqued the notion of meaning as inherently arbitrary by drawing on Peirce's iconic and indexical signs. However, unlike the aforementioned scholars who drew upon Peirce's

triad, he aptly recognised that such forms of meaning need not be reduced to perception, because they too are understood through shared conventions. In his view, the distinction between symbolic and other types of meaning rests elsewhere. According to Graves-Brown (1995, p.94, emphasis in original), '[t]he essential distinction between true symbol systems and other artefacts is only that words, etc., stand as representatives of things, properties and actions, whereas other artefacts *stand for themselves*.' To illustrate his claim via means of one of his own examples, a piano keyboard is a conventional artefact, which is however not part of a system of keyboards; it is not systematically related to the "qwerty" keyboard, or to the ATM keypad. Its meaning is embedded in its use. Or, for a prehistoric example which illustrates that meaning is found in use: '[O]ne does not need to know anything about the palaeolithic to appreciate the paintings of Lascaux' (ibid., pp.95–96). It becomes clear from these cases that, similarly to Byers, Graves-Brown also emphasised the constitutive dimension of conventional artefacts.

In sum, each of the four approaches considered in this section is unique in its own way. In Table 2.1, I have attempted to arrange them depending on whether they are closer to the linguistic or the pragmatic end of the spectrum. Having gauged the contradictions between these perspectives, I devote the following section (section 2.2) to exploring how both, linguistic and pragmatic, takes on signification have been developed in theoretical archaeology during the last fifty years. As will become clear later on, Peirce's semiotic theory has actually been misused in the debate on modern human origins, for it is actually much closer to Grave-Brown's material semiotics than to the semiotic approaches of Chase and Dibble (1992), d'Errico and Nowell (2000), and Rossano (2010).

Table 2.1 The four approaches towards material signification in evolutionary archaeology.

	Linguistic ←————→ Pragmatic			
	Linguistic idiom (as applied in human origins)	Peirce's semiotic theory (as applied in human origins)	Byers' symbolic pragmatics	Grave- Brown's material semiotics
Location of meaning	Reified in the mind	Reified in the mind	Reified in the mind	Emergent from the interaction of mind and matter
Relation between sign and referent	Arbitrary and conventional	Arbitrary and conventional or non-arbitrary and unconventional	Not applicable (For Byers, all- rule guided artefact forms are arbitrary and conventional when within a symbolic cultural system)	Arbitrary and conventional or non-arbitrary and conventional
Function of a material sign	Referential	Referential	Action- constitutive	Referential and action- constitutive

2.2 The nature of material signification in theoretical archaeology

Having shed some light on the linguistic and pragmatic conceptualisations of material signification in evolutionary archaeology, I now broaden my scope by considering how such perspectives have been theorised in the general field of archaeology. Over the past fifty years, a wide variety of distinct approaches have been put forth. In the characteristic words of John Robb (1998, p.329): 'Archaeologists probably disagree about symbols more than anything else they dig up.' Granted the general dissonance on this theoretical issue, in this part of the chapter, I broadly distinguish a range of archaeological theories (appearing from the 1960s to the present) into those adopting a linguo-centric approach (section 2.2.1) and those opting for a pragmatic perspective (section 2.2.2). By outlining

approaches to material signification that are theoretically more acute than those advanced in evolutionary archaeology, I plan to illuminate the profound distinction between linguo-centric and semiotically-informed methodologies. Only then can I make an informed decision, in the final part of this chapter, about the optimal approach for studying the nature of past material signs.

2.2.1 Linguo-centric archaeology

In the early 1960s, Lewis Binford developed a tenet known as New Archaeology, in order to advance positivism. He was convinced that culture-historical archaeology had failed to provide the field with a valid testing methodology that was necessary, since statements need to be verifiable in order to stand true. Objectivism¹¹ was therefore pursued through empirical and quantifying scientific analyses, which led archaeologists to generalisations regarding ‘the laws of cultural process’ (Binford 1972, p.199). This processual school of thought was preoccupied with the functional variability of artefacts, rather than the possible thought processes and categories associated with them, and has thus been fittingly known as ‘functional-processual archaeology’. Functionalism was underpinned by an analogy between an organism and a society, as both were considered to be systems comprised by the synergistic coalescence of various functional parts. According to Binford (1972, p.107), functional-processualists ‘expect variability in and among components of a system to result from the action of homeostatic regulators within the cultural system serving to maintain equilibrium relationships between the system and its environment.’ In essence then, the cultural system was seen as ‘a homeostatic device’, or, more specifically, ‘a flexible adaptive mechanism which allows the survival of society despite fluctuations in the natural environment’ (Renfrew 1972, p.486). From the

¹¹ According to the objectivist position, reality exists independently of human consciousness, and can be known through perception and subsequent conceptualization. Objectivist archaeologists therefore contend that their relationships between past peoples and their worlds can be known through their material remains.

perspective of such a systems approach, symbols had functioned as representants implicated in information exchange, and therefore conferred an adaptive advantage to their users (Flannery 1972; Flannery and Marcus 1976; Wobst 1977). In fact, Binford (1962, pp.219–220, my emphasis), had introduced the term *ideo-technic*, in order to denote ‘the items which signify and *symbolize* the ideological rationalizations for the social system and further provide the symbolic milieu in which individuals are enculturated, a necessity if they are to take their place as functional participants in the social system.’

This sterile emphasis on functionalism has been critiqued on a number of points, which have been summarised by Ian Hodder (1982c, pp.3–6). For one, in overlooking the ideational worlds of past peoples, and reducing culture to a functional system solely responsible for the integration of social units in broader organic wholes, functional-processualists failed to appreciate that functional values depend on cultural contexts. Daily activities had not been simply dictated by their functional purpose, but also by sets of norms and ideas. By neglecting this interdependence, functional-processualists parted function from culture, and set out to identify the functions reflected by material culture. Hodder noted that, in doing so, they failed to account for the cultural diversity of the coherent cultural structures, in which artefacts and individuals had been embedded. As would be expected, the under-appreciation of particular historical contexts, led to the production of ill-informed cross-cultural generalisations.

In order to avoid the problematic effects of positivism by accounting for the rules and codes according to which the observed systems functioned, a tenet known as structuralism was developed in the latter half of the 1960s. As the semiotic archaeologists Robert Preucel and Alexander Bauer (2001) pointed out, this tradition has its origins in Saussurean linguistics. The *semiology* advanced by Saussure (2011 [1916]) is ‘[a] science

that studies the life of signs within society' (ibid., p.16). In his view, the sign need be conceived in linguistic terms as a two-sided psychological entity that connects an acoustic image/sound pattern with a concept – neither of which is a physical phenomenon. They are instead mental entities that have been termed *signifiant* (=signifier) and *signifié* (=signified) respectively. As can be seen in figure 2.1, these two elements of the sign are bidirectionally related and mutually constituted. Such a bifaceted sign operates on two principles: according to the first, '[t]he bond between the signifier and the signified is arbitrary' (ibid., p.67), and according to the second, '[t]he signifier, being auditory, is unfolded solely in time from which it gets the following characteristics: (a) it represents a span, and (b) the span is measurable in a single dimension; it is a line' (ibid., p.70). These principles guide the unidimensional unfolding of sequential interdependent arbitrary signs, which ultimately yield what we understand as intelligible language (Figure 2.2). Besides language though, this linguistic model can be purportedly applied to non-linguistic semiological systems as well, for as Saussure (2011 [1916], p.68) put it: 'Signs that are wholly arbitrary realize better than the others the ideal of the semiological process; that is why language, the most complex and universal of all systems of expression, is also the most characteristic; in this sense linguistics can become the master-pattern for all branches of semiology although language is only one particular semiological system.'

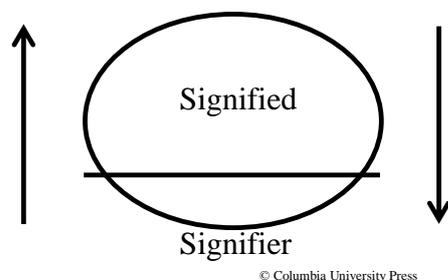


Figure 2.1 The Saussurean sign (after Saussure 2011, p.67).

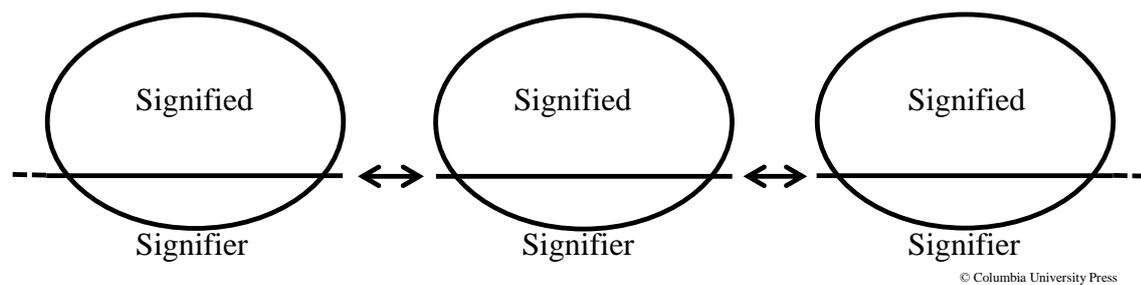


Figure 2.2 The Saussurean language system (after Saussure 2011, p.115).

The notion, according to which semiology is a *passé-partout* methodology that can be employed for studying all kinds of significative systems inevitably led to the diffusion of Saussure's structural linguistics into the social sciences. The increasing tendency to use linguistic models to study cultural practices marked the start of a "linguistic turn" that has since had a significant impact on archaeology (Preucel and Bauer 2001). The first steps were made in France by André Leroi-Gourhan (1965), who delved into prehistoric archaeology, and in the U.S. by James Deetz (1967), who pursued historical archaeology. Deetz (1967, p.87) suggested that 'there may be structural units in artifacts which correspond to phonemes and morphemes in language, a correspondence which goes beyond simple analogy, reflecting an essential identity between language and objects in a structural sense'. This structural element of symbolic material culture comes in contradistinction to the representational element emphasised by functional-processualists. For structuralists, symbols had played a constitutive and structural role in the mental and social lives of past peoples (Robb 1998, pp.334–335). While structuralism never became a dominant processualist approach (Preucel 2006, p.94), it was not short lived. Deetz's students continued working on structural linguistics in the subsequent decades, as is evidenced by the linguistically-oriented work of Mary Beaudry (1993) on 17th and 18th century vessels from the Chesapeake Bay region.

Hodder (1982c, pp.8–9) has identified a number of drawbacks inherent in the linguistic models developed by structuralists. For one, they lacked a theory of practice.

As he pointed out, by treating *langue* as a structured set of differences guided by formal rules, structuralists overlooked its semantic and referential ties, which led them to focus on ideas that were considered dissociated from the practice of use. Whereas functional-processualists had erroneously striven to study social change without accounting for the structure of ideas, structuralists had problematically studied these ideas in isolation from adaptive processes. In this context, the individual was left subordinate to the dictates of predefined cultural structures. For Hodder, the dichotomy between individual and society was unproductive, because it implied that individuals have but a minimal role in the generation of meaning. This in turn leaves structures prone to permanency, and structuralists unconcerned with historical explanations. In this light, it is important to note that structuralists also failed to account for the generation of change.

Faced with structuralism's incapacity to situate the generation of structures within dynamic contexts, Hodder (1982a; b; c; 1984) set the foundations for a theoretical movement known as 'post-processual' or 'contextual' archaeology. According to his contextual perspective, there are three types of meaning an object can have in relation to its symbolism: function (i.e., its effects on the world), structure (i.e., its place within the cultural code), and content (i.e., the changing ideas and associations about it) (Hodder 1987). In order to illustrate these three types of meaning, he focused on an unpublished study on prehistoric iron-smelting furnaces in East Africa. Starting from function, Hodder recognised that those furnaces that were deep had been used for smelting ore, whereas those that were shallow had been employed for resmelting and refining the metal. Unlike shallow furnaces, deep furnaces had been made from decorated bricks, and were also in close proximity to decorated cooking pots. In Hodder's view, the adornment shared by these two kinds of material culture can only be explained by alluding to the cultural structure within which they belonged. It was thus suggested that the unifying feature

between them is their involvement in heat-induced transformation processes – for while the deep furnace transformed iron, the cooking pot transformed food. As for the content of the cultural system dictating the decorations, Hodder suggested that it would have been symbolic, because according to the ethnographic literature decorative furnaces are generally associated with symbolic ideas, such as notions pertaining to fertility. By accounting for these three ways in which things become meaningful, Hodder had officially illuminated the context-dependent explanatory laws that guided past actions.

Following in his footsteps, his students Michael Shanks and Christopher Tilley (1987, p.102, emphasis in original) arrived ‘at what might be termed *the metacritical sign*: the sign whose meaning remains radically dispersed through an essentially open chain of signifieds-signifiers.’ In order to better explain this take on signification, Hodder (1988; 1989) morphed his contextual methodology into an explicitly textual approach, which refuted the strictly linguistic conceptualisation of material culture by earlier structuralists. More specifically, Hodder (1989, p.256) drew on the work of the philosopher Paul Ricœur (1971, pp.530–531), who had identified four main differences between discourse/text and language: 1. discourse is temporal and in a present, whereas language is general and outside of time; 2. discourse refers back to its speaker, and thus has a subject, while language does not; 3. discourse directly refers to the world, whereas language is constituted by structured sets of differences abstracted from the world; and 4. discourse is a communicative act, while language is the condition for communication. In other words, unlike language, textual discourse is situated communication open to interpretation. This textual notion of material culture was soon adopted by others, such as Christopher Tilley (1991), who emphasised the active role of the reader, and Julian Thomas (1996), who placed self-identity in a narrative.

By shifting its entire focus to the patterned relationships between artefacts, the hermeneutic approach fell short on a number of important points. For one, it contains a fundamental methodological paradox. As has been justly questioned by Malafouris (2013, p.127): ‘How can you reconstruct the meaning of an artifact on the basis of its contextual associations when these contextual associations are determined by the meaning of the artifact?’ Yet even if the meanings of artefacts had been known, material culture would still be illegible. Whereas language is characterised by spatiotemporal order, with specific starting and finishing points, material culture is not a suitable candidate for a sequenced arrangement akin to that afforded by following syntactic rules. Where would one start ‘reading’ it, and how would they proceed thereafter? It seems that ‘even when it can be seen as a spatial arrangement, [material culture] preserves no obvious point of commencement’ (ibid., p.95). Most importantly however, the hermeneutic approach has been critiqued for its metaphysical implications. At a time when the textual approach was gaining momentum, Watson (1990) criticised post-processualists for veering greatly towards the subjective end of idealism¹² and dismissing archaeologists’ ability to reach objective conclusions about the material record.

Despite these epistemological shortcomings, postprocessualism proved particularly informative for a new wave of processualism that emerged in the 1990s, because it had granted the cognitive domain with some much deserving merit and had recognised the constitutive nature of material culture. In fact, it was a conference organised by Colin Renfrew and Ezra Zubrow in April 1990 at Cambridge that marked the passage from ‘functional-processual’ to ‘cognitive-processual’ archaeology (Renfrew 1994, p.3). While aiming to maintain the positivist underpinnings of processualism,

¹² According to the idealistic position, reality lies primarily in consciousness. To this extent, idealist archaeologists purport that some past actions cannot be predicted from the material record because they were of a mental origin. As for the subjective form of idealism that post-processualists were criticised to have reached, it holds that things outside the mind are real only in so far as they are perceived.

proponents of the emergent tenet, such as Renfrew (1993; 1994; 1998a; b) and Flannery and Marcus (1993), largely equated the “cognitive” with the “symbolic”. However, unlike the postprocessualists, who sought to discover *what* symbols meant to their users, the cognitive-processualists focused on *how* they were used (Renfrew 1993; 1994). In fact, Renfrew (1994, p.6) identified the use of symbols in at least six aspects of existence: ‘(1) design, in the sense of coherently structured, purposive behaviour; (2) planning, involving time scheduling and sometimes the production of a schema prior to carrying out the planned work; (3) measurement, involving devices for measuring, and units of measure; (4) social relations, with the use of symbols to structure and regulate inter-personal behaviour; (5) the supernatural, with the use of symbols to communicate with the other world, and to mediate between the human and the world beyond; (6) representation, with the production and use of depictions or other iconic embodiments of reality.’ Flannery and Marcus (1993), on the other hand, held a narrower – and more post-processualist – view of symbolic use, for they suggested that cognitive archaeology should be solely preoccupied with domains of communication, such as cosmology, religion, ideology, and iconography.

In the meantime, the post-processualist tenet’s preoccupation with the linguistic and textual interpretation of material culture had evolved into a material metaphor approach. Some first steps towards this direction had been made by Keith Ray (1987) in his study on the Igbo-Ukwu metal finds, in which he defined the material metaphor as ‘a representation or association of representations [that] encapsulates in material form certain kinds of moral or social or ritual relationships, or certain kinds of interaction, by means of either a simple metaphorical or complex proverbial portrayal of objects or creatures’ (ibid., p.67). However, the most notable work on the metaphorical conceptualisation of material culture was published by Tilley (1999). In advancing the

container metaphor as a characteristic example of his approach to symbolism, he argued that ‘by conceiving of human bodies as containers (of fluids and substances, with orifices – entrances and exits) one can begin to examine symbolic linkages between the body as container and other types of containers such as baskets or pots’ (ibid., p.8).

In developing their strictly symbolic perspectives towards material signification, cognitive-processualists and post-processualists remained bounded to the problematic assumption that underpins all linguo-centric approaches – namely, the equation of “signification” and “communication”. As Carl Knappett (2005, pp.8–9) pointed out, although signs that are established upon a non-arbitrary relation to their referents can be intended to function as communicators, this need not be the case. For instance, ‘[i]f a forest fire ignites spontaneously, the smoke seen in the distance is understood to have meaning, but is not communicating a message. However, if a forest fire is interpreted as an act of arson, with the arsonists responsible known to be using this means of conveying a political message, then the smoke seen from a distance may well be understood to be communicative’ (ibid.). Communication though comprises only a narrow slice of our significative lives. Most of our daily interpretations depend on non-communicative signs, for as has been recognised by Malafouris (2013, p.95), ‘[t]hings act most powerfully at the non-discursive level incorporating qualities like colour, texture, and smell that affect human cognition in ways that are rarely conceptualised.’

2.2.2 Pragmatic archaeology

Since the turn of the millennium, the linguistic approach to material culture has been heavily criticised by an increasing number of scholars who have started granting its pragmatic dimension with some much deserving merit. One of the novel paradigms that brought materiality into the spotlight is *symmetrical* archaeology. Faced with the hermeneutic tendency of archaeologists to reduce all that is meaningful to the mind,

Bjørnar Olsen (2003, p.90, emphasis in original) reminded his colleagues ‘that material culture *is* in the world and plays a fundamentally different constitutive role for our being in this world than texts and language.’ He thus proposed ‘a more egalitarian regime, a symmetrical archaeology, founded on the premise that things, all those physical entities we refer to as material culture, are beings in the world alongside other beings, such as humans, plants and animals’ (ibid., p.88). Based on this symmetrical logic, the proponents of this dictum have defended the view that humans are ontologically indivisible from things (Olsen 2010; Olsen et al. 2012; Shanks 2007; Webmoor and Witmore 2008; Witmore 2006; 2007).

According to Hodder (2014, p.19) however, the co-constitution of humans and things is not symmetrical – ‘our relations with things are often asymmetrical, leading to entrapments in particular pathways from which it is difficult to escape.’ In order to come closer to the true nature of these relationships, he advanced a pragmatic approach founded on *entanglement* (Hodder 2011a; b; 2012; 2014). He defined this as the sum of four types of relationships between humans and things: humans depend on things (HT), things depend on other things (TT), things depend on humans (TH), and humans depend on humans (HH). Within this multi-faceted entanglement, there is a dialectical struggle between dependence (i.e., the reliance of humans and things on each other) and dependency (i.e., a constraining and limiting need of humans for things). In other words, the enabling aspect of things rests on their fruitful use by goal-oriented humans, while their constraining aspect pertains to the limits they impose on what humans can do. To this extent, things can be taken to entrap humans (and vice versa).

In dealing with the undermaterialisation of archaeology and the separation of mind and matter, both of the aforementioned pragmatic approaches drew some much needed attention to the intrinsic material qualities of things and the co-constitution of the

social and the physical. However, in focusing on the action-constitutive aspects of material culture, they veered away from its representational function. As a corollary, the way artefacts become significantly meaningful was left under-theorised. Symmetrical archaeology is not preoccupied with the ways artefacts mean something else, because, as Olsen (2010, p.172) pointed out, their overemphasised communicative role is not a primary aspect of their being. Along similar lines, Hodder (2014, p.33) has argued that '[w]e cannot reduce things solely to the relational, to a semiotics of things.' Being mainly focused on the power of things to entrap, he only briefly acknowledged the Peircean distinction between icons, indices, and symbols (Hodder 2012, p.97).

Unlike the symmetrical and the entanglement theories, explicitly Peircean archaeology has managed to bring the ontological and semiotic dimensions of things closer together by demonstrating how their representational function is fundamentally dependent on their materiality. As Neil Wallis (2013, p.207) characteristically put it: 'The Peircean semiotic alternative posits signs as the constitutive matter of meaning rather than the mere expression of meanings previously formed.' The aptitude of this pragmatic semiotic framework in describing the constitutive dimension of signification makes it especially valuable for studying the ways in which the materiality of things provides the foundations for their significative function. Recognising the untapped potential of a pragmatic semiotic theory for archaeology, Preucel and Bauer (2001) set the foundations for a Peircean archaeology at the turn of the millennium. Unfortunately though, despite its usefulness for classifying the semiotic nature of material signs, Peirce's theory has thus far been surprisingly underexploited by archaeologists. Perhaps its intricacy, compared to the traditional linguistic approaches, may have been a deterring factor for adopting it. As recognised by Christopher Watts (2008, p.187): 'Owing to the contours of a creative mind steeped in mathematics and logic, his is a canon marked by heroic theorising, labyrinthine

reasoning and runaway terminology.’ Yet despite its challenging character, Peirce’s semiotic theory has already been fruitfully utilised to examine a wide range of artefacts and practices. Given the insightful work of semiotic archaeologists on past material signification, I aim to provide here an overview of the field as it has developed over the past fifteen years. To this end, I start by considering how the triadic nature of Peirce’s sign has been implemented in archaeological cases (section 2.2.2.1), before focusing on the ways in which his sign typology has been used to describe the different kinds of relations in which material signs are involved (section 2.2.2.2). I finally conclude this part of the chapter by examining the role of material signification in mediating identity (section 2.2.2.3).

2.2.2.1 The triadic nature of material signs

Unlike the Saussurean approach, the Peircean doctrine does not take the material sign as an entirely mental dyadic relation between a signifier and a signified. Instead, Peirce (CP 2.228)¹³ proposed that the emergence of significative meaning (i.e., Interpretant) depends on the relation between a sign (i.e., Representamen or Sign) and what it stands for (i.e., Object) (Figure 2.3).¹⁴ The application of these three semiotic entities to archaeological evidence can be seen in the work of Mark Aldenderfer (2012), who employed them in studying the pre-Buddhist use of standing stones in far western Tibet. As he suggested, the standing stones (i.e., Representamen) were significantly tied to the mountain (i.e., Object) in order to produce notions of social and religious significance (i.e., Interpretant).

¹³ Adhering to scholarly tradition, I cite Peirce’s work as CP (followed by volume and paragraph number in *The Collected Papers of Charles Sanders Peirce*).

¹⁴ In this dissertation, I have chosen to capitalise all of the semiotic terms introduced from now on in order to avoid conflation with non-semiotic terms, as in the case of (semiotic) Objects and (material) objects.

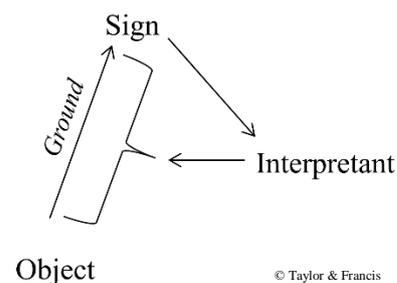


Figure 2.3 The triadic relations enveloped between the Sign (First), its Object (Second), and its Interpretant (Third). The Ground is the factual relation that incites and partly constitutes the emergent meaning (adapted from Preucel and Bauer 2001, 90, fig. 3).

Interpretants are not always thoughts though – they can also be feelings or physical/mental reactions. Peirce (CP 5.475–5.476) thus made a useful distinction between *emotional*, *energetic*, and *logical* Interpretants. The usefulness of this triptych for distinguishing the kinds of meaningful experience that material signs could have incited, has been illustrated by Zoë Crossland (2010; 2013), who opted for the term “affective” instead of “emotional”, and the term “habitual” instead of “logical”. In describing the semiotic nature of 17th century apotropaic witch bottles from England, she noted that ‘the interpretants that the witch bottles elicited were affective as much as they were energetic’ (Crossland 2010, pp.400–401). In another study, on 19th century Tswana architecture, Crossland (2013) suggested that novel architectural layouts would initially elicit energetic Interpretants, which in time became habitual Interpretants.

According to Peirce (CP 1.343; 1.536), repeated experience leads to the formation of general rules – that is, *habits* – that guide future interpretation. Semiotic archaeologists therefore conceptualise the material sign as an object that becomes significantly meaningful through patterned interpretation. For them, ‘meaning is not an inherent quality of a thing nor simply a matter of relations; what a thing means is what habits it involves’ (Marila 2014, p.9). As they see it, matter and mind are inextricably tied, and generate meaning through the habitualisation of their constitutive interactions; for as

Peirce (6.158) characteristically put it: '[W]hat we call matter is not completely dead, but is merely mind hidebound with habits.' In order to better appreciate the interpretation of material artefacts as semeiotic habits, let us consider the rosaries used by Irish (Gaelic)-speaking communities at the Aran island, western Ireland. According to the anthropologist Veerendra Lele (2006), rosaries have been religiously interpreted because the sequential and ordinal arrangement of their beads would have supported the repetitive recital of particular Catholic prayers. Aiming to highlight the habitualised entwinement of mind and matter, he noted that '[t]he actual form of the prayers regulates the formal possibilities of the rosary beads themselves, just as the beads materially regulate the practice of prayer' (ibid., p.61). It is important to recognise, at this point, that in studying the formation of mental habits, semiotic archaeologists have also remained perceptive to their transformation over time. For instance, in her aforementioned paper on Sotho Tswana communities, Crossland (2013) illustrated how they experienced dynamic changes in their daily practices because of the architectural (and semiotic) changes motivated by British missionaries, who sought to reproduce the spatial patterning of British homes, towns, and villages. In order to better understand how material changes could have affected the habitual practices of past peoples, we must appreciate the ways in which a material sign can stand for something else. This means turning to Peirce's famous typology.

2.2.2.2 The types of material signs

According to Peirce's semiotic theory, a Sign does not stand for its Object in all respects, but only in some respect or capacity, known as the sign's *Ground* (CP 2.228). Although this connection may be entirely arbitrary, it can also be founded on similarity and spatiotemporal contiguity. In the former case, the Sign and its Object share a quality, and in the latter, the Sign is directly affected by its Object (CP 2.247–2.248). In view of these

non-arbitrary modes of signification, semiotic archaeologists have been studying how iconic and indexical meanings could have been founded on material qualities and physical relations. In what follows, I provide a general overview of these attempts, in order to illuminate the various kinds of material culture that have been semiotically understood through Peirce's icon-index-symbol triad. As will become evident, these forms of signification are not mutually exclusive, as the same object can be understood variably 'according to the perspective and intentionality of relevant social agents' (Knappett 2005, p.91).

For instance, the aforementioned Catholic rosaries appear to have functioned as all three types. According to Lele (2006), a rosary is: iconic of the repeated prayer, given that, similarly to the beads, the iterated prayers are bounded, whole, and individual; indexical, given that each of the beads corresponds to a prayer; and symbolic due to the conventionality that characterises the connection of the beads and the iterated prayers.

Pottery can also signify in all three ways, as is suggested by Neil Wallis (2013), who examined two types of clay vessels from the Middle Woodland period of the south-eastern United States. Swift Creek Complicated Stamped vessels exhibit designs that were produced by impressing carved wooden paddles into the wet clay. The paddles thus created indices, which, in Wallis' opinion, may have converted domestic cooking vessels in agentic beings, therefore enabling the distribution of personhood. Weeden Island vessels on the other hand, were often effigy vessels. While they may be seen as indices of the persons and places of their manufacture, they did not effectively enchain multiple objects, people, and places, for they lacked clear evidence of indexical contact. They do however look similar to animals or persons, which makes them icons. Wallis (2013, p.223) was therefore able to conclude that 'the producers of Swift Creek Complicated Stamped pottery and Weeden Island effigies were working with the same repertoire of

symbolic meanings but employing their semiotic potentials in contradictory ways.’ For another telling application of Peirce’s triptych on pottery, let us consider Knappett’s (2002) examination of clay skeuomorphism from Minoan Crete. Knappett stated that the skeuomorphs that resemble metal prototypes, as well as those that resemble basket prototypes, are icons, due to the similarity that connects them with the original forms. However, it is only the latter of these types that is indexical as well, because the skeuomorphs that resemble a basket are existentially connected to the original basket that was impressed on the ceramic mould. Finally, it is worth noting that the indexical nature of ceramics has also been recognised by Capone and Preucel (2002), who argued that the motifs designed on pottery from the Kotyiti Pueblo, an ancestral Cochiti village in New Mexico, were indexical of their beliefs.

The aforementioned apotropaic devices discussed by Crossland (2010) also seem to have functioned as all three sign categories. For the sympathetic magic to be effective, witch bottles were perceived to have functioned as: icons, due to the similarity between the bounded and fragile vessel and the body; indices, due to the inclusion of bodily products, such as urine, hair, and nail parings; and symbols, due to the felt hearts that ‘represent the heart without resembling it or having any physical connection with it’ (ibid., p.399).

Figurines are yet another example of an artefact type that probably functioned as all three kinds of signs. In her study on early artefacts from sites in northern Honduras, Rosemary Joyce (2007) maintained that they indexically signified practices, such as the labour and intentions of their makers and users, and that they iconically signified practices, such as standing, sitting, moving, dressing, and modifying the body. While she took the idiosyncratic nature of figurines from socially-comparable sites to attest to their symbolic nature, making inferences regarding their symbolic character is especially

difficult due to the lack of access to the conventionalisations of past communities. She has therefore only but speculated that the Honduran figurines may have symbolised social ceremonies.

Finally, it is worth noting that the icon-index-symbol triad has not only been applied to portable artefacts; it has also been used to describe the significative nature of architectural structures. For instance, Lele (2006) argued that mortarless stone walls found around Irish fields are: iconic, when represented on T-shirts, posters and postcards; indexical, when taken to signify the people paying ongoing attention to their maintenance; and symbolic, in that their origin and age is metaphorically related with the state of the linguistic forms used. Matthew Liebmann (2008) on the other hand, focused on the architecture of the 17th century Patokwa and Boletsakwa villages. He suggested that the dual-plaza pattern found at the sites is iconic, as it connects them via means of similarity; as well as indexical in signifying the relationship of the architectural structures with the inhabitants and the concept of duality that is characteristic of moieta social organisation. In fact, iconic and indexical forms of meaning have also been associated with the aforementioned 19th century Tswana architecture. As suggested by Crossland (2013), the new structures were iconically related to the idealised British originals – but only in the eyes of the missionaries, who had the required frame of reference. The Tswana on the other hand were indexically influenced by the architectural changes, for their daily practices were directly affected. For instance, a closed doorway blocking the entrance to private and sequestered parts of the building would have been seen by the Tswana as an indexical sign restricting the movement of people. Evidently, the same structures are meaningful in very different ways to different cultural groups. In order to understand how material signs can actually affect people with distinct cultural identities, we must explore their essential role in mediating identity.

2.2.2.3 The mediation of identity through material signs

In the literature on Peircean semiotic archaeology, material signs have been most notably associated with the mediation of identity, given that their materiality confers them with profound effects. As recognised by Preucel and Bauer (2001, p.87), ‘material culture often has considerable durability, unlike the ephemeral nature of the spoken word. This suggests that the control of material objects is often an effective strategy in the control of meaning.’ On this note, let us consider the following archaeological cases in which material signs have been used for the creation, maintenance, and revitalisation of cultural identities:

Bauer (2013) focused on the creation of a new pan–Black Sea identity during the first half of the Early Bronze Age, through the production and use of a distinctive type of ceramic pottery. Given that the pottery of the coastal groups was characterised by iconic similarity, and was distinct from that of inland groups, he suggested that pottery-making (along with metalworking and fishing) must have had identity-forming consequences.

Some archaeologists on the other hand, have concentrated on the maintenance of identity through material signification. For instance, Lawrence Coben (2006) centred on the maintenance of Inka identity during the 15th and 16th centuries in areas of war and rebellion, by way of replicating state-sponsored ritual performances. These would take place in replicated portions of the Inka capital, Cuzco, which physically represented their worldview. By placing architectural and performative instantiations known as *Replicas* (CP 2.246) in strategic locations throughout its empire, the state provided the settings for a calendar of ritual ceremonies and spectacles that referenced certain repeated material attributes of these sites – essentially mediating the Inka identity. Along similar lines, Lele (2006) suggested that Aran identity is heavily dependent on the aforementioned mortarless stone walls. This personal account is especially telling: “One respondent said

that a person's identity in Aran 'is wrapped around their ability to make a stone wall and a rabbit-proof stone wall at that'" (ibid., p.64). It is thus apparent that the stylistic appearance of the walls represented village and kinship identity.

Granted the fundamental identity-maintaining effects of architectural structures, it is worth noting that identity can also be retained through much more compact means. Craig Cipolla (2008) informed us that, despite regularly using colonially-introduced metal tools, the inhabitants of the 19th century Eastern Pequot reservation in North Stonington, Connecticut, continued using traditional stone and glass chipped tools for butchering purposes. Through their amenability to abductive reasoning, these artefacts had functioned for the Pequot as indices of their past, thus bringing the community members together, and maintaining the Eastern Pequot identity.

Finally, it is worth recognising that besides creating and maintaining cultural identities, material signs can also contribute to the revitalisation of identity. According to Preucel (2006) and Liebmann (2008), ceramics and architecture underpinned a revitalisation of a pan-Pueblo identity at the Kotyiti, Patokwa, and Boletsakwa sites, during the 17th century. As they explained, the shared properties of the artefacts and structures would have been experienced by the Pueblo visiting neighbouring communities, and would have thus promoted a notion of pan-Pueblo unity.

This concludes the general overview of semiotic archaeology. Having paid particular attention to Peirce's various theoretical concepts, and after considering a range of linguistic and pragmatic approaches, I can now make an informed decision regarding the most suitable approach for studying the nature of past material signs.

2.3 The optimal theory for describing the nature of past material signification

While treating material culture in linguistic terms may be the dominant approach in evolutionary and theoretical archaeology, according to Malafouris (2013, p.91), its proponents commit the *fallacy of the linguistic sign*. As he rightly noted, conflating two semiotic ontologies is problematic because language and material culture function and mean in radically different ways. Handling the latter with tools specifically designed to treat the former leaves a large part of the material semiotic domain unaccounted for (Boivin 2008, chapter 2; Knappett 2005, chapter 5; Malafouris 2013, chapter 5). To illuminate the materiality of things, we must thus adopt a pragmatic approach – yet one that maintains its focus on their representational function, as the thesis at hand is focused on the significative function of ornamental artefacts. In this section, I explicate why it is Peirce’s pragmatic semiotic theory that can help address the three misconceived assumptions of the linguistic dictum – namely, that meaning is entirely mental (section 2.3.1), only arbitrary (section 2.3.2), and solely referential (section 2.3.3).

2.3.1 Materiality

According to Malafouris (2013, p.92), treating the sign as a disembodied and disengaged relationship between a “signifier” (acoustic or visual form) and a “signified” (concept) unfolding in the human mind, leaves it completely detached from the external world, and thus deprives external reality and material culture from having a place within the system. As a result, the physical properties of artefacts (e.g., colour, texture, and smell) and their affordances go largely overlooked. In addressing this issue, Malafouris suggests conceptualising material objects and signs as opportunities for meaning-making, rather than as accomplishments of a meaning-generating brain. As he put it: ‘There is no meaning inherent in past or present material signs; there is only the capacity for meaning’

(ibid., p.117). It follows from this that meaning is not reified information residing in external storage devices, but an emergent product of a relational process of engagement with the material world.

The emergent and relational nature of meaning situated in specific experiential settings is a fundamental axiom in Peirce's pragmatism (from the Greek noun *πρᾶγμα* {pragma}, act) – that is, the mode of reasoning that anchors the meaning of abstract mental concepts to concrete experience. In his theory, physical reality provides the basis for interpretation and thought. In order to understand how this is the case, we must return to Peirce's triadic sign. As previously mentioned, the Sign stands for its Object in reference to a sort of idea that he termed *ground*, and thus elicits the formation of its Interpretant (CP 2.228) – that is, the meaning of the semiotic process. Given however that more than one Interpretant can be produced by the same Object, Peirce made an important clarification: he termed the signification-inducing Object that yields a certain Interpretant *immediate*, and the Object that corresponds to all the potential Interpretants as *dynamical* (CP 8.183). This latter type of Object is essentially intangible, for once cognised it becomes an immediate Object. In recognising the existence of the dynamical Object, Peirce acknowledged some sort of reality beyond interpretation and mind (Hausman 2012). In his view, this material world is not a mindless substrate upon which thoughts are exerted, but an integral part of semiosis itself (Aydin 2015).

2.3.2 Iconicity and indexicality

By failing to recognise the active role of material culture in signification, most archaeologists view the internal connection between signifier and signified as “arbitrary”, and therefore entirely the product of human convention (Malafouris 2013, p.92). This second problematic notion leads to overlooking the fact that significative meaning can emerge through relations of resemblance and physical connection.

As has been observed by Knappett (2002, p.103): '[I]t is apparent from Peircian semiotics that to talk about artefacts being symbolic is inaccurate most of the time.' Indeed, the above semiotically-examined cases attest to the fact that artefacts can become meaningful in a variety of iconic and indexical ways. In many cases actually, artefacts functioned as all three types. Unfortunately however, the iconic and indexical forms of signification have been misunderstood by prehistorians, who deprive them from any sort of conventionality. To them, icons and indices can be readily perceived – it is only symbols that require familiarity with a conventional rule. Yet as Crossland (2013, p.93) pointed out: 'Both iconic and indexical sign relations have conventional dimensions...and it is the way in which these conventions are assumed or unrecognized that gives iconic and indexical signs their apparent force, on the one hand, and room to be misunderstood, on the other.' It thus appears that the shared conventionality entailed in signification is not a property of symbols alone, for it can also characterise the communicative function of iconic and indexical signs.

2.3.3 Constitution

In studying material signs, we must recognise that focusing only on their referential aspect is problematic, because it leaves their constitutive dimension neglected. Faced with such an oversight, Colin Renfrew (2001b) advanced the notion of the "constitutive symbol", which is a material sign 'where the symbolic or cognitive element and the material element co-exist, are in a sense immanent, and where one does not make sense without the other' (Renfrew 2001a, p.98). For instance, the concept of "weight" has no meaning if separated from the embodied experience of a material thing (Renfrew 2001b, p.133). Clearly, it is the tangibility of an artefactual medium that enables it to carry conventionalised meaning (Mahaney 2014). In this regard, a material sign actually substantiates a signified concept instead of referring to something existing separately

from it – that is, ‘[i]t operates on the principle of participation rather than that of symbolic equivalency’ (Malafouris 2013, p.97). That said, these two principles are not necessarily mutually exclusive, for as recognised by Malafouris (2013, p.117), a figurine could have functioned as an iconic representation of some deity and the concrete embodiment of the deity itself in the context of the same ritual process.

Indeed, according to the pragmatic semiotic theory, these principles are compatible, because significative equivalency can in fact be founded upon participation. As the semiotician Göran Sonesson (2006; 2007; 2010a; 2012) has argued, iconic and indexical signs are respectively underpinned by iconic and indexical grounds. In other words, taking an icon or an index to stand for something else can only be done if two “things” are relevant in some respect or capacity: in the case of icons, they must share certain qualities, whereas in the case of indices, they must be linked by way of contiguity or factorality (i.e., the relationship between a part and a whole). Transferring this idea to archaeology, we can see that iconic artefacts share some physical properties with what they stand for, whereas indexical artefacts are existentially linked with what they signify. It thus becomes evident that the materiality of material signs is a constitutive participant of their significative function.

2.4 Summary

This chapter set out to examine the forms that linguo-centric and semiotically-informed approaches have taken in evolutionary and theoretical archaeology, in order to ultimately identify the most appropriate theory for studying the nature of past material signification. Starting at the debate on modern human origins, we saw that symbolism has been associated with non-utilitarian kinds of material culture. For instance, rituals and figurative representations are generally considered symbolic because they are taken to

have conveyed a predefined message. Their non-utilitarian nature is generally deemed evident enough that idiosyncratic cases can stand their own ground without losing their symbolic connotations. Contrastingly, artefacts such as pigments, engravings, and stylised tools are not as clearly communicative. For this reason, archaeologists have focused on establishing their standardisation. According to their reasoning, a non-utilitarian artefact that is found in multiple locales must have been communally understood. After all, this shared conventionality of their meanings would have been imperative for the successful communication of the imbued messages. Following this linguistic logic, most evolutionary archaeologists consider stylised tools, and especially pigments and engravings to have been symbolic. Yet for the small minority of prehistorians that drew upon Peirce's basic triptych, the meaning of some artefacts could have been readily perceptible. For instance, figurative representations could have been iconic and stylised tools might have been indexical. According to Byers (1994) though, meaning is not to be found in iconic, indexical, or symbolic material signs, because artefacts are not referential. In his view, meaning resides in the intentionality of human agents who imbue and use the rule-governed forms of objects in order to execute purposeful actions. For Byers then, artefacts are symbolic, not because they stand for something else, but because their stylised form is guided by a broader symbolic system of beliefs, values, and rules. Yet it seems that the referential and the pragmatic dimensions are not necessarily incompatible. As has been recognised by Graves-Brown (1995), conventional artefacts may function like words when they belong in symbolic systems, but are most often simply standing for themselves. By acknowledging this constitutive role of the materiality in the generation of meaning, he defended the idea according to which the meaning of artefacts is not reified in the mind of their users, but actually emerges during use.

Faced with four distinct theoretical perspectives on the nature of material signification, ranging from the popular strictly symbolic approach and the seemingly Peircean approach, to Byers' and Graves-Brown's pragmatic theories, I decided to expand my scope and examine the forms that linguo-centric and pragmatic perspectives have taken within the broader domain of theoretical archaeology. Again, it seems that most archaeologists have adopted some variation of the strictly symbolic approach in their quest to elucidate past material signs. Functional-processualists for instance, conceived material symbols as representational artefacts involved in adaptive information exchange, whereas structuralists viewed them as structural elements of past ideational realms. Hodder's (1982c, pp.8–9) post-structuralist tenet on the other hand, critiqued both of these approaches for failing 'to explain particular historical contexts and the meaningful actions of individuals constructing social change within those contexts.' In view of this insufficiency, he set the foundations for a contextual archaeology that aimed to abridge societal adaptation and cultural norm. According to this post-structuralist tenet, material culture is best treated as text. Reading however spatial arrangements of artefacts proved to be a highly subjective task that failed to yield objective conclusions about the archaeological record. In an attempt to ground the idealist elements of post-processualism to a more objective basis, some scholars tried exploring the cognitive realm from a processualist point of view. For this reason, cognitive-processualists moved past the question of what material symbols meant, to the issue of how they were used. In the meantime, the post-processual tenet had been developing a material metaphor approach to material culture. Yet despite these innovative takes on processualism and post-processualism, the proponents of both of these theoretical tenets did not manage to escape a problematic assumption inherent in linguo-centric approaches – namely, the idea that signification is inherently communicative. Their linguistic perspective consequently

precluded them from appreciating the various ways in which the meaning of material culture is shaped by the materiality of things.

To account for this issue, archaeologists over the past fifteen years have been concentrating on the pragmatic dimension of material culture. As symmetrical archaeologists have been asserting, the meaning of things is to be found within heterogeneous networks comprised of humans, animals, plants, and materials. Based on this logic, they refute the mind-matter dualism inherent in the linguo-centric dictum, and propose that humans and things are ontologically indivisible. As Hodder (2012) suggested, humans and things are actually entangled in particular pathways that dictate what humans can and cannot do. While both the symmetrical approach and the theory of entanglement are laudable for granting the action-constitutive dimension of material culture with some much deserving merit, they are not suitable for studying the nature of material signs, because they have veered too far away from the representational function that defines material signification, thus leaving it under-theorised.

Peirce's semiotic theory on the other hand, has been much more fruitful in illuminating the significative nature of discovered artefacts, because it manages to account for the representational function of material signs by way of a pragmatic methodology. In view of its unique ability to unite representation and praxis, semiotic archaeologists have been implementing a variety of Peirce's theoretical concepts in the study of past material signification. From the scope of Peircean archaeology, emphasis need be placed on the interpretation of significative artefacts, because it is the interpretive process itself that yields feelings, physical/mental reactions, and thoughts. As we saw, these meaningful experiences are in fact generated by habituating the ways in which material signs can stand for something else in some respect or capacity. According to Peirce's popular triad, the connections of relevance between material signs and what they

stand for can rely on similarity, contiguity/factorality, or arbitrariness. Interestingly, these semiotic grounds are not mutually exclusive, for some significant artefacts can simultaneously function as icons, indices, and symbols. In other cases, the same material structure could have been semiotically interpreted in different ways by different groups. This discordance on the appropriate interpretation of material signification is a logical corollary of fundamental differences in cultural identity – which, as we saw, can be created, maintained, or revitalised through material signs.

After considering the insights yielded by semiotic archaeology, as well as the various conceptualisations of significant artefacts in evolutionary and theoretical archaeology, I was ultimately able to identify the optimal theory for studying the nature of past material signification. Specifically, it was determined that the commonly employed linguistic approaches are problematic because they treat significant meaning as entirely mental, only arbitrary, and solely referential. As pointed out by Malafouris (2013), conflating the semiotic ontologies of language and material culture entails committing the fallacy of the linguistic sign, which leaves a large part of the significant spectrum unexplored. Peirce's semiotic theory on the other hand, can indeed account for the materiality of material signs because it treats significant meaning as: emergent from the interaction of mind and matter; iconic and indexical (besides just arbitrary); and constitutive (besides only referential).

It follows from this, that the version of Peirce's theory employed by prehistorians is largely misguided and actually closer to the dictates of the linguistic idiom than to Peirce's theoretical disposition. In fact, his pragmatic theory is much more in line with the ontological proposals put forth by Graves-Brown (1995). Peirce's semiotic framework is however much more descriptive. While most scholars draw upon his terminology in order to study the ways in which a material sign is connected to what it stands for, Peirce

has also described two other kinds of triptychs involved in his triadic semiotic process. Unfortunately though, the analytical precision they can offer the field has been largely overlooked, even by semiotic archaeologists. To date, only Preucel (2006) and Watts (2008) have applied these semiotic tools to the archaeological record. The remarkable analytical precision with which they were able to semiotically describe historical forms of material culture sets a promising precedent for the application of Peirce's comprehensive framework to the prehistoric record.

It is thus imperative that we delve deep into Peirce's semiotic theory, if we are to spherically describe the nature of past material signs, and therefore move past the linguistic tendency that has been monopolising the debate on modern human origins. For this reason, I devote the following chapter to outlining a detailed account of Peirce's semiotic theory.

Chapter 3

Outline of the Peircean semiotic theory

Chapter outline

In the previous chapter, I considered the linguistic and pragmatic approaches to material signification in evolutionary and theoretical archaeology, and determined that the linguistic idiom should be abandoned in favour of Peirce's semiotic theory. In this chapter, I outline a detailed account of his framework, which can endow us with the analytical precision required for describing the nature of past material signification. To this end, I start by examining Peirce's sign in detail (section 3.1). I then proceed by outlining his three triadic typologies (section 3.2), before finally combining them in forming a tenfold typology of signs that can accurately describe the nature of material signs (section 3.3).

3.1 Peirce's sign

Let us begin by considering the theoretical underpinnings of the Peircean sign. In doing so, we must appreciate the metaphysical background of Peirce's semiotic (section 3.1.1), before reconsidering, in greater depth than that provided in the previous chapter, the triadic nature of Peirce's sign (section 3.1.2), and the three types of Interpretants it generates (section 3.1.3).

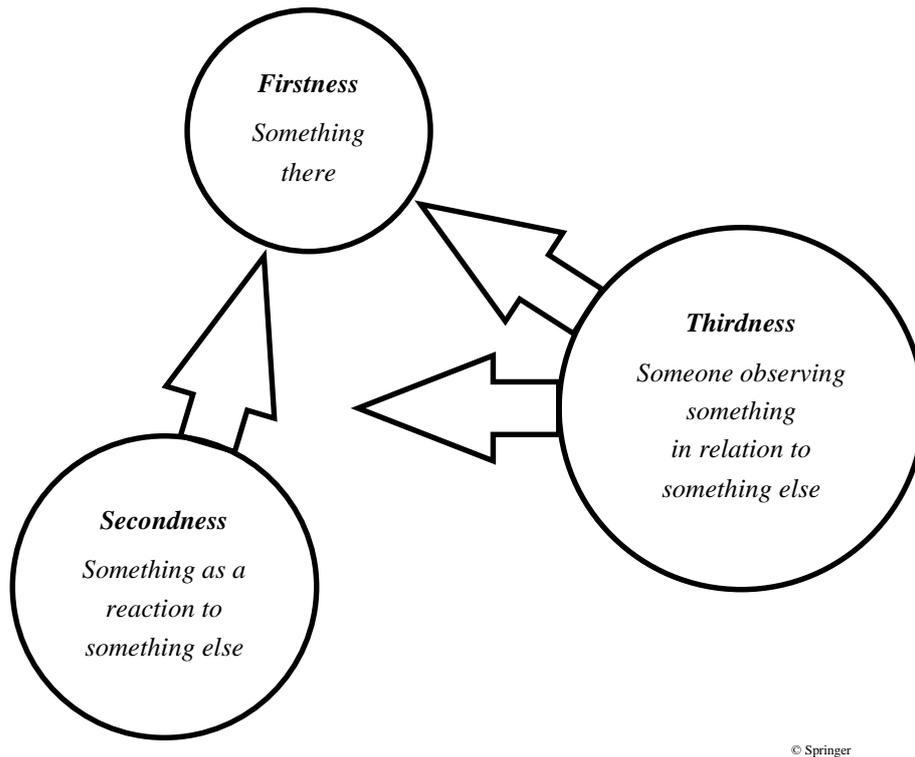
3.1.1 Phenomenological categories

As has been already defined, pragmatism is a mode of reasoning that grounds the meaning of abstract mental concepts to experience.¹⁵ In explicating the purpose of his *pragmatic maxim*, Peirce (CP 8.191, emphases in original) wrote:

The maxim is intended to furnish a method for the analysis of concepts... The method prescribed in the maxim is to trace out in the imagination the conceivable practical consequences – that is, the consequences for deliberate, self-controlled conduct – of the affirmation or denial of the concept; and the assertion of the maxim is that herein lies the *whole* of the purport of the word, the *entire* concept.

Simply put, an object's concept consists entirely of its practical effects. Based on this maxim, Peirce sought to develop a phenomenological framework for the classification of thoughts, the sum of which constitutes the *phaneron* (from the Greek word φανερός {phanerós}, visible) – that is, ‘the collective total of all that is in any way or in any sense present to the mind, quite regardless of whether it corresponds to any real thing or not’ (CP 1.284). To this end, he made a distinction between three states of meaningful being: Firstness, Secondness, and Thirdness (Figure 3.1). Let us now consider these phenomenological categories in more detail:

¹⁵ Despite being the founder of pragmatism, Peirce (CP 8.205–8.206) later coined the term *pragmaticism*, in order to distinguish his own notion of pragmatism as a method of thinking from the pragmatic system of philosophy as developed by other scholars.



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Figure 3.1 Appearance is monadic, reaction is dyadic, and observation is triadic as seen by Sonesson (2012, p.91, Fig.5.4).

A First is a purely qualitative *possibility*, such as redness. As a state of being, ‘Firstness is the mode of being which consists in its subject’s being positively such as it is regardless of aught else’ (CP 1.25). It hence requires neither actualisation (i.e., a Second) nor conceptualisation (i.e., a Third). As has Peirce astutely noted about the First: ‘It cannot be articulately thought: assert it, and it has already lost its characteristic innocence; for assertion always implies a denial of something else. Stop to think of it, and it has flown!’ (CP 1.357). What he essentially implied is that once conceptualised, a First becomes embodied by a Third. The only way it can thus be experienced without being conceptualised is via means of an instantaneous feeling, such as happiness or pain.

A Second, on the other hand, is a brute *fact*. As a state of being, Secondness is manifested within the universe of existents as actuality. Secondness is of a relational nature, as it is the ‘mode of being of one thing which consists in how a second object is’

(CP 1.24). As pinpointed by Sonesson (2012, p.14), it is made of two parts: a property and a relation. However, as such ‘[t]here is no reason in it’ (CP 1.24). To illustrate the lack of reason behind Secondness Peirce advanced the following example: ‘I instance putting your shoulder against a door and trying to force it open against an unseen, silent, and unknown resistance. We have a two-sided consciousness of effort and resistance, which seems to me to come tolerably near to a pure sense of actuality’ (ibid.). If the relation between the two entities is conceptualised through habit it is understood as a Third. Thus, for it to be experienced as a Second, the relation needs to elicit nothing more than a physical or mental reaction.

A Third, on the other hand, is a law-like *rule*. As a state of being, Thirdness is interwoven with continuity, regularity, and orderliness, which emerge from, and substitute, chaotic randomness (Gorlée 1994, p.41), for it ‘*consists* in the fact that future facts of Secondness will take on a determinate general character’ (CP 1.26). Such universal inferences stem from a third component found beyond Secondness, an interpreter, whose being consists of observing the property and the relation that connects two things. Hence, Thirds provide the stability required for the numerous predictions we make in our daily lives, and it is on this basis that ‘all intellectual activity is a Third’ (Gorlée 1994, p.41). It is also important to recognise that Thirdness, ‘the consciousness of synthesis’, cannot be reduced to the ‘here’ and ‘now’, and as such ‘[i]t differs from immediate consciousness, as a melody does from a prolonged note’ (CP 1.381). In such light, the philosopher Sandra Rosenthal (1982, p.240) pointed out that ‘Thirdness, apart from its relation to Secondness is not real.’

3.1.2 Triadic sign

Following the three ontological categories, the Peircean sign is also tripartite. As has been famously defined by Peirce (CP 2.228, emphases in original):

A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its *object*. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the *ground* of the representamen.

The Sign or Representamen is in monadic relation with itself, a dyadic relation to its Object (because the ground denotes the properties connecting the two things), and a triadic relation to its Interpretant (which interprets the connection between Sign and Object). On this basis, a Sign or Representamen is a First, an Object is a Second, and the Interpretant is a Third (CP 2.274). The triadic relations between these components constitute an irreducible meaning-yielding process (CP 1.345). Simply put, all three are indispensable ingredients for the emergence of meaning.

Yet despite the analytical precision of Peirce's triadic signification, Sonesson (2007, p.92, emphasis in original) finds it unsatisfactory because it fails to offer 'any *specific* definition of the *sign*'. In his view, Peirce took the sign for granted and thus did not specify the conditions that need be fulfilled in order for something to fall under one of his categories (i.e., Sign/Object/Interpretant). This led to the loose application of Peirce's sign and typology to the functional cycles of various organisms that are not capable of signification – in the sense of the capacity reserved for humans. To this extent, Sonesson (2007) has critiqued biosemioticians on the following points:

For one, he noted that most animals fail to differentiate the world as they experience it from the world beyond their own consciousness. In semiotic terms, this means that they cannot make a distinction between the "immediate" Object and the "dynamical" Object. To use the example of the tick that was advanced by Sonesson (2007), a tick can only know the "dynamical" Object (i.e., the mammal) as the "immediate" Objects to which it responds (e.g., butyric acid, hairiness, warmth). Despite the fact that a "dynamical" Object is by its very nature truly unattainable, even by

humans, a tick fails to understand that it experiences a thematic perspective of that Object. According to Sonesson (2007, p.105), meaning appears to them through a kind of “filter” which lets through certain aspects of the “real world.” Humans, on the other hand, are capable of understanding meaning through relevance. In Peircean terms, the ground that connects a Sign and its Object is a form of relevance, because the Sign stands for its Object only in a particular respect (i.e., the ground). Unlike filtering, relevance does not exclude any aspects of the “real world”. As Sonesson (2007, p.106) aptly recognised, ‘it merely places some portions of the environment in the background, ready to serve for other purposes.’ Humans therefore come closer to comprehending that there is more than they actually experience.

Yet Sonesson (2007) underlined that there is another interrelated respect in which humans differ from lower-order animals, which precludes us from using the biosemiotic notion of the Peircean sign. Humans are capable of Thirdness – that is they respond to a reaction (i.e., relation). They thus identify the Sign as standing for its Object in some regard. On the other hand, lower-order animals do not respond to relations, but to single facts. For instance, the tick does not respond to the way the butyric acid (i.e., Sign) stands for the mammal (i.e., Object) because it is unaware that the mammal even exists. Given that it is unable to establish the Sign’s connection with the Object, it cannot conceive of it, and thus lacks the capacity for Thirdness.

It is thus safe to say that the loose definition of Peirce’s sign as has been used in biosemiotics is not helpful for our purposes. According to biosemioticians, symbolism has existed long before humans became capable of mastering it. In Jesper Hoffmeyer’s (2008, p.285) own words: ‘The potential for symbolic (conventional, law-bound) reference has, in fact, been used by life processes ever since the replicative systems of RNA and DNA first appeared.’ Given that biosemioticians treat endosemiotic symbolic

reference in the same terms that archaeologists treat the exosemiotic interpretation of symbols, it becomes evident that we need a conceptualisation of signification closer to our discipline – one that can make the crucial distinction between perception and signification. Only then, can we differentiate between the semiotic capacities of humans and earlier species, and thus ultimately account for the origins of humans' unique significative ability.

In order to elucidate the ability of humans to appreciate signs as standing for something else in some respect or capacity, Sonesson (1994; 2006; 2007; 2010a; 2012; 2013a; b) introduced his own terminology. He suggested that Peirce's "Representamen" or "Sign" be referred to as *Expression*; Peirce's "immediate Object" (and its Interpretant) as *Content*; and Peirce's "dynamical Object" (and its Interpretant) as *Referent*. As it appears, Sonesson has focused on the elements of the Sign–Object relation in order to distinguish truly significative meaning from other types of meaning, such as perception. This binary theoretical concept should not be taken to parallel Saussure's binary notion of the sign, because Sonesson does not deny the triadic nature of the sign; he simply focuses on the Sign–Object relation, because the relations between things and events (i.e., Seconds) comprise the domain of analysis (i.e., Secondness) that needs to be further illuminated, if we are to reach a stricter conceptualisation of signification. Specifically, he proposes that in order for a thing/event to stand for another thing/event, as an Expression would stand for its Content, they must adhere to the following dictum:

They must be *doubly differentiated* from the point of view of the subject, in that:

- i) Expression and Content(/Referent) do not go over into each other in time and/or space;
- and ii) Expression and Content(/Referent) are conceived to be of different nature. In order to better appreciate this double differentiation between the semiotic entities, let us consider the following indexical scenario discussed by Sonesson (2012, p.84): 'To the

hunter, it is important to identify the marks on the ground (expression) as being those of an elk (indexical content), but, being a hunter, he cannot be satisfied with this; he will follow the traces left by the animal until he finds the real elk (referent).’ Evidently, the marks and the elk are clearly differentiated in both respects: while the mark of the elk is here and now, the elk is spatiotemporally extended; and while the Expression is a physical impression on the ground, the Content/Referent is the concept of an animal. As has been exemplified by Sonesson, these kinds of differentiations can also characterise iconic situations. As he recounted: ‘Looking at the photography, I have no trouble (unlike small children and animals) to distinguish the colour spots on the paper (the expression) from the vicarious perception it suggests, e.g. of my wife fifteen years ago dancing Jalisco in a ample, pink skirt (content), nor from the real person I have known for twenty-six years and with whom I share so many memories (the referent, the real, continuous person in my personal Lifeworld)’ (ibid.). Again, the photograph and the depicted person are differentiated in both respects – that is, the Expression and its Content/Referent are differentiated in time/space, and are of different nature.

According to another criterion for recognising a sign, the Expression and the Content are in a *double asymmetrical relation* with each other. For one, the Expression is more directly perceived than the Content (i.e., the former needs to stand for the latter, and not the reverse), and, in turn, the Content is more accessible than the Referent. On the other hand, it is the Referent and/or the Content that are more in focus, for they are more important than the Expression. Again, to use Sonesson’s (2012, p.85) own example: ‘When I look at the photograph, I am normally interested in the person depicted (my wife, either at the exact moment she was dancing Jalisco, or as an enduring person of my personal Lifeworld). My wife does not represent the photograph.’ It thus becomes clear

that the picture is directly given and non-thematic, whereas the person depicted is only indirectly present and thematic.

In brief, the two criteria established by Sonesson allow us to recognise when the perception of relevance between two “things” can be conceptualised as significative. In other words, they enable us to recognise that one of these things (i.e., the Expression) stands for the other (i.e., its Content/Referent) in some respect or capacity (i.e., iconically, indexically, and/or symbolically). To this extent, Sonesson’s terms are not incompatible with a Peircean approach – quite the opposite in fact. They are analytically useful concepts that help make explicit the significative function of material culture. Besides providing greater accuracy when describing the nature of prehistoric material signs (in the following chapter), Sonesson’s terminology proves especially useful when tracing the emergence of material signification (in the second part of this dissertation).

3.1.3 Interpretants

Having set the definitional foundations for the notion of sign, I return to Peirce’s theory in order to briefly consider how Peirce’s ontological categories are reflected in his distinction between the three types of Interpretants. As mentioned in the previous chapter (section 2.2.2.1), Peirce (CP 5.475–5.476) has identified three types of Interpretants: emotional, energetic, and logical. The emotional Interpretant appreciates the sign via means of a feeling, and is thus a First. A musical piece would “speak” to such an Interpretant. The energetic Interpretant exerts effort, whether physical (e.g., the command to ground arms) or mental (e.g., snippets of thought), and is hence a Second. As Peirce underlined, such an Interpretant cannot hold the meaning of an intellectual concept as concepts are of a general nature, whereas the capacity of an energetic interpretant cannot exceed a single act. It is only a Third such as the logical Interpretant that can hold general concepts by way of inference. In order to better appreciate how Interpretants are incited,

we must gain a detailed understanding of the relations that make up the sign. In the next part of the chapter, I thus delve into the semiotic workings of the Sign–Object relation, as well as consider the other two types of relations comprising the sign.

3.2 Three triads

The three kinds of semiotic relations distinguished by Peirce describe the workings of: the Sign in relation to itself, the Sign in relation to its Object, and the Sign in relation to its Interpretant. Each of these categories is further divided into another three categories – one corresponding to each category of being (i.e., Firstness, Secondness, and Thirdness). It is important to recognise that the nine semiotic entities yielded from the intersecting trichotomies (Table 3.1), are not exactly sign types, but types of relationships between the parts of a sign. Yet for the purpose of simplicity, I shall be maintaining the term *sign types*. Having made this clarification, let us now outline the different sign types, starting with the triadic relations of comparison (section 3.2.1), proceeding with the triadic relations of performance (section 3.2.2), and concluding with the triadic relations of thought (section 3.2.3).

Table 3.1 The triad of Peirce’s trichotomies.

	<i>Firstness</i>	<i>Secondness</i>	<i>Thirdness</i>
Triadic relations of Comparison S – S	Qualisign	Sinsign	Legisign
Triadic relations of Performance S – O	Icon	Index	Symbol
Triadic relations of Thought S – I	Rheme	Dicent	Argument

3.2.1 Triadic relations of comparison

The first trichotomy of signs discussed by Peirce, known as the ‘Triadic relations of Comparison’ (CP 2.234), distinguishes the ways that a Sign relates to itself in:

Qualisigns, Sinsigns, and Legisigns (CP 2.243–2.246).

According to Peirce (CP 2.244), ‘[a] *Qualisign* is a quality which is a Sign.’ As a qualitative possibility, a Qualisign is a First, and can only act as a sign once embodied by a Sinsign.

‘A *Sinsign* (where the syllable *sin* is taken as meaning “being only once,” as in *single*, *simple*, Latin *semel*, etc.) is an actual existent thing or event which is a sign’ (CP 2.245, emphases in original). As a single manifestation of a sign, a Sinsign is a Second, which embodies one or more Qualisigns.

Lastly, ‘[a] *Legisign* is a law that is a Sign’ (CP 2.246). Peirce explained that it signifies through an instantiation of its application termed its *Replica*. Peirce (CP 4.537) also introduced the terms *Type* and *Token*, to refer to Legisigns and Replicas respectively. As the general law that guides interpretation of single instances of Signs (i.e., Replicas), a Legisign is a Third, and thus embodies both Sinsigns and Qualisigns.

3.2.2 Triadic relations of performance

The second trichotomy of signs discussed by Peirce, known as the ‘Triadic relations of Performance’ (CP 2.234), distinguishes the ways that a Sign relates to its Object in: Icons, Indices, and Symbols (CP 2.243, 2.247–2.249). As we have already seen, this triad has been used by archaeologists aiming to describe the relationship between the material sign and what it stands for. The deeper implications of this triptych thus need be thoroughly considered. To this end, we must start by recognising the distinctions that Sonesson (2006; 2007; 2010a; 2012) has made between principles, grounds, and signs (Table 3.2).

What Sonesson’s work helps us appreciate is that the ground and the sign function are

actually distinct variables. This means that an iconic sign is a combination of iconic relevance (i.e., similarity) and sign function; whereas an indexical sign is a combination of indexical relevance (i.e., contiguity/factorality) and sign function. In fact, as Sonesson's sees it, the iconic or indexical relevance between two "things" need not even be found in the context of signification – that is, the similarity, contiguity, or factorality between them may simply be perceived (in which case we are simply dealing with affordances). For our purposes however, the issue of primary importance consists of establishing the various ways in which the different semiotic grounds can be combined with sign function, in order to yield iconic, indexical, and symbolic signs. On this note, let us now examine each of these cases in greater detail.

Table 3.2 The relationship between principles, grounds, and signs (after Sonesson 2012, p.85, Fig.5.2).

	Firstness	Secondness	Thirdness
Principle (Firstness)	Iconicity	–	–
Ground (Secondness)	Iconic ground	Indexicality = indexical ground	–
Sign (Thirdness)	Iconic sign (icon)	Indexical sign (index)	Symbolicity = symbolic ground = symbolic sign (symbol)

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3.2.2.1 Icon

According to Peirce (CP 2.247), '[a]n *Icon* is a sign which refers to the Object that it denotes merely by virtue of characters of its own, and which it possesses, just the same, whether any such Object actually exists or not.' In iconic signs, the Sign is connected to the Object by way of similarity or resemblance – whether visual (e.g., a painting),

auditory (e.g., onomatopoeic words), gustative (e.g., home-cooked food), olfactory (e.g., computer-controlled scent output), or tactile (e.g., a rubber teat of a feeding bottle). Since the properties of two things iconically related inhere in them independently, Sonesson (2006, p.181) recognised that ‘the iconic ground is “about” the object at the other end of the relation.’

As a qualitative possibility existing regardless of the Object’s existence, *iconicity* – to use the term employed by Sonesson (2006; 2012) – is a First (see Table 2.2).

Whereas, when a relation is actualised between two things sharing a property independently from one another, the *iconic ground* established is a Second. At this level, iconicity acquires an element of indexicality, for the two things are existentially connected. It is only once it manifests itself as a Third that it becomes an *iconic sign*. At the level of Thirdness, the iconic ground acquires an element of symbolicity, for the iconic Sign is conventionally understood to stand for something else (i.e., its Object).

To exemplify these categories of being, Sonesson (2006, p.173) used some of Peirce’s own examples: the blackness of a blackbird is considered an iconicity, two black things sharing a common quality are connected by means of an iconic ground, and when one of the black things is taken to stand for the other, it is an iconic sign, or an Icon. The prerequisite for anything to be an Icon of anything else is that ‘it is like that thing and used as a sign of it’ (CP 2.247). To this extent, a photograph is a characteristic example of an iconic sign.¹⁶

¹⁶ There has been much debate regarding the semiotic nature of photographs; even Peirce himself was not firm on this issue – sometimes considering them iconic, and others indexical signs. In view of this discrepancy, Sonesson (1989b) has made a strong case for treating photographs as primarily iconic signs. He argued that indexicalist arguments do not account for what the photograph depicts. While the Content of both indexical and photographic signs is spatiotemporally constrained, the Expression of the latter is not. To illustrate this difference through Sonesson’s (ibid., p.81) own example: a hoofprint (which looks somewhat like the animal that left it behind) is primarily indexical because its Expression is spatiotemporally constrained and thus points to the whereabouts of the animal; whereas the photograph is primarily iconic because its Expression is omnitemporal and omnispacial once it is developed, and its Content (i.e., what it depicts) can still be grasped even if one is unaware of the connection between the depicted elements and actual elements occupying a specific spatiotemporal milieu.

Having made these clarifications regarding the nature of icons across the three categories of being, it is helpful to recognise an important distinction, made by Sonesson (2010a; 2013b), between two types of iconic signs, based on whether the iconic grounds are readily perceived or require prior familiarity with the sign function in order to be discerned. In what he termed *primary* icons, the perception of a similarity between something and something else is at least a partial reason for taking one to stand for the other. In these cases, the iconic ground between two “things” can be readily identified without resorting to any particular conventions. The most characteristic case of a primary icon is the picture, because the readily apparent similarity between the depicted and the real entities is the main reason that the depiction is identified as an iconic sign. In *secondary* icons though, prior knowledge that one thing stands for another in a specific interpretive system is at least a partial reason for perceiving their similarity. In these cases, the iconic relationship is partially motivated by the sign relation, and thus requires familiarity with a particular convention in order to be appropriately gleaned. A representative example of secondary icons is presented by a car at a car exhibition, since prior knowledge of its significative function in the context of the exhibition is required in order to appreciate its similarity with the cars sold by the manufacturer. As can be seen through this example, secondary icons are objects that are normally used for what they are, and which become significative – of themselves, of some of their properties, or of the class of which they form part – in particular situations, and according to specific conventions.

3.2.2.2 Index

In Peirce’s own words (CP 2.248), ‘[a]n *Index* is a sign which refers to the Object that it denotes by virtue of being really affected by that Object.’ Otherwise put, the Sign directs attention towards an Object with which it is particularly or existentially connected. Given

that the properties of these two things are in one way or another actually connected, ‘the indexical ground is “about” this relation’ (Sonesson 2006, p.181).

Indexicality – to use the term employed by Sonesson (2006; 2012) – is a Second (see Table 2.2). As we have already seen in the previous chapter (section 2.3.3), this *indexical ground* may emerge in two ways: *contiguity* and *factorality*. While the former refers to a spatiotemporal existential relationship between two things such as fire and smoke, the latter denotes a relationship between a part and a whole such as that between a visible extremity of a hidden object and the object, or between a sailor’s gait and his social role.

As a Second, indexicality (i.e., the indexical ground) can be embodied by a Sign, which is a Third. Similarly to the iconic ground, the indexical ground acquires an element of symbolicity when stabilised and objectified at the level of Thirdness, as the indexical Sign becomes conventionally understood to stand for something else (i.e., its Object). Yet, while the indexical ground can be embodied by sign function, it does not itself embody an indexical principle (i.e., a First), as can be seen in Table 2.2. The reason behind this is that, by definition, indexicality is not concerned with how a thing exists regardless of anything else. Instead, it pertains to the connection of two things by way of contiguity or factorality. In this light, these two things share a quality, but not in the way things connected by iconic grounds do. Two things linked by iconic grounds resemble one another by sharing a property that they possess independently from one another. In contrast, two things connected by indexical grounds share a quality, not by typical iconic resemblance, but by being directly affected by one another. To this extent, when one of these things is taken to significantly stand for the other at the level of Thirdness, it can be said that the Index involves a sort of Icon, albeit one of ‘a peculiar kind’ (CP 2.248).

In order to better appreciate the distinctions between the three categories of being, let us consider the example of smoke and fire. The principle of relevance between these two things is manifested as an indexical ground based on contiguity (i.e., Second); and when smoke is taken to signify fire, it is an indexical sign (i.e., a Third). Yet it is also interesting to note that this Index embodies a peculiar kind of Icon, because by being directly affected by fire, smoke shares a certain quality with it.

Having made these ontological clarifications regarding the nature of indices across the three categories of being, it is useful to make here an important distinction between two types of indexical signs, based on whether or not the formation of the indexical ground precedes the formation of the sign function. According to Sonesson (1989a; b), in some indices, the indexical ground between two “things” pre-exists and is therefore open to perception before the formation of the indexical sign. Such *abductive* indices are based on known regularity in order to describe states of affairs, and generally necessitate prior cultural knowledge in order to be properly interpreted.¹⁷ A fingerprint is a typical example of an abductive index because the indexical ground linking the fingerprint and the perpetrator pre-exists to the formation of the sign. Yet in other indices, the indexical ground between two “things” is actually established the moment the sign is given. According to Sonesson, such *performative* indices entail posited regularity in order to create states of affairs, and do not necessitate much cultural knowledge because their meaning is spontaneously generated.¹⁸ A pointing finger is a classic example of a performative index because the ground between the finger and what it points to is established with the formation of sign.

¹⁷ The indices that can be used in order to ascertain facts have been referred to by Peirce as *reagents* (CP 8.368, note 23). Consider, for instance, the use of water with a shaving of camphor in order to determine whether the containing vessel is clean.

¹⁸ The indices that are used to force attention to the thing intended have been referred to by Peirce as *designations* (CP 8.368, note 23). Consider, for example, the use of pronouns and proper names.

Granted this useful distinction, it is also important to recognise that indexical signs can simultaneously be abductive and performative (Sonesson 1989a, p.53; 1989b, p.64). As exemplified by Sonesson (1989a, p.53): '[T]he clock over the clockmaker's shop is abductive because it depends for its interpretation on the prior knowledge about a relation between a clock and the kind of services to be expected of the watchmaker. On the other hand, the emplacement of the clock creates a contiguity with a particular part of a building that it thus designates as the place where the watchmaker's shop is to be found.'

3.2.2.3 Symbol

According to Peirce (CP 2.249), '[a] *Symbol* is a sign which refers to the Object that it denotes by virtue of a law, usually an association of general ideas, which operates to cause the Symbol to be interpreted as referring to that Object.' Simply put, the symbolic Sign is associated with its Object through a conventional rule, rather than by way of iconic or indexical grounds. As has been noted by Sonesson (2006, p.172), a symbol is literally groundless before becoming a sign because there is nothing in the Expression and its Content that explains the sign relation that produced the relevance between them.

Given that the principle of relevance between these two parts of the sign is produced solely by the sign relation, Sonesson recognised that symbolicity (i.e., the symbolic ground) is necessarily a Third (see Table 2.2). The conventional connection between the Sign and its Object (i.e., what we generally refer to as *arbitrariness*) requires that the Sign functions through a general law. As a Legisign, a symbolic Sign can only be instantiated through a Replica (CP 2.249). Although Replicas are – by definition – acts (i.e., Sinsigns) that are guided by general rules (i.e., Legisigns), the Replica of the symbolic Sign is itself general. More importantly though, the Object it refers to is also of a general nature (ibid.). This generality has its being in determining certain “existent” instances where the Symbol denotes its Object. These need not exist in the same way that

iconicities and indexicalities exist (i.e., by being actualised in the physical world). As Peirce pointed out, these may be ‘existent in the possibly imaginary universe to which the Symbol refers’ (ibid.). Regardless of where they exist, these instantiations affect the Symbol – albeit indirectly, because the symbolic Sign and its Object are connected through a law, such as that of association. In view of this associative law that links the Sign and its Object, Peirce posited that the ‘[s]ymbol will involve a sort of Index, although an Index of a peculiar kind’ (ibid.). It appears that this indexical Sign is “peculiar” in that unlike a proper Index, which is actually affected by its Object, the one embodied by the symbolic Sign is barely affected by its Object because it is connected with it by a general law. To this extent, Peirce posited that the slight effect that its instantiations have upon the Symbol do not account for its key characteristic (ibid.). As a matter of fact, the essential character of the symbolic Sign is to be found in its symbolicity – that is, in the *purely* arbitrary ground that connects it with its Object.

3.2.3 Triadic relations of thought

The final trichotomy of signs discussed by Peirce – the ‘Triadic relations of Thought’ (CP 2.234) – distinguishes the ways that an Interpretant relates to the Sign–Object relation in: Rhemes, Dicot Signs or Dicot Signs, and Arguments (CP 2.243, 2.250–2.252).

According to Peirce (CP 2.250), ‘[a] *Rheme* is a Sign which, for its Interpretant, is a Sign of qualitative Possibility, that is, is understood as representing such and such a kind of possible Object.’ Otherwise put, it denotes the possibility of an Object. As a First, it need not be actualised, and as such it is neither true nor false. That being said, by representing the characters of its Object, it does however confer information, even if not perceived as functioning to that regard.

On the other hand, ‘[a] *Dicot Sign* is a Sign, which, for its Interpretant, is a Sign of actual existence. It cannot, therefore, be an Icon, which affords no ground for an

interpretation of it as referring to actual existence' (CP 2.251). It is instead reserved for Indices and Symbols, which convey factual information about their Objects. As a Second, a Dicisign can be either true or false, and embodies 'a peculiar kind of Rheme' which describes the fact which is interpreted as indicating (ibid.).

Lastly, '[a]n *Argument* is a Sign which, for its Interpretant, is a Sign of law' (CP 2.252). As a Third, the Interpretant of the Argument conceptualises the Sign as an instantiation of a general class of Arguments tending to the truth. On such grounds, the Argument is characterised by a mode of representation that "urges" a law, and is therefore consubstantial with Symbols alone (CP 2.253). A law can only be manifested through a kind of Dicent Symbol or Proposition termed a *Premiss*, which is 'quite different in force (i.e., in its relation to its interpretant) from a similar proposition merely asserted; and besides, this is far from being the whole Argument' (ibid.). In other words, a *Premiss* is one of the many Propositions embodied by an Argument.

As we have seen in our overview of Peirce's sign types, all three kinds of triadic relations are characterised by the embodiment of lower-order signs by higher-order ones. If we are to better appreciate how lower-order signs provide the foundations for more elaborate forms of signification, we must explore how the nine sign types outlined above can be combined in forming a tenfold typology of signs. I thus dedicate the final part of this chapter to the ten levels of signification that can enable archaeologists to accurately describe the nature of past material signs.

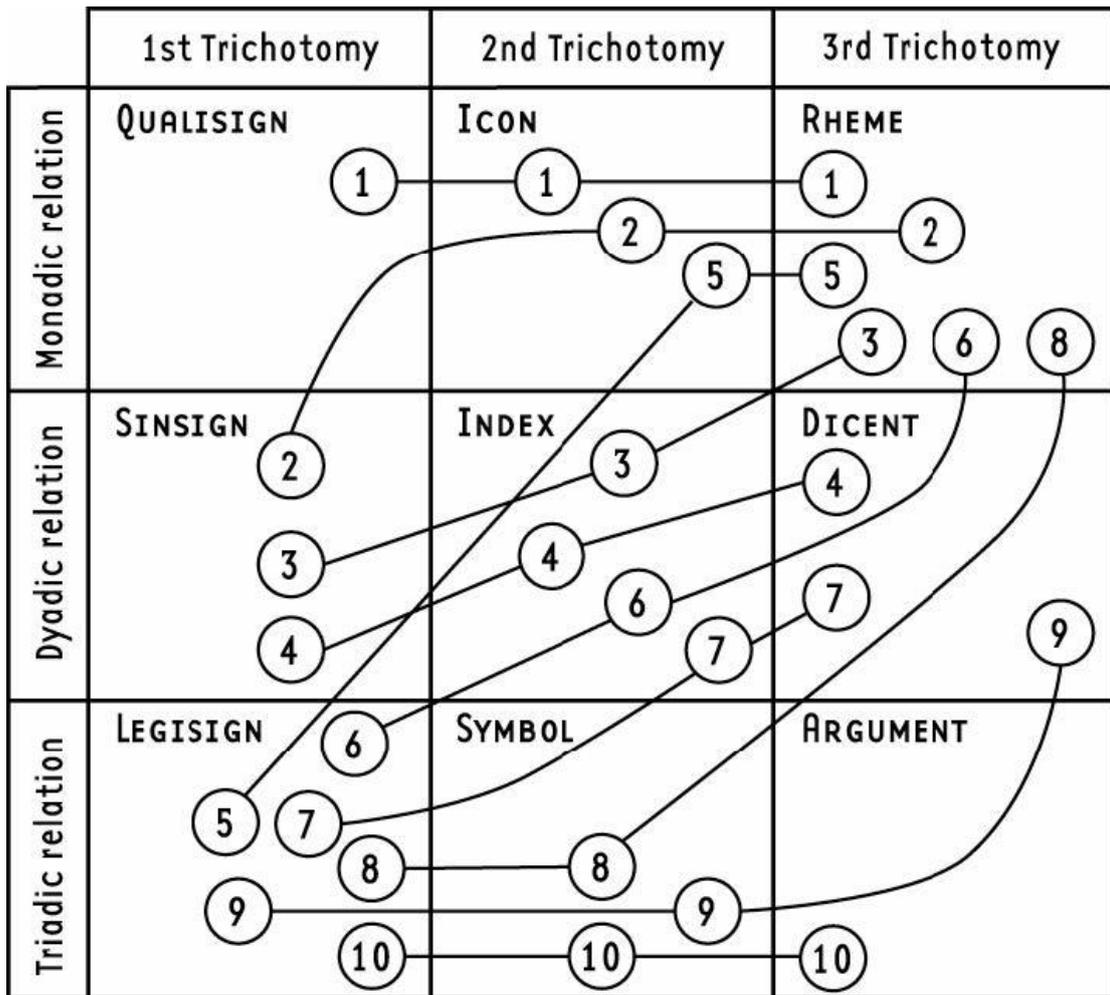
3.3 Peirce's tenfold typology of signs

While the triad of trichotomies can yield a total of twenty-seven possible sign combinations, not all of them are underpinned by logic. The level of the Sign's relation to itself must be at least as high as the level of the Sign–Object relation, which in turn must be at least as high as the level of the Sign–Interpretant relation. These restrictions stem

from an underlying hierarchical principle, the workings of which have already been revealed above: only a possibility (i.e. a First) can determine a First; only an actuality (i.e. a Second) can determine a Second and involve a First; and only a law (i.e. a Third) can determine a Third, and involve a Second and a First. As a result, only ten sign combinations can occur (Table 3.3; Figure 3.2). I shall thus first outline a tenfold typology that starts from “simpler” kinds of meaning such as instantaneous feelings, before moving towards more “complex” kinds of meaning such as syllogisms. Having covered the spectrum of meaning (section 3.3.1), I will consider the application of this detailed and analytically-precise typology to three archaeological case studies (section 3.3.2).

Table 3.3 The ten sign categories in Peircean semiotics (CP 2.254–63; adapted from Watts 2008, p.198, Table 10.2). It need be clarified that the parenthesised elements are specificational redundancies and were thus not included in Peirce’s original account. In this dissertation, however, all three elements will be provided every time for the purpose of clarity.

No.	Category	Name	Example	Ref.
1	First	(Rhematic Iconic) Qualisign	a feeling of ‘red’	2.254
2	Second	(Rhematic) Iconic Sinsign	an individual diagram	2.255
3	Second	Rhematic Indexical Sinsign	a spontaneous cry	2.256
4	Second	Dicent(-ic) (Indexical) Sinsign	a weathervane	2.257
5	Third	(Rhematic) Iconic Legisign	a diagram	2.258
6	Third	Rhematic Indexical Legisign	a demonstrative pronoun	2.259
7	Third	Dicent(-ic) Indexical Legisign	a street cry	2.260
8	Third	Rhematic Symbol(-ic Legisign)	a common noun	2.261
9	Third	Dicent(-ic) Symbol(-ic Legisign)	a proposition	2.262
10	Third	Argument(-ative Symbolic Legisign)	a syllogism	2.263



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Figure 3.2 The 10 classes of signs as a system of cross-relational classes (after Farias and Queiroz 2006, p.289, Fig.1).

3.3.1 Outline of the tenfold typology

1. A Rhematic Iconic Qualisign is ‘any quality in so far as it is a sign’, as exemplified by a feeling of red (CP 2.254). Analysing its constituents from the triadic relations of comparison to the triadic relations of thought: the Qualisign refers to the fact that the Sign is a qualitative possibility, the Icon reveals the character it shares with its Object, and the Rheme signals its denotative essence. The Firstness of all its components makes the Rhematic Iconic Qualisign a First.
2. A Rhematic Iconic Sinsign is ‘any object of experience in so far as some quality of it makes it determine the idea of an object’, as exemplified by an individual diagram

(CP 2.255). The Sinsign refers to the actualisation of the Sign, the icon to the quality it shares with its Object, and the Rheme to its denotative essence. The Secondness of the Sinsign makes the Rhematic Iconic Sinsign a Second.

It should be noted here that a Rhematic Iconic Sinsign embodies a Rhematic Iconic Qualisign.

3. A Rhematic Indexical Sinsign is ‘any object of direct experience so far as it directs attention to an Object by which its presence is caused’, as exemplified by a spontaneous cry (CP 2.256). The Sinsign refers to the actualisation of the Sign, the Index to its contiguity with its Object, and the Rheme to its denotative essence. The Secondness of the Sinsign and the Index makes the Rhematic Indexical Sinsign a Second.

It should be here noted that a Rhematic Indexical Sinsign necessarily embodies a Rhematic Iconic Sinsign, which according to Peirce is ‘of a peculiar kind...since it brings the attention of the interpreter to the very Object denoted’ (ibid.).

4. A Dicentric Indexical Sinsign is ‘any object of direct experience, in so far as it is a sign, and, as such, affords information concerning its Object’, as exemplified by a weathervane (CP 2.257). The Sinsign refers to the actualisation of the Sign, the Index to its contiguity with its Object, and the Dicisign to its informative essence. The Secondness of all its components makes the Dicentric Indexical Sinsign a Second.

It is necessary to note here that a Dicentric Indexical Sinsign embodies a Rhematic Iconic Sinsign as the information, and a Rhematic Indexical Sinsign to indicate the Object to which the information refers.

5. A Rhematic Iconic Legisign is ‘any general law or type, in so far as it requires each instance of it to embody a definite quality which renders it fit to call up in the mind the idea of a like object’ (CP 2.258). A diagram, devoid of its factual individuality, is a prime example of such a sign, because it is the rule required for its interpretation that

directs one to the depicted spatial relations. The Legisign refers to the general rule guiding the Sign, the Icon to the quality it shares with its Object, and the Rheme to its denotative essence. The Thirdness of the Legisign makes the Rhematic Iconic Legisign a Third.

Of note here is that, according to Peirce, a Rhematic Iconic Legisign embodies a Rhematic Iconic Sinsign ‘of a peculiar kind’ because it is a Replica (ibid.).

6. A Rhematic Indexical Legisign is ‘any general type or law, however established, which requires each instance of it to be really affected by its Object in such a manner as merely to draw attention to that Object’ (CP 2.259). Demonstrative pronouns are characteristic examples of Rhematic Indexical Legisigns, as the rules for interpreting their Replicas direct one to the circumstances within which they occur. The Legisign refers to the general rule guiding the Sign, the Index to its contiguity with its Object, and the Rheme to its denotative essence. The Thirdness of the Legisign makes the Rhematic Indexical Legisign a Third.

It should be noted here that, according to Peirce, a Rhematic Indexical Legisign embodies a Rhematic Indexical Sinsign ‘of a peculiar kind’ for it is a Replica (ibid.). In fact, ‘[t]his sign is always instantiated in a rhematic indexical legisign, so there are no pure cases of such signs’ (Liszka 1996, p.51). However, a Rhematic Indexical Legisign also embodies a Rhematic Iconic Legisign as its Interpretant (CP 2.259).

7. A Dicentric Indexical Legisign is ‘any general type or law, however established, which requires each instance of it to be really affected by its Object in such a manner as to furnish definite information concerning that Object’, as is exemplified by a street cry (CP 2.260). The Legisign refers to the general rule guiding the Sign, the Index to its contiguity with its Object, and the Dicisign to its informative essence. The Thirdness of the Legisign makes the Dicentric Indexical Legisign a Third.

It should be noted here that a Dicentic Indexical Legisign embodies a Rhematic Iconic Legisign to signify the information, and a Rhematic Indexical Legisign to denote the subject of that information. In the words of the semiotician James Liszka (1996, p.51): ‘Because these are correlated in the sign [in the Dicentic Indexical Legisign], they are interpreted as revealing something factual, and so it is dicentic. Because it is always instantiated in a dicentic sinsign, there are no pure cases of this sort of sign.’ Otherwise put, a Dicentic Indexical Legisign is always instantiated as a Dicentic Indexical Sinsign, its Replica.

8. A Rhematic Symbolic Legisign is ‘a sign connected with its Object by an association of general ideas in such a way that its Replica calls up an image in the mind which, owing to certain habits or dispositions of that mind, tends to produce a general concept, and the Replica is interpreted as a Sign of an Object that is an instance of that concept’ (CP 2.261). Peirce exemplified such a sign by means of a common noun. A Legisign refers to the general rule guiding the Sign, the Symbol to its arbitrary association with its Object, and the Rheme to its denotative essence. The Thirdness of the Legisign and the Symbol makes the Rhematic Symbolic Legisign a Third.

It is necessary to note here that a Rhematic Symbolic Legisign ‘is always instantiated in a rhematic indexical sinsign, so there are no pure examples of this type’ (Liszka 1996, p.51). The Rhematic Indexical Sinsign is ‘of a peculiar kind, in that the image it suggests to the mind acts upon a Symbol already in that mind to give rise to a General Concept’ (CP 2.261). For instance, a Replica of the word ‘camel’ is a Rhematic Indexical Sinsign, because the Sign acts as cue for the conceptualisation of a camel, a notion with which the interpreter is already acquainted with prior to encountering the Replica. In this light, the Interpretant of the Rhematic Symbolic Legisign can often be

represented by the Interpretant as a Rhematic Indexical Legisign, and other times as a Rhematic Iconic Legisign (e.g., onomatopoeic words, such as buzz).

9. A Dicentric Symbolic Legisign is ‘a sign connected with its object by an association of general ideas, and acting like a Rhematic Symbol, except that its intended interpretant represents the Dicent Symbol as being, in respect to what it signifies, really affected by its Object, so that the existence or law which it calls to mind must be actually connected with the indicated Object’ (CP 2.261). An ordinary Proposition is an example of such a sign. The Legisign refers to the general rule guiding the Sign, the Symbol to its arbitrary association with its Object, and the Dicensign to its informative essence. The Thirdness of the Legisign and the Symbol makes the Dicentric Symbolic Legisign a Third.

Of note here is that a Dicentric Symbolic Legisign embodies a Dicentric Indexical Legisign, which is how the interpreter perceives it when making an association with the general nature of the sign. A Dicentric Symbolic Legisign also embodies a Rhematic Symbolic Legisign which signals the sign’s essence through embodying a Rhematic Iconic Legisign that expresses the information, and a Rhematic Indexical Legisign that denotes the subject of that information. Moreover, a Dicentric Symbolic Legisign embodies, as a Replica, a Dicentric Indexical Sinsign that is ‘of a “peculiar” kind’, because it instantiates a law that ‘has its being in instances’ (CP 2.262).

10. An Argumentative Symbolic Legisign is ‘a sign whose interpretant represents its object as being an ulterior sign through a law, namely, the law that the passage from all such premisses to such conclusions tends to the truth (CP 2.263).’ A syllogism is a prime example of such a sign. The Legisign refers to the general rule guiding the Sign, the Symbol to its arbitrary association with its Object, and the Argument to its truth-tending essence. The Thirdness of all its components makes the Argumentative Symbolic Legisign a Third.

It should be noted here that an Argumentative Symbolic Legisign embodies a Dicentic Symbolic Legisign (or Proposition), which either can hold true or not – unlike the Argument, which is not prone to doubt, veering the sign towards definiteness. Such a Third consists of a set of Premisses that lead to a Conclusion via a means of a leading principle, which states that should the former series of propositions tend towards the truth, so will the concluding proposition.

Based on the above, it appears that these ten levels of signification are hierarchically structured as seen the following lattice (Figure 3.3):

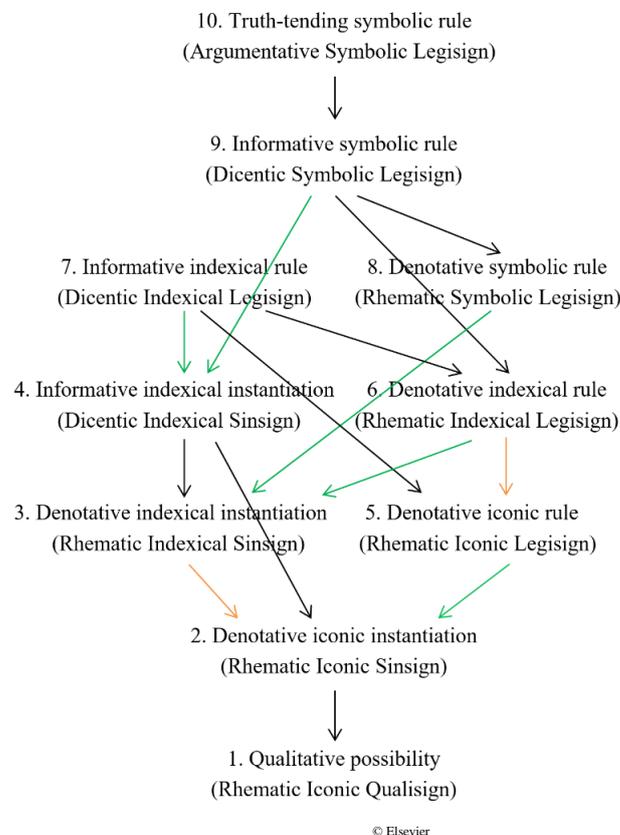


Figure 3.3 In this lattice, the ten classes of signs are hierarchically structured, with higher-order signs embodying lower-order signs (after Iliopoulos 2016b, p.120, Fig.4). The black arrows point towards the embodied lower-order signs that provide the foundations for higher-order signs. The other two types of arrows are special in that they point towards special cases of lower-order signs: the green arrows point towards “peculiar” Sinsigns that are real-world instantiations (i.e., Replicas) governed by general rules (i.e., Legisigns) (CP 2.246); and the orange arrows point to “peculiar” Icons that do not just resemble their Object, but are actually modified by it (CP 2.248).

3.3.2 Application of the tenfold typology to archaeological case studies

Having outlined Peirce's tenfold framework, let us now examine how it has been implemented in the semiotic analysis of three archaeological case studies.

The first archaeological case study comes from Preucel (2006), who investigated the semiotic dimensions in the architecture of the Brook Farm, a utopian community at West Roxbury, Massachusetts, which operated between 1841 and 1847. More specifically, he treated the roles of the buildings as social actors in mediating the incongruence between the semiotic ideologies of Transcendentalism and Fourierism which defined the community during 1841–1844 and 1844–1847 respectively. In order to understand how these movements could have influenced the architecture of the period, let us first consider their philosophical positions. Best summarised in Preucel's (2006, pp.183–184) words: 'In the former case, agenthood was based upon the individual expressed in relation to nature, labor, equality, education, agriculture, industry, and divinity. In the latter, it was based upon the "new man," conceived as an individual free to realize his or her full potential in connection with others by engaging in all spheres of life.' In view of this distinction, let us now consider the semiotic classification of the mediating architecture.

Each of the buildings had its own distinct architectural form, which would make this diverse style a Rhematic Indexical Legisign (i.e., a denotative indexical rule) that attests to the individuality characterising the Transcendentalist movement. Therefore the buildings are Rhematic Indexical Sinsigns (i.e., denotative indexical instantiations), which also embody Rhematic Iconic Sinsigns (i.e., denotative iconic instantiations), given that they resemble specific forms of rural architecture. Moreover, they are also Rhematic Indexical Sinsigns (i.e., denotative indexical instantiations) in another respect – they regulate activities that are characteristic of communal living. However, the phalanstery

that was built during the transition to Fourierism functioned as a Dicentic Indexical Sinsign (i.e., an informative indexical instantiation), for it was interpreted as a public marking of the transition to a stricter overarching communality. Lastly, it is also worth noting the semiotic status of two paintings of Brook Farm, which were used by its members on their lecture circuit. Given that they provided the material reality required for the contextualisation of their lectures, they would have functioned as Dicentic Indexical Sinsigns (i.e., informative indexical instantiations) which embodied Rhematic Iconic Sinsigns (i.e., denotative iconic instantiations). So where does this semiotic analysis leave us?

According to Preucel (2006, p.209), the diversity in the buildings manufactured and used during the Transcendentalist phase attests to this movement's celebration of the individual within the society. In fact, the architectural structures incited Transcendentalist habits of practice and thought. As would be expected, the strength of these habits made the inhabitants of Brook Farm reluctant towards the phalanstery built during the transition to the Fourierist phase. It is to this extent, that Fourierism never actually replaced Transcendentalism – instead, the two movements co-existed until the abandonment of Brook Farm.

Another archaeological case study in which Preucel (2006) utilised the Peircean framework, centers on the Kotyiti Pueblo, an ancestral Cochiti Village in New Mexico around the time of the Pueblo Revolt of 1680. In the revitalisation movement, Pueblo leaders used architecture, site location, ceramics, and rhetoric for the creation of semiotic ideology. In terms of the architecture, the plaza pueblo is a Rhematic Indexical Sinsign (i.e., a denotative indexical instantiation) of the Keres worldview – itself a Dicentic Indexical Legisign (i.e., an informative indexical rule) – on the basis of the cardinal directions of its gateways and their association with the corners of the world, where

mythological places and deities are thought to be found. For instance, the northern gateway likely refers to Shipap, the place of emergence of the underworld. As for the pottery, the doubleheaded key motif is a Rhematic Iconic Legisign (i.e., a denotative iconic rule), as it referenced earlier pre-Spanish forms, while the shield design is a Rhematic Iconic Sinsign (i.e., a denotative iconic instantiation) referencing an actual shield, as well as a Rhematic Indexical Legisign (i.e., a denotative indexical rule) drawing attention to the publicly articulated reasons for warfare. Regarding site location and ceramics, the double plaza pueblo (i.e., the main village of Kotyiti Pueblo) and the doubleheaded key motifs are likely to have functioned as Argumentative Symbolic Legisigns (i.e., truth-tending symbolic rules) by referring to ideas of balance and harmony between the two moieties. Finally, it is interesting to note that Preucel (2006) also applied this triad of triptychs to the rhetoric used by the Pueblo in order to refer to the mythic time when their people emerged from the underworld. Put in his own words: '[the references to time] are rhematic indexical sinsigns (individual phrases indexing a particular conception of the past) acting to constitute a rhematic symbol (the revival discourse)' (ibid., p.220). There is also a mention of the lake Copala, which should it refer to the primordial lake associated with the emergence of Tewa (i.e., a group of Pueblo people), then the mythological lake can be interpreted as a Dicentic Indexical Legisign (i.e., an informative indexical rule) embodying a Rhematic Iconic Sinsign (i.e., a denotative iconic instantiation) that signified the specific location commonly identified as the place of origin. Based on such an analytically precise semiotic study, Preucel (2006, p.246) was able to conclude that '[t]here is compelling evidence that this revitalization discourse identified at Kotyiti circulated widely among the Pueblo people and created a new sense of self and community.'

Finally, let us consider Watts' (2008) implementation of Peirce's tenfold typology in a semiotic analysis of the Late Woodland pottery from southwestern Ontario, Canada. More specifically, Watts compared earthenware vessels from two adjacent but distinct cultural traditions – the Western Basin and the Ontario Iroquoian – in aspects of: morphology (e.g., rim height, thickness, orientation, etc.), decoration (e.g., tool, technique and motif use), and symmetry on vessel necks. In terms of morphology, the consistency exhibited by the vessels of both types suggests that their manufacture was guided by general rules, or more specifically, Dicentic Indexical Legisigns (i.e., informative indexical rules), which would mean that the Replicas were Dicentic Indexical Sinsigns (i.e., informative indexical instantiations). In terms of decoration however the two cultural traditions differ. While the consistency demonstrated by the Iroquoian vessels suggests their manufacture was guided by Dicentic Indexical Legisigns (i.e., informative indexical rules), the variation that characterised the Western Basin vessels led Watts (2008, p.203) to suggest that 'Western Basin decorative practices were likely attuned to a semeiotic mediation involving rhematic indexical legisigns [i.e., denotative indexical rules], where configurations of decorative bands, as rhematic indexical sinsigns [i.e., denotative indexical instantiations](replicas), point to 'play' or possibility.' Finally, in terms of symmetry, the emergent overall patterning suggests, yet again, that while the Iroquoian vessels were guided by Dicentic Indexical Legisigns (i.e., informative indexical rules), the Western Basin vessels were guided by Rhematic Indexical Legisigns (i.e., denotative indexical rules). Informed by this semiotic analysis, Watts (2008, p.203) was able to conclude that, unlike the Western Basin potting practices, the 'Iroquoian potting practices during Late Woodland times were mediated by a relatively coordinated form of material agency.' In his view, the consistency characterising the manufacture of Iroquoian vessels reflects the routinisation of the Iroquoian daily practices, which was an effect of

the permanency they experienced inhabiting semi-sedentary villages involved in the production of maze.

3.4 Summary

In this chapter, I sought to outline a version of Peirce's semiotic theory that is detailed enough to provide archaeologists with the analytical precision required for accurately describing the semiotic nature of past material signs. To this end, I started by establishing the phenomenological underpinnings of his pragmatic framework, which aims to elucidate the formation of concepts by gauging the practical effects of objects. In order to explore human experience and consciousness, Peirce made a distinction between three categories of being: Firstness (i.e., possibility), Secondness (i.e., actuality), and Thirdness (i.e., conception). As we saw, these ontological categories provided the scaffolding for all of the triadic distinctions comprising his semiotic theory. Most characteristically, Peirce's notion of the sign is triadic as the Sign stands for its Object in some respect (i.e., the ground), thus generating an Interpretant. While this definition is invaluable for acknowledging the role of interpretation in the creation of meaning, Peirce did not account for the criteria that the Sign and its Object need fulfill in order for their relation to be deemed significative. In view of this theoretical oversight, Sonesson proposed that the Sign and its Object – or, as he terms them, the Expression and its Content – must be doubly differentiated, in that these entities should not overlap in time and/or space, and in that they should be of different nature. He also added that the Expression must be directly present, but that its Content must be more in focus. Only then should the resulting interpretations be considered the products of a significative process. Returning to Peirce's theory, it was subsequently shown that Interpretants can assume three distinct forms: emotional, energetic, and/or logical.

To illuminate how these kinds of meaning are actually elicited, we then turned to a detailed examination of the three types of relations that characterise the nature of the Peircean sign. As we have seen, these include: the Sign's relation to itself (i.e., the triadic relations of comparison), the Sign's relation to its Object (i.e., the triadic relations of performance), and the Sign's relation to its Interpretant (i.e., the triadic relations of thought). Briefly put, the triadic relations of comparison can be distinguished in: Qualisigns (i.e., qualities that are Signs), Sinsigns (i.e., actual existent things or events that are Signs), and Legisigns (i.e., general rules that are Signs); whereas the triadic relations of performance can be distinguished in: Icons (i.e., Signs connected to their Objects via similarity), Indices (i.e., Signs connected to their Objects via contiguity/factorality), and Symbols (i.e., Signs connected to their Objects via arbitrariness). It should be noted here that Sonesson has made a useful distinction between two types of Icons: primary icons (i.e., iconic signs whose iconic grounds are directly perceptible) and secondary icons (i.e., iconic signs whose iconic grounds require prior cultural knowledge in order to be discerned). He has also made a valuable distinction between two kinds of Indices: abductive indices (i.e., indexical signs whose indexical grounds precede the sign function) and performative indices (i.e., indexical signs whose indexical grounds are created at the moment the sign function is given). Having recognised Sonesson's useful distinctions, we then considered the last of Peirce's triptychs. As he had proposed, the triadic relations of thought can be distinguished in: Rhemes (i.e., Signs of qualitative possibility for their Interpretants, and as such neither true nor false), Dicisigns (i.e., Signs of actual existence for their Interpretants, and as such either true or false), and Arguments (i.e., Signs of law for their Interpretants, and as such always true).

Finally, we saw that the nine types of sign relations that characterise the nature of the triadic sign can be combined in ten different ways, thus forming a detailed and analytically-precise tenfold typology. Succinctly outlined, the ten levels of signification put forth by Peirce include: the Rhematic Iconic Qualisign (i.e., a qualitative possibility – level 1), the Rhematic Iconic Sinsign (i.e., a denotative iconic instantiation – level 2), the Rhematic Indexical Sinsign (i.e., a denotative indexical instantiation – level 3), the Dicentric Indexical Sinsign (i.e., an informative indexical instantiation – level 4), the Rhematic Iconic Legisign (i.e., a denotative iconic rule – level 5), the Rhematic Indexical Legisign (i.e., a denotative indexical rule – level 6), the Dicentric Indexical Legisign (i.e., an informative indexical rule – level 7), the Rhematic Symbolic Legisign (i.e., a denotative symbolic rule – level 8), the Dicentric Symbolic Legisign (i.e., an informative symbolic rule – level 9), and the Argumentative Symbolic Legisign (i.e., a truth-tending symbolic rule, or simply a syllogism – level 10). As it became apparent through a brief summary of three case studies, these ten levels of signification have been successfully employed by semiotic archaeologists, in order to accurately describe the semiotic nature of past material artefacts and structures.

Informed by the theoretical insights yielded by this overview, I draw upon Peirce's semiotic framework in the following chapter, in order to accurately describe the significant nature of prehistoric material signs, such as early ornamental shell beads.

Chapter 4

Application of the Peircean semiotic theory

Chapter outline

In the previous chapter, I presented a version of Peirce's semiotic theory that can provide archaeologists with the analytical precision required for accurately describing the semiotic nature of prehistoric material signs. In this chapter, I use its theoretical insights in order to address the semiotic misconceptions afflicting the discussion on modern human origins. To this end, I start by re-evaluating the nature of symbolism as it has been generally conceptualised by prehistorians (section 4.1), and proceed by rethinking the nature of ornamental signs (section 4.2). Finally, I extend my scope beyond Peirce's icon-index-symbol triad and apply his tenfold typology of signs to ornamental shell beads, in order to accurately describe their semiotic nature (section 4.3).

4.1 Re-evaluating the nature of symbolism

As we have already seen (section 2.1), the overwhelming majority of those involved in the debate on modern human origins identify symbolism on the basis of: i) a non-utilitarian function that they associate with arbitrary meaning; and ii) the standardisation that they take as proof of the conventionality required for the communicative function of "non-utilitarian" artefacts. Deacon (1997) on the other hand, has placed emphasis on the systemic nature of symbols. Peirce's semiotic will thus be employed in what follows for the purpose of evaluating arbitrariness (section 4.1.1), conventionality (section 4.1.2), and systematicity (section 4.1.3) as characteristics of symbolism.

4.1.1 Arbitrariness

Unlike most prehistorians, who consider the communicative meaning of “non-utilitarian” artefacts to be of a codified form (section 2.1.1), Deacon (2012, p.11) rightly acknowledged that arbitrariness ‘basically tells us that neither likeness nor correlation are necessary.’ Yet despite defining arbitrariness according to Peirce’s semiotic theory, he argued that he does not find this a sufficient criterion for recognising symbolic reference, as he thinks that it is not exclusive to this type of signification (Deacon 2011; 2012). In his view, non-symbolic signs can also involve a degree of arbitrariness, resulting from the interpretive component of the semiotic process. For instance, Deacon (2012, p.11) noted that icons can involve low levels abstraction, as when one uses their imagination to discern a face on the full moon or in a cloud formation. Yet he asserted that they can also be highly abstract, as in the case of mathematical equations. These require the ability to discern its symbol-mediated isometry before they can be understood as something iconic (e.g., a parabolic trajectory). Along similar lines, indices also involve a degree of abstraction. As Deacon (2012, p.11) sees it: ‘What gets correlated and how (accidental, cultural, evolutionary) can be arbitrary, only the fact of correlation is not.’ To use his own example, the bell that causes the rat to press the bar of the Skinner box in order to get water, is an arbitrary index of the state of the apparatus. While the pairing of these states was arbitrarily paired in the experimental design, one is not a symbol for the other. On this basis, Deacon suggests that arbitrariness cannot be used as a reliable benchmark for symbolism.

I suggest that Deacon has come to this conclusion because he has confounded two distinct concepts that have been associated with the term *arbitrariness*. Despite acknowledging that arbitrariness ‘basically tells us that neither likeness nor correlation are necessary’, Deacon made a case against the arbitrariness entailed in having to focus on a

particular relevance between two things, rather than on any other of the possible connections (e.g., identifying *this* semiotic ground, rather than *that* semiotic ground). Contrastingly, the arbitrariness identified in the previous chapter (section 3.2.2.3) as the defining characteristic of symbolic signs, is the complete lack of similarity and contiguity/factorality in their semiotic ground. In other words, the Expression and the Content of the symbolic sign neither share any qualities nor are they physically connected. No matter how abstract the relation between a face discerned on a cloud and the face it is deemed to stand for, it would still be fair to say that the two entities are taken to be relevant based on similarity, even if this is only minimal. Likewise, while the bell may be arbitrarily chosen as an index of the state of the apparatus, these entities are indisputably connected through spatiotemporal contiguity. To this extent, the cloud is an icon and the bell is an index. Unlike these icons and indices, symbols depend on *purely* arbitrary connections between general concepts. To this extent, Deacon seems misguided in suggesting that arbitrariness is not a suitable criterion for characterising symbolism.

Unfortunately, the problem with arbitrariness lies elsewhere: arbitrariness is virtually undetectable in the prehistoric archaeological record, because the arbitrary connection between significant artefacts and general ideas cannot be gleaned from the material evidence. As we have seen (section 3.2.2.3), symbols exist solely in the mental domain because they only exist as general rules (Legisigns). For instance, the uppermost form of symbolic signification in figure 3.3 is syllogistic (Argumentative Symbolic Legisign – level 10). Syllogisms embody propositions – or better yet, premises – which are also intangible because they are mental statements in which something is affirmed or denied (Dicentric Symbolic Legisigns – level 9). These in turn embody mind-bound symbolic concepts, which are neither true nor false, but denotative, as in the case of the word “camel” (a Rhematic Symbolic Legisign – level 8). That said, denotative symbolic

rules are always instantiated as replicated objects of direct experience (Replicas) which direct our attention to Objects by which their presence is caused (Rhematic Indexical Sinsigns – level 3). However, these signs are not truly indexical, because unlike typical indices they function as instigators of a symbolic concept already held in mind (e.g., a Replica of the word “camel” acting as a cue for the conceptualisation of an actual camel). To this extent, it seems that materiality does not really lend any of its physical qualities or relations to symbols – at most, it acts as their cue. For instance, had the Venus of Willendorf represented a deity, then the limestone figurine (i.e., the Expression) would have functioned as a cue for the conceptualisation of the fertility goddess (i.e., the Content/Referent). The purely arbitrary nature of this association would have made the sign symbolic. However, it is impossible to infer whether this was indeed the case. As Renfrew (1982, p.11) recognised right from the very beginning of cognitive archaeology, the meanings of past behaviours cannot be deciphered, because ‘cognised’ categories held by past minds cannot be directly accessed. In this light, trying to detect the arbitrary meanings of “non-utilitarian” artefacts from ahistorical archaeological records seems futile.

4.1.2 Conventionalality

While the exact arbitrary relevancies embedded in symbolic grounds (between symbolic material signs and what they stand for) may be virtually undetectable, the conventionalality characterising the significative function of artefacts may be somewhat more approachable. According to Sonesson (2013b, p.189) regularity and repetition may be taken to suggest “ruleboundedness” (i.e., symbolicity), which would have been necessary for conveying a predefined message. Although not a sufficient criterion, standardisation of form would have been an essential prerequisite for symbolism, because symbolic levels of signification depend on artefactual Replicas. As we saw above, these denotative

indexical instantiations (Rhematic Indexical Sinsigns – level 3) function as cues for simple symbolic concepts (Rhematic Symbolic Legisigns – level 8), which can themselves be embodied by informative symbolic propositions and syllogisms (Dicentric Symbolic Legisigns and Argumentative Symbolic Legisigns – levels 9 and 10 respectively). The generalised function of material culture as a cue for symbolism would have been, for instance, the case had the engraved ochre pieces from southern Africa been actually symbolic (section 2.1.2.1). Yet using repetition of form as a proxy for symbolic culture is misguided, because icons and indices can also be conventional. According to the neuroarchaeologist Helen Anderson (2012), the engravings on the discovered ochre pieces bear striking visual resemblance to deeply striated rocks encountered across southern Africa. It would thus seem reasonable to suppose that Middle Stone Age humans would have been able to perceive the ground of similarity between the engraved artefacts and the rock formations. Had they also been able to conceive the engraved ochres as signs for the striations on the rock formations, they would have conventionally understood the artefacts as icons, rather than symbols. In semiotic terms, the depictions would have actually been denotative iconic instantiations (Rhematic Iconic Sinsigns – level 2) guided by a denotative iconic rule (Rhematic Iconic Legisign – level 5).

Interestingly, the conventionality of icons and indices has gone largely unnoticed, not just by the proponents of the strictly symbolic dictum, but also by the small number of prehistorians that have drawn upon Peirce's icon-index-symbol triad. The paper by d'Errico and Nowell (2000) on the Berekhat Ram figurine is a characteristic case of this issue. For the purpose of demonstrating the applicability of Peirce's classificatory system by way of a modern day example, the authors postulated that the Eiffel tower is not only an icon for the actual Eiffel tower, but also 'a symbol of the entire city of Paris and/or all of France' (ibid., p.162). In doing so, they seem to have reserved the communicative and

cultural function of material signs for symbols alone. As they saw it, artefacts that admittedly possess visual elements should be considered symbolic only if they hold some sort of meaning beyond that conferred by mere representation, for icons are mere visual representants devoid of a capacity to communicate anything beyond what they depict. Yet in light of a pragmatic semiotic theory, to reduce iconic signs to mere perception and deprive them of the truly communicative function that comes with conventionalisation is misguided.

Before explaining why this is the case, I must first acknowledge that some iconic signs (i.e., primary icons) can indeed be readily grasped without resorting to any particular convention. The ability of humans to interpret depictions is evidenced by the fact that people of cultures that are unfamiliar with pictures are usually able to make sense of them (Kennedy 1974; Sonesson 1989a). Primary icons can be properly understood because the difference between the depicted and the actual object is not so extensive that it masks the evident similarity between them (i.e., the iconic ground). As Sonesson (2013b) pointed out, the reason humans are able make informed interpretations of such visual resemblances is because their ecological environment helps them develop: the ability to perceive wholes (Gestalts), a proclivity for taking contours as the equivalent of objects' sides, and an acceptance of bi-dimensional surfaces as stand-ins for three-dimensional objects.

While these ecologically incited abilities may explain why the perspectival cues of some icons can be readily discerned, they cannot account for seemingly iconic artefacts, such as the Berekhat Ram, which are not as clearly depictive. As we have already seen (section 3.2.2.1), proper interpretation of secondary iconic signs requires prior cultural knowledge. While the iconic relevance between the material sign and its referent is actually there, discerning it requires being familiar with a particular sign relation. To use

the Eiffel tower example employed by d'Errico and Nowell (2000), the architectural structure no doubt shares some qualities with France, and even more so with Paris. However appreciating it as their icon requires being familiar with some conventions (e.g., where it is located, how promotional media work, etc.). Depending on commonly shared knowledge, does not make a material sign symbolic. In fact, the Berekhat Ram proto-figurine might have been conceived as a secondary iconic sign, because prior knowledge of its significative function in some particular system of interpretation would have been required in order to perceive its similarity with its referent. It thus becomes evident that depriving an iconic *sign* from the conventional character of its sign function (Thirdness) is semiotically incorrect, because it reduces the sign to the underlying iconic ground of similarity that links the artefact with something else (Secondness).

The sign function of indices has been similarly misunderstood, because while performative indices (e.g., the pointing finger) are barely conventional, abductive indices (e.g., fingerprint) do actually depend on prior cultural knowledge (section 3.2.2.1). As we saw in the introductory chapter (section 1.3.2.2), Henshilwood and Dubreuil (2011) dismissed Peirce's icon-index-symbol triad because they drew their Peircean terminology from Deacon's (1997) book, where indices are defined as simple associations. Faced with this kind of reductive definition, they objected and postulated that indices depend on more than causality. From a semiotic point of view, it appears that they were right, because indices cannot be reduced to the indexical ground between two things (Second). They are essentially a sign relation (Third) that has been founded on an indexical ground. In fact, abductive indices require conventionalising knowledge about the indexical relevance of contiguity/factorality that links two "things". To make this clearer through an archaeological example, had stylised tools been used as markers of social identity, they would have been abductive indexical signs because prior knowledge would have been

required for interpreting their significative function, which would have been based on pre-existing semiotic grounds of contiguity between a particular kind of tool and a specific group of people. Merely perceiving the contiguity between people and tools would be insufficient – making significative sense of the tools would require the conceptualisation of tools as signs of group identity. Given that indexical signs are actually a combination of both indexical grounds and sign function, it becomes clear that Deacon (1997) is misguided in reducing indices to mere associations.

Faced with the misconception that icons and indices are perceptually understood, Sonesson (2006, p.180) posited that ‘the expression and content, respectively, of a sign, must be distinguished from the existence of a semiotic function relating these objects.’ In his view, making this distinction between the sign relation (Third) and the semiotic ground (Second) is beneficial not only for the purposes of theoretical clarity, but also for distinguishing the phylogenetic and ontogenetic emergence of iconic and indexical grounds from the emergence of the corresponding signs (*ibid.*, p.181). As shall be demonstrated in the second part of this thesis, tracing the phylogenetic emergence of early material signs requires that we distinguish semiotic grounds from sign function. For now, suffice it to say that the communal understanding of iconic and indexical signs relies on the conventionalisation of the significative association between two things, in that one stands for the other in some respect or capacity.

In this regard, it could be perhaps said that the standardisation of “non-utilitarian” artefacts reveals that they had been conventionally understood to stand for something else (whether as icons, indices, or symbols). Yet to confidently conclude that all standardised “non-utilitarian” artefacts were significative would be overly ambitious, as signification resides at the inaccessible level of concepts (Thirdness). What we can say however, is that repetition of form would have afforded the generation of the general rules (Legisigns)

through which significant meanings are mediated. For instance, the engraved ochre pieces considered above might not have been manufactured with the deliberate intent to represent some sort of predefined meaning. Instead, their creation might have been incidental, with a representational function being instituted only after long-term material engagement (Davidson 2013; Malafouris 2013). This then raises the question: How could have the production of such geometric shapes been incidental? Perhaps the creation of the engravings could have been incited by repeated encounters with the deeply striated rocks of southern Africa. As argued by Anderson (2012), frequent visual experiences of these natural formations would have heightened the sensitivity of the plastic visual cortex, conferring humans with a stronger response to lines of particular orientation. To this extent, humans might have been prone to engrave such lines on plastic materials (but not with the intent to represent – at least initially). The more of these engravings would have been created, the more likely it would have been for people to perceive and conventionalise their similarity with the rock formations, and thus ultimately conceive them as iconic signs. Regardless through of whether these engraved ochre pieces had actually functioned as signs, what is of importance here is that repetition of form would have afforded the perception and conventionalisation of iconic and indexical grounds (thus eventually scaffolding the emergence of material signification).

4.1.3 Systematicity

In Deacon's (2011, p.399; 2012, p.13) view, the telling canon of symbolism is having to resort to knowledge that is not embodied in the sign-vehicle (i.e., the event or object acting as a sign), because a symbol depends on an external system of relations within which its formal similarities and correlative aspects are embedded. To use one of his own examples, the chevron insignia on a military jacket is understood to signify a person's military rank in a symbolic fashion, given that his or her military rank is an integral and

relational element of a system of military ranking (Deacon 2012, p.14). This systemic nature of symbolism is one Deacon (1997) introduced in his seminal book *The Symbolic Species*, which is considered as the most important attempt to integrate semiotics and cognitive semiotics from an evolutionary standpoint (Sonesson 2006, p.135). Thusly, Deacon's systematicity of symbolism has been introduced in the debate on modern human origins – and in particular into the discussion on early body ornamentation, for as we saw in the introductory chapter (section 1.3.2.2), it has been taken as the defining characteristic of Peircean symbolism by both, proponents (e.g., Garofoli 2015, p.14) and opponents (e.g., Henshilwood and Dubreuil 2011, p.389) of Peirce's semiotic theory. According to this take of symbolism, 'there can be no symbolisation without systematic relationships' (Deacon 1997, p.100) – all symbols exist within systems characterised by regimented combinatorial organisation, such as those comprising languages.

The view that all symbols are to be found within elaborate systems has been critiqued by Sonesson (2006, pp.183–187), who presented instances of symbols that do not belong to systems, or if they do, these are minimal. For example, a white walking stick signifies that the person is blind. However, not using a white walking stick does not signify that one is not blind – so the symbolic sign does not belong to a system. On the other hand, the lack of a flag in an admiral ship signifies that the admiral is not on-board – so the symbol belongs to a very minimal system. In this light, Sonesson rightly argues that symbolicity and systematicity are independent variables. It appears to me that the independence of these variables can be explained by taking into consideration the triadic relations of thought, which distinguish signs in Rhemes, Dicisigns, and Arguments (section 3.2.3). A symbolic system, such as a ritualistic ceremony, is held together through its own truth, as in the case of syllogisms, and is thus an *Argumentative Symbolic Legisign*. On the other hand, a white walking stick signifying the blindness of the user,

acts as a proposition and is therefore a *Dicentric Symbolic Legisign*. As can be seen in figure 3.3, although the former type of sign functions by embodying the latter type of sign, the opposite is not true. It would thus be wrong to say that all *Dicentric Symbolic Legisigns* belong in systems. As argued by Sonesson, subsuming all symbols in systems has always been a problem of the structuralist approach. I shall return to Deacon's structuralist interpretation in the following chapter (section 5.1.2.2), when I discuss its unsuitability for studying the emergence of material signification from a truly Peircean perspective. For now, it should suffice to note that symbolicity and systematicity are independent variables.

4.2 Rethinking the nature of ornamental signs

Having clarified what should be treated as symbolism by scholars delving into the topic of modern human origins, we can now examine the semiotic nature of early body ornamentation. Specifically, let us start by identifying the constitutive role of matter in the nature of ornamental signs (section 4.2.1), before exploring their iconic and indexical nature (section 4.2.2).

4.2.1 The constitutive role of matter in the nature of ornamental signs

As we saw in the first chapter, most archaeologists involved in the debate on modern human origins treat early material signs as objects that store and communicate codified meanings. It is thus popularly held that symbolic material culture represents 'the ability to share and transmit coded information within and across groups' (Bouzougar et al. 2007, p.16051). According to the proponents of the signaling theory, this information is purportedly communicated through signals transmitted through ochre pigments and beads (Knight et al. 1995; Kuhn 2014; Power 2009; Stiner 2014). In this regard, meaning is generally seen as a reified entity that originates in the mind and resides in objects.

It is suggested here that a perspective implicitly drawn from behavioural ecology is unproductive, because according to the Peircean doctrine, meaning is actually the emergent product of the constitutive entwinement between mind and matter. As we saw in the previous chapter, meaning in the form of emotional, energetic, and logical Interpretants is generated by interpreting the relation of relevance between a Sign and its Object. It thus follows that material signs (i.e., Expressions) mediate affective, reflexive, and informative meaning through an evaluation of their relation to what they stand for (i.e., Contents). From a semiotic point of view, sign function (Thirdness) is founded on the iconic grounds (Secondness) that are perceived – that is, the similarity or contiguity/factoriality between two things (Sonesson 2006). These kinds of relevance are respectively based on shared qualities and existential relations. While admittedly these ontologies may come to our attention by way of interpretation (because this is the only way we come to know the world), what we find behind them is the material world beyond the scope of the human mind. As Sonesson (2007) has pointed out, while we may not be able to fully grasp the “dynamical” Object (i.e., all the possible ways in which something can relate to something else) because it becomes “immediate” when cognised, humans are in fact able to appreciate that there is a physical world beyond their own perception and conception (section 3.1.2). The fundamental contribution of materiality to the generation of significative meaning thus requires that we acknowledge its constitutive role in icons and indices.

In this light, understanding the ways in which early body ornaments could have meant, requires that we take into consideration their physical qualities and relations (with other ornaments and people), and try to appreciate how ornamental signs (i.e., Expressions) could have been iconically and indexically relevant to what they stood for

(i.e., Contents). Having to understand the ways in which ornamental Expressions could have signified various Contents, brings us to another important misconception.

4.2.2 The iconic and indexical nature of ornamental signs

In overlooking materiality and treating meaning as the inherently arbitrary product of social convention, prehistorians have been adamant that early body ornaments had functioned as symbols. However, as aptly recognised by the linguist Rudolph Botha (2008; 2009; 2010), the available evidence does not warrant the claim that ornamental shell beads were symbolic artefacts that had been syntactically organised. As we have already seen, he suggested that the beads can be identified as symbols only if one presents specifics of: i) the meaning that these beads had for their wearers, ii) the social conventions by which they acquired this meaning, and lastly iii) the information stored and displayed in the beads – in case that differed from the aforementioned meaning (Botha 2008, p.203). Essentially Botha requires archaeologists to move beyond speculations and provide concrete evidence of what the Blombos beads actually meant and how the Blombos inhabitants imbued them with these meanings.

I posit that working towards these goals is problematic. For one, discerning *what* the shell beads meant for their wearers is impossible due to the lack of a written record. Hence, Botha's first and third requests cannot be addressed. Most importantly though, his second request reveals that he can only see ornamental meaning as the epiphenomenal product of social convention. Indeed, if beads were made in order to function as symbols, their symbolic function would have been the result of social convention. However, beads could have become meaningful in non-symbolic ways – a fact that Botha seems to overlook. In doing so, he does not manage to evade the fallacy of the linguistic sign committed by the archaeological consensus that he critiques. As we have already seen,

conflating material culture and language is a category mistake that leaves a large part of the significative spectrum unexplored.

In the introductory chapter, we saw that this linguistic stance towards ornamental meaning has been challenged by a minority of scholars, who focused on *how* ornamental shell beads might have meant, and proposed that their meanings might not have been the arbitrary products of social conventions. Most notably, Garofoli (2015) put forth a semiotic account suggesting that the earliest ornaments would have been iconic and indexical because their meanings would have been established by way of social perception. He suggested that gleaning the meaning of iconic and indexical ornaments, by accounting for the “directedness” of actions towards them, would have set the foundations for their conventionalisation. Put in the explicitly semiotic terminology advanced in the previous chapter, Garofoli seems to be suggesting that the perception of iconic and indexical grounds would have been eventually associated with sign function in yielding iconic and indexical signs. In order to understand how Garofoli conceptualised the relation between the level of perception (i.e., the semiotic ground) and that of signification (i.e., the sign function), we must examine in detail the way in which he described the iconic and indexical meanings of ornaments. Only then can we evaluate and add to his theoretical postulations by drawing on the outlined semiotic framework.

Starting with icons, Garofoli posited that early body ornaments would have been iconic when they would have been aesthetically appreciated. In order to illustrate his claim, he advanced the following hypothetical scenario about Sally and her golden nugget:

With respect to the nugget example, it could be argued that the nugget can iconically mean that the body of Sally is made of gold. However, since this explanation could appear weak when applied to other kinds of aesthetic ornaments not made of gold, I suggest that a broader definition of iconicity should be adopted. This would not imply similarity between sign and object. In this loose sense, iconicity should be intended as the

fact that the ornament produces a new icon of Sally's body: *extended Sally*. This new icon is coupled with emotional reaction internal to the subject... (ibid., p.12, emphasis in original)

It becomes evident from the quoted passage that after being unable to establish a compositional – in terms of their materials – similarity between the ornaments and Sally's body, Garofoli adopted an admittedly looser definition of iconicity, according to which, upon being worn, the ornament altered Sally's appearance, and thus incited emotional responses.

I suggest that before considering the new version of Sally's – now "extended" – body as an icon, we must acknowledge how ornaments function semiotically in and of themselves. Informed by Sonesson's (2010a; 2013b) distinction between primary and secondary icons (section 3.2.2.1), I propose that the golden nugget in Garofoli's scenario is a secondary iconic sign, because it is an ordinary object that becomes a sign – of itself, of some of its properties (e.g., goldness, value, portability, and accessorisation), and of the class of which it is part of (i.e., other such body ornaments) – only in certain circumstances (i.e., when used as an accessory). Cultural knowledge is thus required in order to aesthetically appreciate how the golden nugget can stand for itself and its properties, and in order to recognise the iconic relevance (i.e., iconic ground) linking it to other such ornaments. No doubt, someone unfamiliar with (nugget-based) ornamentation would have been unable to make much sense of the suspended artefact. It thus follows that in order to appreciate an adorned Sally as an icon, one would have needed some sort of cultural background (even if minimal and perceptually garnered) that dictates the function of the golden nugget as a secondary icon.

Along similar lines, I posit that early shell beads would have been secondary iconic signs so long as they functioned as signs of themselves, of some of their properties (e.g., roundness, value, portability, and accessorisation), and of the class of which they

form part (i.e., other *Nassarius kraussianus* shell beads). Understanding them as such would have undeniably required some kind of cultural knowledge. Even if the Blombos beads had signified ‘coolness or good taste’ by standing for themselves, they would not have been symbolic, as Henshilwood and Dubreuil (2011, p.391) have alluded on the basis of the abstract social standards such an interpretation would have purportedly required. I propose that they would have mediated meaning as secondary icons, which still require conventional knowledge in order to be understood, but this knowledge pertains to properties that the shell beads actually share with what they stood for (i.e., themselves, their properties, and other such ornaments).¹⁹

Having accounted for the iconic nature of early body ornaments, I now turn towards the more popular scenario, according to which they communicated specific messages pertaining to their wearer’s ‘marital status, group affiliation, wealth and status’ (Kuhn and Stiner 2007b, p.47). In order to understand the relevance established between ornaments and their wearer’s capacities, we must examine how ornaments could have functioned as indices. Garofoli (2015, p.13) described the physical association established between Sally and her ornaments as follows:

Gold nuggets are rare and difficult to find. When Sally wears a shiny necklace with several gold nuggets she appears in the eye of any observing conspecifics to be capable of providing and showing off such a rare material. Gold nuggets therefore become indexical of Sally’s capability of finding rare and desirable items by virtue of an existing natural law that characterizes them (i.e. their rarity).

¹⁹ It should be remarked that I am not supporting the representationalist notion of Henshilwood and Dubreuil (2011), according to which the cultural rules guiding ornamentation were initially formed as mental templates and thus preceded the manufacture of the ornaments themselves. Instead, I agree with Garofoli in that conventionalisation was a product of material engagement. However, in adding to Garofoli’s semiotic postulations, I must clarify that the iconic element he described in his hypothetical scenario about Sally is not as readily understood as that involved in primary icons (i.e., depictions), and that the conventionalisation of early ornaments as signs would have been required in order to glean their iconic relevance to themselves, their properties, and other such ornaments. The evolutionary process through which such a cultural convention would have been formed is explored in the second part of this dissertation (esp. chapter 7).

In this light, Garofoli posited that the understanding of indexical ornaments is founded on the perception of causal connections. Semiotically put, causality resides in the indexical grounds (Seconds) created between beads and their wearers' capacities. Their conventionalisation through repeated experience would have established sign function (a Third). It is at this point that ornaments would have been identified as signs for their wearer's capacities because they would have fulfilled Sonesson's criteria for signification. For one, ornaments and wearers would have been doubly differentiated: i) they would not have gone over into each other in time and/or space (while the ornaments are in the here and now, the wearer's capacity is spatiotemporally extended); and ii) they would have been perceived to be of different nature (i.e., the ornament is material, whereas the wearer's capacity is mental). Ornaments and wearers would have also been in a doubly asymmetrical relation, in that the ornament would have been presented to one's immediate attention, but the wearer's capacity would have been the focal point. Given that such a sign function would have been founded upon pre-existing indexical grounds, whose interpretation as significative would have required prior knowledge stemming from known regularity, these ornamental signs would have functioned as abductive indices.

Yet it is also important to acknowledge that Sally's ornaments could have, in turn, functioned as performative indices by enabling others to establish indexical grounds at will. Prehistorians tend to reduce the function of material signs to reference alone, overlooking the fact that they can also instigate a connection with what they signify. For instance, according to Janowski's (1998) research on the Kelabit of Sarawak, East Malaysia, the potential to be "good" is inherited via the acquisition of beads, whose value depends on who has owned them in the past. From a semiotic point of view, the body ornaments confer their wearer with "goodness" by establishing indexical grounds

between them upon being worn. Hence, if the Middle Stone Age shell beads are to be viewed as indexical, we must also recognise their performative function. In fact, for a detailed understanding of how the performative and abductive aspects of ornamental indexical signs unfold, it is also important that we illuminate the nature of their underlying grounds.

Most evidently, ornaments become meaningful with respect to their wearer through the ground of contiguity established when they are worn. One could, however, argue that ornamental beads can signify information about their wearers even when not



Figure 4.1 Glass and faience beads from the tomb of Clytemnestra, Archaeological Museum, Athens, Greece. Photo by the author.

worn. I would be inclined to say that even in this case, the material sign means through its existential relation with the displaced wearer. Let us take for instance the set of glass and faience beads found in the ‘Tomb of Clytemnestra’ in Mycenae, Greece (Figure 4.1), and suppose for the sake of argument that Clytemnestra was indeed the female buried in the tomb. To a visitor of the Archaeological Museum of Athens, the beads signify via their once physical and semiotic connection to Clytemnestra. Although one cannot attain the actual message they may have signified when worn, I consider it fair to speculate that, by being showcased unworn in a museum display, they still signify, more than 3,000 years later, the message that “*their wearer was Clytemnestra*”.

Shell beads however can also relate to their wearer via means of factorality, as is characteristically illustrated by the ethnographic record. Based on her work in Northern Kenya, Sarah Williams (1987, p.34) reported that ‘[i]n Turkana, to be without ornament is to be without identity.’ If lacking ornamentation, one would thus be considered devoid

of personhood. In this case, ornaments appear to be part of the whole, where the whole is a person that is not just physically manifested, but one that also bears socially-constructed identity. Evidently then, the factorality involved in this instance, as well as the spatiotemporal contiguity entailed in the previous example, attest to the fact that the ornaments signifying their wearers' capacities are indices.

Having outlined the iconic and indexical ways in which shell beads can mean, let us finally reconsider their symbolic nature, which has long taken centre stage in the debate on modern human origins. Drawing from Deacon's (1997) work, Garofoli (2015, p.14) proposed that ornaments should be considered as *full-symbols* only when they are involved in symbolic systems. For instance, punk ornaments are part of an abstract and shared cultural system, and can thus only be interpreted by being familiar with its dictates (ibid., pp.15–16). However, as has been mentioned already, Sonesson (2006) has pointed out that symbols need not have belonged in elaborate systems. Thus, had early body ornaments been used to simply signify whether their wearer had been the leader of the group, they would not have been part of a symbolic system, because "status" would not have been part of an extensive system of ranked statuses. That said, we still cannot determine whether ornamental signs such as the Blombos shell beads had been symbolic (even in a simple way), for as we have already seen, the arbitrary connection between a significative artefact and what it stands for cannot be discerned from the material evidence. To this extent, it becomes clear that it is impossible to warrant the 'ornaments-to-symbols sub-inference' – which, by extension, leaves the 'symbols-to-syntax inference' ungrounded, and therefore ineligible for further consideration. It is thus safe to conclude that, in the light of methodological restrictions, these two inferences must remain invalid.

4.3 Extending the nature of ornamental signs

Having re-examined the semiotic nature of ornamental signs, let us now extend our semiotic scope beyond the generally studied Sign–Object relation, which distinguishes between iconic, indexical, and symbolic signs. Despite utilising a curtailed version of Peirce’s semiotics in studying early body ornamentation, Garofoli (2015, p.5) aptly recognised that ‘[a] deeper analytic approach involving more precise categories...would allow more specific relations between signs and objects to be highlighted, which can become the target of cognitive processes while producing interpretants.’ Due to the usefulness of analytical precision for our purposes, we start by taking into consideration the Sign’s relation to itself, before examining the Sign’s relation to its interpretant (section 4.3.1). Informed by these two important but overlooked triptychs, we finally illuminate how the various meanings that have been associated with ornamental shell beads fall into Peirce’s tenfold typology of signs (section 4.3.2).

4.3.1 Triadic relations of comparison and thought

Starting with the triadic relations of comparison, the sixty-eight Blombos beads would have been Sinsigns (Seconds), because they are actual existent things that would have been signs. As such, they would have embodied various Qualisigns (Firsts), such as roundness and shininess. The actual relations in which these qualities would have been involved would have been guided by Legisigns (Thirds). Given that these general rules would have dictated the interpretation of the physical instantiations of ornamentation, the discovered shell beads would have been a particular kind of Sinsign – namely, a Replica.

Moving on to the triadic relations of thought, the Blombos beads would have been Dicisigns (Seconds), because they would have likely conveyed factual information about their wearers. As such, they would have embodied Rhemes (Firsts) – that is, signs that denote the presence of a connection between the shell beads and their wearer (this

connection could have been iconic, indexical, or symbolic). Moreover, in cases in which the connection between the shell beads and their wearer had been symbolic, the Dicisigns would have been embodied by Arguments (Thirds) held together by their own truth. When embodied by such syllogisms, the propositions signified via the shell beads would have essentially become their premises. It is important to recognise however that these syllogisms would have been held together *entirely* in thinking. Ornamental shell beads could not have directly signified at this level, due to their physical dimension. As material signs they could have only denoted (as Rhemes) and provided information (as Dicisigns) about what they stand for. Whether this information would have been dictated by and constituted part of a symbolic syllogism (an Argument) depends on whether the shell beads had actually been involved in a cultural narrative, such as a ritual.

4.3.2 Tenfold typology of signs

Informed by the above, let us now examine how the three triads of relations coalesce in forming categories in Peirce's denary framework. At first, we must remind ourselves what sort of meanings shell beads may have communicated. As mentioned above, the Blombos beads have been associated with a number of concepts, such as "good taste" and most notably "group affiliation", "wealth", and "status". The first of these concepts generally pertains to early body ornaments that did not hold any particular meaning, whereas the remaining concepts are purportedly involved in the communication of information about their wearer. As we cannot go beyond speculation regarding the actual content of the *Nk* shell beads found at Blombos Cave, let us accept for argument's sake that the Interpretant generated by the Blombos beads could have had two distinct forms: i) '*Such beadworks signify "good taste".*'; and ii) '*Such beadworks signify their wearer's "group membership"/"wealth"/"social status".*' In this section, I intend to demonstrate that beadworks would have been at a different level in Peirce's tenfold typology when

mediating these two types of meanings. More importantly though, I shall also demonstrate that, even if beads had been involved in the communication of information about their wearer, the significative level they would have assumed would have depended on the nature of the “message”.

I start with the possibility that early body ornaments had been associated with a meaning of the form: ‘*Such beadworks signify “good taste”.*’ As we previously saw, early beads would have been secondary iconic signs when aesthetically appreciated, because some kind of cultural knowledge would have been required in order to appreciate them as standing for themselves. In being valued for their inherent qualities, early body ornaments would have functioned much like artwork. According to Peirce, works of art incite ‘a consciousness belonging to the category of Representation, though representing something in the Category of Quality of Feeling’ (CP 5.113). This means that, despite representing at the conceptual level of Thirdness, works of art are in fact experienced as feelings, which are Firsts. While this may initially seem paradoxical, it can be explained by reminding ourselves that iconicity pertains to the inherent qualities of things. Upon this realisation, the philosopher and semiotician Martin Lefebvre (2007, p.337, emphasis in original) noted that, in speaking about the aesthetic experience of art, Peirce is essentially referring to ‘*the contemplation of signhood (i.e. the quality of a sign qua sign) iconically standing for itself.*’ In terms of Peirce’s tenfold typology, this means that artworks elicit conceptualisation of denotative iconic rules (Rhematic Iconic Legisigns – level 5) about how they stand for themselves. Yet in doing so, they actually incite feelings (Rhematic Iconic Qualisigns – Level 1). It thus follows, that appreciating the Blombos beads for their inherent qualities would have entailed the conceptualisation of a denotative iconic rule (a Rhematic Iconic Legisign – level 5), according to which: ‘*Such beadworks signify “good taste”.*’ As can be seen in figure 4.2, this denotative iconic rule

would have manifested itself as a denotative iconic instantiation (Rhematic Iconic Sinsign – level 2), whose meaning would have been *‘This beadwork signifies “good taste”.*’ The Replica of such tasteful ornamentation would have essentially reproduced feelings (a Rhematic Iconic Qualisign – level 1).

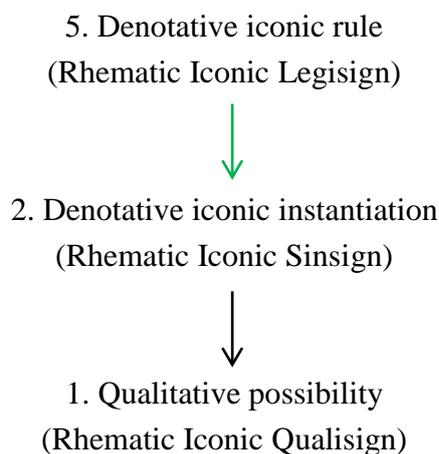


Figure 4.2 The types of signs in Peirce’s tenfold typology involved in the signification of the meaning: *‘Such beadworks signify “good taste”.*’ The black arrow points towards an embodied lower-order sign that provides the foundations for a higher-order sign, and the green arrows point towards a “peculiar” Sinsign that is a real-world instantiation (i.e., Replica) governed by a general rule (i.e., Legisign).

Having accounted for the aesthetic nature of ornamentation, let us now turn to the semiotic nature of informative Interpretants in the form of: *‘Such beadworks signify their wearer’s “group membership”/“wealth”/“social status”.*’ I start by positing that beadworks would have been at a different level in Peirce’s tenfold typology if they had signified their wearers’ “group membership” and “wealth”, than if they had signified their “status”. The reasoning behind this fact is that “status” is a symbolic concept, given that it does not share any qualities with the beadworks (the beadworks only act as cue for the conceptualisation of “status”), whereas “group membership” and “wealth” are iconic concepts, because the beadworks do in fact share certain qualities with these ideas. This may strike one as odd given that shell beads do not seem to resemble “group

membership” and “wealth” in the traditional iconic sense characteristic of pictures (i.e., primary icons). As we saw above though, ornamental shell beads are actually secondary icons, in that prior knowledge is required in order to identify the grounds of iconic relevance linking beadworks and group membership or wealth. In the first case, these iconic grounds connect the exclusive-to-the-group quality of the beadworks with the exclusivity of “group membership”; whereas in the latter, the iconic grounds link the time and effort invested in the beadworks with that inherent in the concept of “value”. Of course beadworks are seldom seen as signs of “group membership” or “value” – they are most often viewed as signs of *their wearer’s* “group membership” or “wealth”. The same holds true for treating beads as signs of their wearer’s “status”. In both cases, the (iconic and symbolic) concepts are associated with an index that denotes that these concepts concern the beadwork’s wearer. To understand how different kinds of meaning can be combined to form different levels in Peirce’s tenfold typology, I now consider how the meaning ‘*Such beadworks signify their wearer’s “group membership”/“wealth”.*’ would have differed from the meaning ‘*Such beadworks signify their wearer’s “status”.*’

As can be seen in figure 4.3, a beadwork that signified its wearer’s “group membership” or “wealth” would have at most been guided by an informative indexical rule (Dicentric Indexical Legisign – level 7), whose meaning would have been ‘*Such beadworks signify their wearer’s “group membership”/“wealth”.*’ This would have been a law (Legisign) that required each instance of it to be really affected by its Object (Index) in such a manner as to furnish information about that Object (Dicisign), because of the general rule dictating the informative spatiotemporal contiguity/factoriality between the beadworks and their wearer’s “group membership”/“wealth”. This informative indexical rule (Dicentric Indexical Legisign – level 7) would have embodied a denotative indexical rule (Rhematic Indexical Legisign – level 6), whose meaning would have been

'Such beadworks signify their wearer's capacity.' This would have been a law (Legisign) that required each instance of it to be really affected by the Object (Index) it denoted (Rheme), due to the general rule denoting the spatiotemporal contiguity/factorality between the beadworks and their wearer. The informative indexical rule (Dicentric Indexical Legisign – level 7) would have also embodied a denotative iconic rule (Rhematic Iconic Legisign – level 5), whose meaning would have been *'Such beadworks signify "group membership"/"wealth".'* This would have been a law (Legisign) that required each instance of it to share certain qualities with the Object (Icon) it denoted (Rheme), because of the general rule that denotes the resemblance between the beadworks and "group membership"/"wealth".

The informative indexical rule (Dicentric Indexical Legisign – level 7) would have manifested itself as an informative indexical instantiation (Dicentric Indexical Sinsign – level 4), whose meaning would have been *'This beadwork signifies its wearer's "group membership"/"wealth".'* This would have been a Replica (Sinsign) that had really been affected by its Object (Index) in such a manner as to furnish information about it (Dicisign), because it would have been an actual instantiation of a general rule in which the spatiotemporal contiguity/factorality between the beadwork and its wearer is described. In turn, the informative indexical instantiation (Dicentric Indexical Sinsign – level 4) would have embodied a denotative indexical instantiation (Rhematic Indexical Sinsign – level 3), whose meaning would have been *'This beadwork signifies its wearer's capacity.'* This would have been a Replica (Sinsign) that had really been affected by the Object (Index) it denoted (Rheme), as it would have been an actual instantiation of a general rule in which the spatiotemporal contiguity/factorality between the beadwork and its wearer is denoted. The informative indexical instantiation (Dicentric Indexical Sinsign – level 4) would have also embodied a denotative iconic instantiation (Rhematic Iconic

Sinsign – level 2), whose meaning would have been *'This beadwork signifies "group membership"/"wealth".'* This would have been a Replica (Sinsign) of a law that shared certain qualities with the Object (Icon) it denoted (Rheme), as it would have been an actual instantiation of a general rule that pertains to the resemblance between the beadwork and "group membership"/"wealth". Finally, this denotative iconic instantiation (Rhematic Iconic Sinsign – level 2) would have embodied certain qualitative possibilities (Rhematic Iconic Qualisigns – level 1), which would have included *"group membership"/"wealth"*.

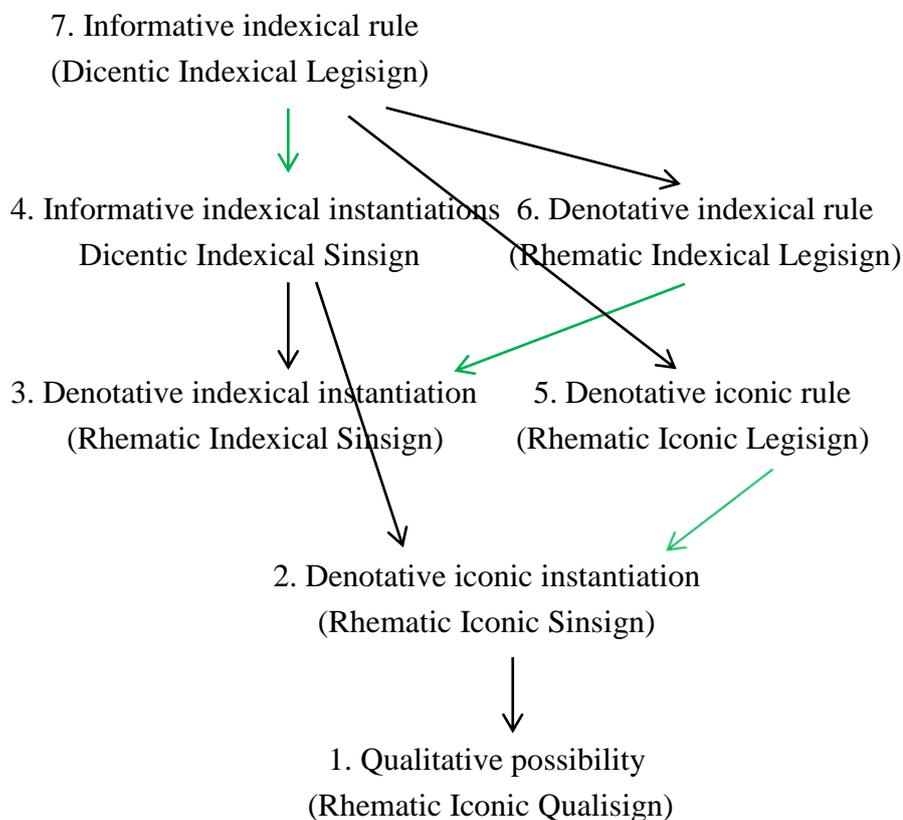


Figure 4.3 The types of signs in Peirce’s tenfold typology involved in the signification of the meaning: *'Such beadworks signify their wearer’s "group membership"/"wealth".'* The black arrows point towards the embodied lower-order signs that provide the foundations for higher-order signs, and the green arrows point towards “peculiar” Sinsigns that are real-world instantiations (i.e., Replicas) governed by general rules (i.e., Legisigns).

As can be seen in figure 4.4, unlike a beadwork that signified its wearer's "group membership" or "wealth", which would have at most been guided by an informative indexical rule (Dicentric Indexical Legisign – level 7), a beadwork that signified its wearer's "status" would have at most been guided by an informative symbolic rule (Dicentric Symbolic Legisign – level 9), whose meaning would have been '*Such beadworks signify their wearer's "status".*' This would have been a law (Legisign) that required each instance of it to be arbitrarily associated with its Object (Symbol) in such a manner as to furnish information about that Object (Dicisign), due to the general rule dictating the informative arbitrary relation between the beadworks and their wearer's "status". This informative symbolic rule (Dicentric Symbolic Legisign – level 9) would have embodied a denotative indexical rule (Rhematic Indexical Legisign – level 6), whose meaning would have been '*Such beadworks signify their wearer's capacity.*' This would have been a law (Legisign) that required each instance of it to be really affected by the Object (Index) it denoted (Rheme), because of the general rule denoting the spatiotemporal contiguity/factorality between the beadworks and their wearer. The informative symbolic rule (Dicentric Symbolic Legisign – level 9) would have also embodied a denotative symbolic rule (Rhematic Symbolic Legisign – level 8), whose meaning would have been '*Such beadworks signify "status".*' This would have been a law (Legisign) that required each instance of it to be arbitrarily related to the Object (Symbol) it denoted (Rheme), due to the general rule denoting the arbitrary association between the beadworks and "status".

The informative symbolic rule (Dicentric Symbolic Legisign – level 9) would have manifested itself as an informative indexical instantiation (Dicentric Indexical Sinsign – level 4), whose meaning would have been '*This beadwork signifies its wearer's "status".*' This would have been a Replica (Sinsign) of a law that had really been affected

by its Object (Index) in such a manner as to furnish information about it (Dicisign), because it would have been an actual instantiation of a general rule in which the spatiotemporal contiguity/factorality between the beadwork and its wearer’s “status” is described. In turn, the informative indexical instantiation (Dicentic Indexical Sinsign – level 4) would have embodied a denotative indexical instantiation (Rhematic Indexical Sinsign – level 3), whose meaning would have been ‘*This beadwork signifies its wearer’s capacity.*’ This would have been a Replica (Sinsign) of a law that had really been affected by the Object (Index) it denoted (Rheme), for it would have been an actual instantiation of a general rule in which the spatiotemporal contiguity/factorality between the beadwork and its wearer is denoted.

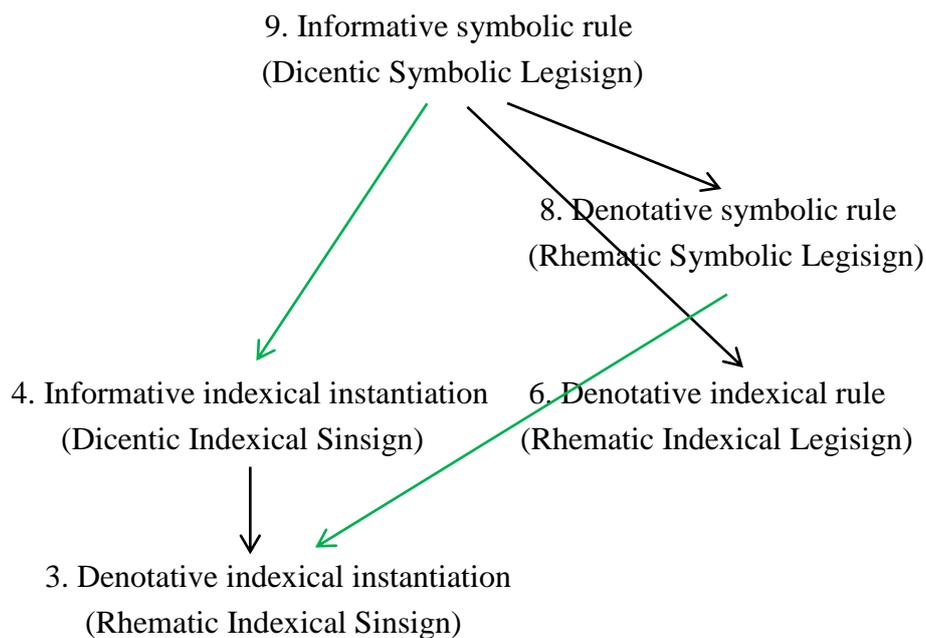


Figure 4.4 The types of signs in Peirce’s tenfold typology involved in the signification of the meaning: ‘*Such beadworks signify their wearer’s “status”.*’ The black arrows point towards the embodied lower-order signs that provide the foundations for higher-order signs, and the green arrows point towards “peculiar” Sinsigns that are real-world instantiations (i.e., Replicas) governed by general rules (i.e., Legisigns).

Despite its terminological cumbersomeness, the detail of such a pragmatic semiotic analysis endows us with the analytical precision that is required in order to distinguish between different types of signs and understand how they coalesce in forming higher-order signs. It is thus more suitably geared to study prehistoric ornamental signs than the linguistic all-or-nothing approach to symbolism that is currently prevalent, or Pettit's (2011) fivefold symbolic framework (section 1.3.2.2). In fact, Peirce's tenfold typology is much more analytically precise than the triadic icon-index-symbol version, and should thus be more appropriate for tracing the evolutionary emergence of ornamental signs, from the formation of the first iconic and indexical signs to the development of intricate symbolic systems.

It should be noted here that I am not making the deterministic postulation that rising through these levels would have taken place in a linear and step-like fashion, for signs fall under different kinds, rather than degrees, of complication (Sonesson 2013a; b). Nonetheless, the relations of embodiment illustrated in figure 3.3 should give us a rough idea of how rituals, which could be seen as a cultural syllogisms (Argumentative Symbolic Legisigns – level 10), could have depended on artefactual sign-vehicles with physical relations and qualities (Dicentric Indexical Sinsigns and Rhematic Iconic Sinsigns – levels 4 and 2, respectively). While the relations between these significative sorts are best seen as bidirectional (in that artefacts support rituals and rituals dictate the form and use of artefacts), it would be fair to assume that experience of feelings and the perception of similarity and contiguity/factorality preceded the creation of complex symbolic concepts. To this extent, the emergence of iconic and indexical material signs could have provided the foundations for symbolic narratives, as I will be demonstrating in the latter part of this thesis.

4.4 Summary

This chapter drew upon a pragmatic semiotic theory in order to re-evaluate the nature of symbolism and ornamental signification as they are generally conceived in the debate on modern human origins. Starting at the notion symbolism, it was determined that the arbitrary relation between a “non-utilitarian” artefact and its referent is indeed symbolism’s defining characteristic. The arbitrariness of “non-utilitarian” material culture cannot however be detected in the archaeological record, because by definition there is nothing in a symbolic sign that explains its relation to what it stands for. Standardisation is not a helpful indicator either, because we saw that repetition of form is not exclusive to symbols. Contrary to the popular misconception that reduces them to mere perception, iconic and indexical signs can also depend on conventionality. One might thus be inclined to say that even though we cannot identify symbolism, we can at least use the standardisation of “non-utilitarian” artefacts as definitive evidence of signification. Yet it was suggested that this too would be impossible to establish with certainty, as sign function is entirely conceptual (i.e., a Third) and we have no direct access to past minds. Although we cannot confidently say that standardised “non-utilitarian” artefacts actually reflected significative meanings, it is fair to suppose that they could have afforded their conceptualisation. Humans would have certainly been able to attend to the similarity and contiguity/factorality between artefacts and other things, thus eventually conceptualising them as material signs. These need not have been integrated into cultural systems in order to be considered symbolic, because not all symbols are part of systems. As was demonstrated, symbolicity and systematicity are in fact independent variables.

Keeping these points about symbolism and material signification in mind, we then set out to re-evaluate the nature of early ornamental signs. In particular, it was suggested that ornaments should not be seen as storages for information transmitted to others,

because this notion disregards the constitutive role of materiality in the generation of meaning. It thus followed that the earliest meanings signified by early shell beads would not have been codified snippets of information arbitrarily assigned to them – they would have instead been the emergent products of the ornaments' physical qualities and relations. To this extent, the shell beads' iconic and indexical functionality was further explored. As was proposed, body ornaments would have functioned as secondary iconic signs when aesthetically appreciated in and of themselves because proper interpretation would have depended on prior cultural knowledge. When worn however, they would have enabled humans to make abductive inferences about the capacities of the wearers. Yet, besides being used to describe states of affairs, ornaments would have also been purposefully used to create them. In other words, humans would have adorned themselves to confer upon themselves the properties of ornaments. It thus becomes clear that early body ornaments would have simultaneously functioned as both abductive and performative indices. These indexical signs would have actually been founded on two kinds of indexical grounds, because the ornaments would have been associated with their wearers via both contiguity and factorality. Whether this indexical connection had been symbolically enriched is however virtually impossible to determine, due to the purely arbitrary nature of symbolism. In light of this methodological restriction, we have no choice but to consider the 'ornaments-to-symbols sub-inference' unwarranted – which in turn leaves the 'symbols-to-syntax inference' ungrounded.

Having established the invalidity of these inferences by examining the semiotic nature of the relation between ornamental signs and what they stood for (i.e., Sign–Object relation), our scope was finally broadened in order to study the relations between the ornamental signs and themselves (i.e., Sign–Sign relation), as well as the relations between the signs and their meanings (i.e., Sign–Interpretant relation). Taking into

consideration whether the ornamental signs functioned as a possibility (Qualisign), an actuality (Sinsign), or a general rule (Legisign), and recognising whether the Signs presented their relation to the Object as denotative (Rheme), informative (Dicisign), or law-like (Argument), enabled us to ultimately utilise Peirce's tenfold typology for the purpose of accurately describing the semiotic nature of early body ornaments. The increased analytical precision of this terminologically cumbersome framework allowed us to distinguish between different kinds of signs that have the same kind of relation to what they stand for – that is, between different kinds of icons, indices, and symbols. Moreover, this typology conferred us with a deeper understanding of how the different types of meaning relate to one another, and how they mean in a concomitant manner. The application of this framework to early shell beads therefore made clear that the beadworks' potential meanings (e.g., "*Such beadworks signify their wearer's status*") would have been meaningful by effectively embodying lower-order kinds of meaning. It should thus follow that early humans first grasped lower-order iconic and indexical levels of material signification, before eventually creating higher-order symbolic kinds of cultural meaning – although this should not be taken to imply that the ascent through these levels was in any way deterministic and linear.

Upon this cautionary note, the first part of the dissertation is complete. As we shall see in the second half, the insights yielded by studying the semiotic nature of past material signs will prove especially useful in tracing the evolutionary emergence of prehistoric material signification.

Part 2

The emergence of material signification

Chapter 5

Search for the optimal evolutionary theory

Chapter outline

It became apparent in the introductory chapter that there has been some dissonance regarding whether ornamental shell beads should be seen as the epiphenomenal products of already symbolic brains, or as scaffolds that brought forth human intelligence. In this chapter, I consider the forms these perspectives have taken in the broader debate on modern human origins, in order to identify the optimal theory for studying the evolution of prehistoric material signification. To this end, I start by providing an overview of how the emergence of material signs has been explained by scholars involved in evolutionary cognitive archaeology (section 5.1). I then critique the dominant theoretical dispositions by identifying a theoretical framework that is indeed suitable for studying the evolution of material signification (section 5.2).

5.1 The emergence of material signs in evolutionary archaeology

We begin this chapter with a general overview of the various approaches that have been put forth in the domain of evolutionary cognitive archaeology in order to explain the emergence of material signification, and especially symbolism. Our purpose for doing so is twofold: Firstly, while synopsising each evolutionary approach, we must evaluate the conceptualisation of the material sign's nature by drawing on the pragmatic approach advanced in the first part of this dissertation. Secondly, after presenting the major evolutionary frameworks, we need to identify prevalent trends in the conceptualisation of four important issues: the nature of cognition, the emergence of material culture (and material signification in particular), the process of agency, and the evolutionary narrative.

Gleaning the epistemic tendencies towards these four issues will permit their evaluation in the latter part of this chapter, for the purpose of identifying the optimal theory for studying the emergence of material signification. With these goals in mind, I start by considering the more common approaches, which reduce material signification to symbolism alone (section 5.1.1), before outlining the semiotically-informed accounts that take into consideration iconic and indexical signs (section 5.1.2). Having outlined and evaluated their semiotic dispositions, I finally identify the general theoretical tendencies that most of the reviewed theories share (section 5.1.3).

5.1.1 Symbolic approaches

As has become apparent (section 2.1), most evolutionary archaeologists treat symbolism as the only possible form of material signification. It is thus not surprising that most attempts to explain the emergence of the modern human mind have adhered to a “linguistic” perspective on the nature of material signification. In this section, I outline and semiotically evaluate six different evolutionary accounts on the emergence of symbolism. Although these theories have overlapped for more than twenty years, I consider them in rough chronological order, starting with Donald’s (1991) “memory representation devices” (section 5.1.1.1), and Mithen’s (1996) “cognitive fluidity” (section 5.1.1.2), before examining Gamble’s (2007) “material metaphors” (section 5.1.1.3). I then consider Klein’s (2009) “executive brain mutation” (section 5.1.1.4), and Hoffecker’s (2011) “super-brain” (section 5.1.1.5), before concluding with Gamble, Gowlett, and Dunbar’s (2014) “social brain” (section 5.1.1.6)

5.1.1.1 Donald’s “memory representation devices”

In his seminal book entitled *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*, the cognitive neuroscientist Merlin Donald (1991) proposed that symbolic material culture emerged through three major cognitive transitions in

memory representation. Accordingly, he dissected the evolutionary trajectory of hominins in four stages: the “episodic”, the “mimetic”, the “mythic”, and the “theoretic” – each of which is characterised by a distinct representational strategy. According to Donald, it is the cognitive succession in the evolution of these stages that ultimately led to modern cognitive structure and fully symbolic representations. If we are to understand why Donald considers the emergence of symbolic material culture to have postdated the appearance of linguistic symbolism, it is worth considering each of these transitory steps in some detail. In outlining the three major cognitive transitions of Donald’s four-stage model of evolution, it is also worth considering the semiotically-informed supplementations made by Sonesson (2007; 2010a; 2012). On this note, I start at the very beginning of Donald’s evolutionary narrative.

The time before the episodic stage is characterised by procedural memory, which pertains to the mnemonic learning of action patterns. This system is geared towards storing generalities and discarding specifics. On the other hand, the episodic system that followed was suited towards storing such specifics by allowing the representation of specific events within their spatiotemporal frame. While this capacity may be demonstrated by many birds and mammals, it has evolved to a greater degree in the great apes. As Donald (1991, p.152) characteristically put it: ‘The pinnacle of episodic culture, the culture of the great apes, marked the starting point of the human journey.’ At the episodic stage, hominins would have been able to store their perceptions of experienced events, but like the great apes, they would not have been able to recall them without being incited by an environmental cue. They would have been incapable of willingly accessing their own stored representations, as their underdeveloped motor control system would have been unable to construct and retrieve conscious action-models. This neurocognitive

deficiency would have left them unable to reflect on their own experiences until the first radical evolutionary change.

The transition from the “episodic” stage of the early hominins to the “mimetic” stage would have been underpinned by a mimetic skill. Donald (1991, p. 168) defined this as ‘the ability to produce conscious, self-initiated, representational acts that are intentional but not linguistic.’ The capacity to use one’s body as a representational device would have been the product of a biologically-bestowed supramodal enhancement in the motor control system. The two main characteristics of this adaptation include the ability to voluntarily retrieve stored representations, and the capacity to manipulate them in order to dictate action. This autocued computation of representations allowed hominins to move past the reactive stance other animals assume towards their environments and into a sociocultural realm. Culturally, their mimetic skill would have allowed them to develop new types of tools, as well as communally-shared representations about social structure (e.g., roles and hierarchies) and customs (e.g., games and rituals). These could in turn be mimetically passed on to the following generations, effectively relieving them from having to reinvent them. Eventually though, the representational meanings would have become so complicated that imitation would not have been capable of addressing the impending issue of semantic ambiguity. At this point, a more precise and efficient way to communicate meaning would have been advantageous.

The need for such an adaptation paved the way for the second punctuation, which was driven by the capacity for lexical invention and led hominins from the “mimetic” to the “mythic” stage. As Donald (1991, p.219) recognised: ‘Symbols are invented to facilitate a cognitive operation or purpose; and the purpose, and its solution in symbols, must somehow occur to the inventor.’ He thus proposed that, aided by an enhancement in their representational intelligence, archaic humans would have started naming their

perceptions and conceptions. Prompted by the need to systematise the meaning in their lives, they would have experimented with the imposition of various lexical forms onto different categorical meanings. This symbolic invention would have strengthened the selective pressure for a faster phonological apparatus. Eventually, the linguistic skill and the phonological system would have enabled the development of linguistic systems, which would have been extended to include labels for the relations between words, and the metalinguistic models that dictated how they need be used during thought and discourse. Culturally, the development of an elaborate semantic memory device such as the lexicon, would have led to the creation of narratives in which hominins manipulated past and imagined events. They would have thus become able to construct myths that guided social and communal life – essentially placing the foundations for the final evolutionary transition from the mythic to the theoretic stage.

Before outlining Donald's third punctuation though, it is worth considering how Sonesson (2012) elucidated the transition from the mimetic to the mythic stage by making a distinction between non-significative and significative kinds of imitation. As he pointed out, Donald acknowledged sign function only obliquely by making mention of intentional systems of communication and the distinction of the referent (*ibid.*, p.86). His failure to explicitly recognise sign function led him to subsume heterogeneous cultural phenomena (e.g., gesture, dance, simple rituals, mime, play-acting, coordinated hunting, tool-use and skill) under the same mimetic stage. According to Sonesson, these practices are in need of differentiation, for they do not represent in the same sense. For instance, while imitating tool use does not involve sign function with a clear distinction between Expression and Content, other instances of imitation, such as miming, do. Sonesson hence broke down the mimetic stage into four different stages of imitation for the purpose of elucidating the emergence of sign function over their course. He aptly recognised that, only by

appreciating the emergence of signification through imitation, can we explain the linguistic capacity that drove the transition from the mimetic to the mythic stage.

The first of his four mimetic stages involves simply instantiating a type of act by using the typical means for realising this type in order to fulfil a goal. For instance, hammering a nail in order to fulfil the goal of getting that nail hammered. The second stage involves abstracting the act as a token to a type for the purpose of producing other token acts. For example, observing an act of hammering and extracting the type for doing hammering, in order to be able to hammer in the future. Given that this process of imitation is learned by extracting the typical (relevant) properties of an act produced here and now, it relies on the principle of relevance (i.e., the ability to distinguish between type and token). The third stage involves representing a type of (habitual) act – or perhaps a token outside of time and space. For instance, children will realise *typical* acts of their mother and reproduce them when playing. Along similar lines, the fourth stage involves representing *individual* acts in time and space. For example, in his attempt to enact what Hamlet did in Helsingør during the Renaissance, an actor will act as Hamlet here and now by doing things Hamlet did. These last two stages of imitation are significant in Sonesson's sense of the term because there is a differentiation between Expression and Content, which are asymmetrically related. In essence, imitation 'will function as a sign only to the extent that it is taken to refer back to the imitated act, instead of just being another instance of the same kind' (ibid., p.89). It should thus follow that the imitation of tool use, or any other skill for that matter, is not a significant process, due to the fact that the act is not performed in order to think about the original act, but to achieve the same effect. At this non-significant stage, imitation depends only on identifying iconic

relations between things (perceptions of similarity) (Sonesson 2007).²⁰ It is only when the relation between Expression (i.e., the mimetic act) and its Content (i.e., the original act) is asymmetric that the significative function is grasped.

Based on this crucial distinction between generalisation and signification, Sonesson (2007; 2012) returned to Donald's evolutionary narrative, and clarified the transition from the mimetic to the mythic stage by proposing that mimetic practices would have brought forth two fundamental cognitive and semiotic achievements: *typification* and *sign function* (Figure 5.1). For one, the creation of generalisations or *Types* (i.e., *Legisigns*) that refer to instantiations or *Tokens* (i.e., *Replicas*) would have been a natural product of mimetic memory, because its development in the body depends on its existence in at least one other body. Yet while necessary, typification is not a sufficient condition for signification. According to Sonesson, it must have been the emergence of the sign function that paved the way for the linguistic ability that led humans from the mimetic to the mythic stage, since in this third stage, linguistic or semantic memory becomes disembodied as it requires the conscious coalition of at least two minds in order to be maintained – just like the sign. Having acknowledged the importance of typification and sign function in the second transition, let us now return to Donald's work in order to outline the final major evolutionary change from the mythic to the theoretic stage.

²⁰ It should be noted here that, while these imitation-based signs are primarily iconic, they also function at the indexical level given that the Expression or Sign (i.e., the mimetic act) is really affected by the Content or Object (i.e., the original act).

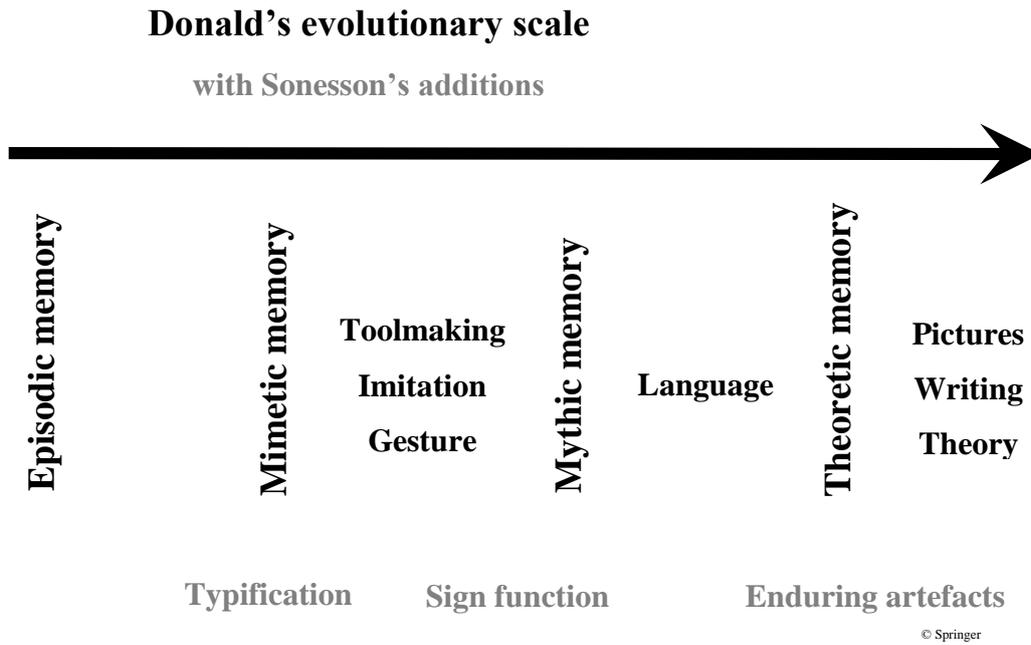


Figure 5.1 Donald's model of evolution with Sonesson's three missing links (adapted from Sonesson 2012, p.82, Fig.5.1).

Unlike the previous two transitions, the third punctuation was a product of an improvement in humans' technological (rather than biological) hardware that enabled the externalisation of memory. Donald (1991, p.309, emphasis in original) defined external memory as 'the *exact* external analog of internal, or biological memory, namely, a storage and retrieval system that allows humans to accumulate experience and knowledge.'

Whereas up until that point neural "engrams" had been relied upon for the purpose of storing memories, novel material media provided humans with the ability to store information that could be retrieved at a later date. Most importantly though, "exograms", such as writing systems and theories can be incessantly subjected to methodical reformatting. The mentally-demanding nature of this process would have required a cognitive reorganisation of literacy-oriented modules, which would have been afforded by the brain's neural plasticity. The neurocognitive changes that emerged along with externalisation of memory instigated a radical change, not only in the capacity, but also in the operationalisation of memory. Specifically, the extensive use of external symbolic

storage relieved biological working memory from having to maintain information in active attention, and allowed it to focus on the extensive manipulation and refinement of readily perceptible informative elements. In this way, the synergistic fusion between working and external memory ultimately led to the complex and variable symbolic representations that characterise modern human culture.

Having reached the end of the evolutionary story as portrayed by Donald, let us now consider how enduring artefacts, which are of particular interest to archaeologists, could have bridged the final transition from the mythic to the theoretical stage (Figure 5.1). As was previously mentioned, Donald's mythic stage is characterised by semantic memory, which pertains to a repertory of units that can be combined in order to create narratives. According to Sonesson (2012, p.82): 'Although Donald is not very clear about it, his description of semantic memory could be taken to imply the presence of system character, that is, an organisation in which signs mutually define each other.' For Sonesson (2007), these linguistic systems would have to be constantly maintained by two or more consciousnesses because they would have been, what Posner (1989) terms *transitory* artefacts. On the other hand, what he terms *enduring* artefacts would have been actually able to embody sociocultural theories, therefore allowing them to exist independently of human consciousness (Sonesson 2007). It is the permanence of this external storage that is taken to have led to the epitome of the theoretic stage. Sonesson (2010b, p.244) thus concludes that '[i]f perception is the first stage of understanding, and the sign function is the second, sign systems must be considered the third, and embodied signs the fourth.'

While Sonesson's semiotic remarks about typification and sign function are two important points that need to be taken into consideration when explaining the origins of systemic language, I disagree with his last suggestion concerning the role of enduring

artefacts. Sonesson considers enduring artefacts, such as the hand-prints on cave walls, to have phylogenetically postdated language because ‘they suppose a record which is independent of the human body’ (Sonesson 2007, p.39). It appears to me that, in his view, semantic meaning and systems need to first emerge close to individuals (in their bodies and words), before being bestowed their own existence in artefacts. I posit, however, that this would have been the case only if enduring artefacts such as the Upper Palaeolithic cave paintings had been created as signs from the very beginning – a postulation that has been challenged (Malafouris 2007a; 2013). As we have already seen, and shall further establish later on, artefacts should not be seen as storages for pre-existing information, but as things and objects that brought forth signification by affording the creation of meaning through material engagement. To this extent, it would be incorrect to place enduring artefacts after language, instead of exploring how their integration with human bodies would have provided the foundations for the emergence of sign function, and eventually sign systems.

5.1.1.2 Mithen’s “cognitive fluidity”

In his discourse on evolutionary psychology, entitled *The Prehistory of the Mind: A Search for the Origins of Art, Religion, and Science*, Steven Mithen (1996) identified *cognitive fluidity* as the vital ingredient of modern cognition, for it allowed a greater degree of interaction between the various intelligences (i.e., general intelligence, social intelligence, natural history intelligence, technical intelligence, and language) of our Swiss-army-knife mind. It purportedly emerged through the invasion of social intelligence by linguistically-articulated “snippets” of non-social information (e.g., regarding animal behaviour and toolmaking), which in turn opened up the non-social world to reflexive consciousness – the ability of our ancestors to predict the behaviour of other individuals. Up until that time reflexive consciousness had been restricted to within

the domain of social intelligence, and upon its release brought forth the integration of the various intelligences. In terms of its cultural by-products, the integration of the social and the technical intelligences at approximately 60 kya, would have enabled the creation of symbolic artefacts, such as ornamental beads used for sending social messages.

This communicative take on material signification is typical of the linguistic dictum; and while recognising the difficulty in defining a visual symbol, Mithen (1996, pp.178–179) identified five of their characteristic properties, which I shall attempt to cross-examine against Peirce’s semiotic theory:

‘1. The form of the symbol may be arbitrary to its referent. This is one of the fundamental features of language, but also applies to visual symbols. For instance, the symbol ‘2’ does not look like two of anything.’

The arbitrary connection between a material sign (i.e., Sign/Expression) and what it stands for (i.e., Object/Content) is the only defining characteristic of symbolism. However, if a “visual symbol” becomes meaningful by perceiving its similarity of contiguity/factorality with something else, it is not exclusively symbolic. In fact, it may be primarily iconic or indexical.

‘2. A symbol is created with the intention of communication.’

While a Peircean symbol can indeed be created with a communicative purpose in mind, material signs do not always become significant due to a prior intention to communicate. As we have already seen (section 1.4.3), significant artefacts such as ornaments may not have been significant from the very beginning, but could have become meaningful through long-term material engagement and social perception. While this mechanism will be further explored later on, it is worth noting at this point that iconic and indexical signs could have become communicative by way of discovery.

‘3. There may be considerable space/time displacement between the symbol and its referent. So, for example, I might draw a picture about something that happened long in the past, or what I imagine may happen some time in the future.’

Mithen is referring here to the differentiation between the Expression and the Content of the sign (or in Peircean terms, between the Sign and its Object): the picture is material and is in the now, whereas the event is mental and in the past/future.

‘4. The specific meaning of a symbol may vary between individuals and indeed cultures. This often depends upon their knowledge and experience. A Nazi swastika has a different meaning to a young child, than to a Jew whose family was lost in the Holocaust. The swastika is in fact an ancient symbol, found in cultures as far apart as Mexico and Tibet.’

The reason the same sign may elicit different meanings to different people is because personal experience has led them to form general rules (Legisigns) that involve different emotional and logical Interpretants.

‘5. The same symbol may tolerate some degree of variability, either deliberately or unintentionally imposed. For instance, we are able to read different people’s handwriting although the specific forms of the letters are variable.’

The variability identified by Mithen pertains to the degree of relevance that is established between a material sign and what it stands for. To reemploy a previous example, whether a cloud will be interpreted as a face depends on whether the cloud and the face share enough features that warrant accepting the former as a sign for the latter. As we have already seen (section 3.2.2), the principle of relevance between two things is a necessary but not sufficient condition for signification. To this extent, the variability in the acceptable degree relevance between a material sign and what it stands for is not a telling characteristic of symbols, or signs in general for that matter.

Based on the above points, I must suggest that Mithen's theoretical approach to material signification is unsuitable for studying the evolution of material signification. Besides, the purportedly improved connectivity between social and technical cognition that gave rise to material signs cannot be confirmed, as this transformation is not associated with an increase in brain size, since it does not entail new processing power.

5.1.1.3 Gamble's "material metaphors"

In *Origins and Revolutions: Human Identity in Earliest Prehistory*, the Palaeolithic archaeologist Clive Gamble (2007) rejected the linguistic dictum by proposing that the first forms of symbolic material culture acquired their meaning through *material metaphors*. As he argued: 'It is the capacity of metaphor to establish conceptual connections between very different categories that makes it so creative in social life' (ibid., p.87). On this definitional basis, he made a distinction between corporeal "instruments", such as the hand, and corporeal "containers", such as the trunk, which must have been respectively projected via means of metaphor onto material "instruments" such as tools, and material "containers" such as houses and networks. Gamble therefore suggested that material culture acquired its symbolic force by referencing instruments and containers of the body-whole. But what exactly did he treat as *symbolic force*? In a previous publication, Gamble (2004, p.85) defined it as 'that mainspring for action where we are both engaged with, and constituted by, the world of objects, artefacts and ecofacts distributed across landscapes and in locales.' To this extent, symbols are objects metaphorically associated to the human body, which hold 'widely shared meanings that co-ordinate human action' (Gamble 2007, p.91).

In outlining an evolutionary account that attributes the emergence of symbols and their meanings to their relations with the human body, Gamble explicitly favoured the notion of embodied cognition (ibid., p.102). Seeing that meanings are not predefined

products of the mind, he suggested that there is no need to use a semiotically-informed methodology. As he put it, meaning is not the central issue here, but the relationships established between humans and things (ibid., p.90). In his view, semiotics is best reserved for more recent periods, because it is largely language-dependent. Citing the work of Mike Parker-Pearson and Ramilisonina (1998, p.310) on Stonehenge, Gamble (2007, pp. 90–91) claimed that the meaning of things is arbitrary, whereas their physical properties afford only certain kinds of interpretation. As he therefore claimed: ‘It is this materiality of the tangible world that may be a significant element in how metaphorical associations come to be made and where the non-tangible basis of semiotics obscures insight’ (ibid., p.91).

While Gamble discredits the semiotic approach because he believes that it cannot address the materially-based relationships between humans and things, I posit that a pragmatic semiotic theory is indeed geared towards describing the types of meaningful relationships outlined in his metaphor-based approach, because these relationships *are* the meaning. For one, the described capacity to establish metaphoric conceptual associations between different categories is, from a pragmatic perspective, the capacity to establish iconic grounds in actual perceptual contexts, because it connects different categories by attending to some kind of similarity (in fact, Peirce (CP 2.276) referred to the icons that depend on parallelism as *metaphors*). The distinction that Gamble made between “containers” and “instruments” is one actually attributed to the difference in their iconic grounds – containers share the quality of containing, whereas instruments share the ability to act. From a semiotic point of view, when these categories would have been projected from the body to the material world, this would have taken place by way of performative indexical grounds. It follows from these points that what Gamble conceptualised as material symbols that referenced the containers and instruments of the human body are

essentially iconic signs: “iconic” because the artefacts and the body parts are connected via some kind of similarity; and “signs” because they are differentiated in time and space, and because the artefactual containers and instruments are more directly perceived than their corporeal counterparts, but the body parts are more in focus as they were the original containers and instruments. In fact, the widely shared meanings that they would have allegedly expressed could be seen as general rules (Legisigns) that guided their physical instantiations (Replicas). These would have exerted “symbolic force” by acting as Legisigns whose material Replicas would have co-ordinated the lives of humans.

Evidently then, Gamble’s evolutionary approach exhibits a wide range of semiotic dimensions, such as iconic grounds, performative indexicality, sign function, and general rules. His theory would have thus been particularly close to semiotically-informed approaches, had Gamble not explicitly refuted semiotics and reduced material signification to symbolism – a misconception that needs to be overcome if we are to appreciate the whole nature of the material sign.

5.1.1.4 Klein’s “executive brain mutation”

In the most recent version of his paleoanthropological textbook, *The Human Career: Human Biological and Cultural Origins*, Richard Klein (2009) remains firm in his view that behavioural and cognitive modernity are the products of a fortuitous *brain mutation* that took place 50–45 kya. In his view, morphology and behaviour appear to have evolved relatively slowly prior to that time, whereas after this time behavioural and cultural change accelerated rapidly, while morphology remained relatively stable (ibid., p.745). For Gamble, this pattern can only be explained by evoking a qualitative neural advance that caused no apparent changes in skull anatomy.

Granted his mutation-based argument for the emergence of the modern human mind, Klein treats symbolic material culture as the passive outcome of symbolically- and

linguistically-capable human brains. For instance, the figurines of the Upper Palaeolithic could have represented totemic symbols of kinship groups, and deities or spirits. As he put it, ‘they clearly imply that late Paleolithic people not only were physically identical to their living descendants but possessed basically the same cognitive and communication facilities, including languages that were as complex as any historic ones’ (ibid., pp.689–690). On the other hand, Middle Palaeolithic artefacts such as the Pigeon Cave beads and the Middle Stone Age Blombos beads were devalued because they predate the 50 kya mark for the behavioural and cognitive revolution. In Klein’s (2009, p.747) opinion, neither site yielded deliberately shaped beads. He finds their perforations less conspicuously artificial than those of younger Later Stone Age shell beads, even though the basic shape of the tick shells remained unaffected. However, as has been noted by d’Errico and Nowell (2000, p.123), proponents of revolution-based models have been known to interpret many of the objects that are often considered to be symbolic, as the result of natural processes. This appears to have been Klein’s approach to generally-accepted symbolic artefacts such as the Middle Stone Age ornamental shell beads. In his view, behavioural and cognitive modernity should be associated with the Later Stone Age, for as he argues: ‘The difference at 50–40 ka is that unequivocal art, ornamentation, and other advanced behavioral markers were closely tied to a dramatic increase in human numbers, notably including the Out-of-Africa expansion. In short, they appear to have been part of a package that significantly enhanced human fitness—the ability to survive and reproduce—and it is in this sense that they signal true evolutionary as opposed to mere historical change’ (Klein 2009, p.742). Evidently then, Klein reduces symbolic material culture to a mere by-product of a selectively-favoured change, which conferred humans with the fitness they required to colonise the world.

Besides the problematic connotations of his strictly symbolic approach, it is worth noting at this point another important shortcoming with Klein's approach. Klein (2009, p.745) acknowledged the unpopularity of his proposal in the archaeological community, but speculated that this stance may be based on their distrust of biological explanations for cultural change. This claim appears to be rather unjustified, given that the other explanations included in this chapter are also heavily dependent on biological factors, but have received wider approval from the archaeological community. What appears to be the main problem of Klein's proposal is its untestability through the fossil evidence, because the modern or near-modern brain size had been reached by 200 kya and a neuronal reorganisation of the brain is exceptionally difficult to identify by means of the sulci in hominid fossil crania. Verifying therefore Klein's neurocentric account on the emergence of advanced behavioural markers is virtually impossible.

5.1.1.5 Hoffecker's "super-brain"

In his book, *Landscape of the Mind: Human Evolution and the Archaeology of Thought*, the archaeologist John Hoffecker (2011) suggested that the transmission of information from one brain to another by way of external symbols created a *super-brain* within each social group, which in turn led to the emergence of the modern human mind. While his conceptualisation of material symbols as external storage devices is neither new nor particularly detailed, it is worth considering his argument in some detail, because it is a characteristic example of the linguo-centric and structuralist approaches to meaning currently dominating the debate on modern human origins.

In his evolutionary account, Hoffecker adopts the traditional stance to cognition according to which the mind is a brainbound processor of symbolic representations. As he characteristically put it: 'From the outset, the brain has generated *symbols* because the external conditions...have to be converted into information; they can be *represented* but

not reproduced inside the brain' (ibid., p.15, emphases in original). Having adopted a representationalist notion of the mind, Hoffecker sees internal representations as templates for the creation of material culture. To this extent, he conceptualises creativity as 'the ability to recombine the elements of mental representations in hierarchical form, yielding potentially infinite variations of structure' (ibid., p.74). Based on this representationalist conceptualisation of creativity, Hoffecker suggested that the earliest stone tools had been created by the projection of predefined representations through our ancestors' hands. The hierarchical steps involved in tool manufacture eventually scaffolded the emergence of language, whereby symbols were created through the externalisation of even more embedded clauses through the vocal tract. In fact, the development of linguistically-articulated thought is taken to have revolutionised the symbolic worlds of humans, not only because it increased the computational and recursive capacities of their brains, but also because it facilitated the transmission of complex (in terms of hierarchical levels) information from one person to another. This unprecedented unification of individual brains is what essentially brought forth the *super-brain*. As Hoffecker (2011, p.75, emphasis in original) sees it, '[t]he concept of the *super-brain* is analogous to that of the super-organism: multiple individuals perform functions normally confined to a single organism.' In the case of human groups, syntactic language allowed them to share and accumulate information to such an extensive degree that a new collective brain was established. It is this representationally-driven communal mind that is purportedly responsible for the momentous combinatorial creativity characterising the archaeological record from 100 kya onwards.

In advancing such a representationalist account for the emergence of modernity, Hoffecker appears to have approached material signification by way of structural linguistics. As he suggested: 'Instead of trying to recover content and meaning, the

cognitive archaeologist can focus his or her attention on the *structure* of externalized thoughts' (ibid., p.28, emphasis in original). In his view, symbolic material culture need be appreciated, not just as external storage devices, but as hierarchically-structured representations. For instance, Hoffecker (2011, p.100) proposes that the incised geometric patterns engraved on ochre pieces 'appear to represent abstract designs.' In maintaining such a structuralist approach to meaning, Hoffecker completely disregards the role of materiality in the generation of meaning. As we have seen (section 2.3), treating material signs in exclusively syntactic terms is problematic, because it disregards that fact that significant meaning: emerges from the constitutive interaction of mind and matter; can have an iconic or indexical relation to what it stands for; and can unfold in action-constitutive ways. To this extent, Hoffecker's social-brain approach is not suitable for exploring the nature of significant meaning either.

5.1.1.6 Gamble, Gowlett, and Dunbar's "social brain"

In their recently published project report, entitled *Thinking Big: How the Evolution of Social Life Shaped the Human Mind*, Clive Gamble, John Gowlett, and Robin Dunbar (2014) defended the *social brain hypothesis*, which posits that the increasing size of the brain correlates to the increasing size of social units. As has long been argued by the latter scholar, the key capacity linking the biological and social domains is the *theory of mind* (Dunbar 1992; 2003). From the perspective of evolutionary psychology, the capacity to attribute mental states to others was an evolutionary response to problems of cognitive load stemming from the increasingly larger and more complex social groups of the Palaeolithic. To this extent, the socially-exerted selective pressures for greater computational capacity drove the expansion of the neocortex, and led to the characteristic encephalisation of hominins. This so-called "Machiavellian intelligence" hypothesis has been evoked lately to help explain the prehistoric record.

In order to evaluate the social brain hypothesis against the archaeological findings, the aforementioned scholars made a clear distinction between the two main kinds of resources that they consider the sensorial and affective building blocks of hominins' social bonds – namely, “material” and “emotional” resources (Gamble et al. 2011). While the former include the affordances and properties of animals, plants, water, stone, wood etc., the latter involve empathy, qualitative and quantitative bonds, and second-order emotions.²¹ Yet as Gamble and his colleagues (2011, p.129) concede in their conclusion, ‘[t]he emotional affect arising from involvement with materials remains impossible under current approaches to the Palaeolithic.’ Perhaps this restriction explains why, instead of focusing on the interplay between materials and emotions, the authors actually focused on the “technological” and “social” competencies they underpinned. The technological competencies would have been expressed through an array of adaptations, such as: meat-based diet, fire, stone and bone tools, ochre pigments, ornamental beads, engraved ochre, composite artefacts, hafting, and figurative art; whereas the social competencies would have guided activities, such as: face-to-face interaction, social grooming, language, music, performance, communal hunting, the use of hearths for socialising, codes of conduct, rituals, art, and religion. In the authors' view, the amplification of these two kinds of competencies over time, enabled hominins to address their social problems, and in doing so drove encephalization and, by extension, community size.

Based on this logic, Gamble and his colleagues (2011) partitioned the Palaeolithic in three stages depending on whether cultural amplification corresponds to encephalization. The first temporal movement extended from 2.6 to 1.6 million years ago (mya), and is characterised by the first material innovations, such as the earliest stone

²¹ Unlike the primary emotions that all animals have (fear, anger, happiness, sadness, disgust, surprise), second-order or social emotions (i.e., guilt, remorse, greed, and shame) require the capacity for theory of mind and level-2 intentionality (Gamble et al. 2011, p.125).

tools, which led to community sizes greater than those established by other primates. On the other hand, the second stage, dated at 1.5–0.4 mya, reveals a preferential emphasis on emotional resources such as language and theory of mind-dependent emotions, because the observed brain enlargement is not accompanied by a significant improvement in material technologies. As for the final period, spanning from 300 to 25 kya, the authors propose that it is marked by symbolic materials, such as ornamental shell beads and engraved ochre, which were used to exert emotional influence beyond the confines of one's own social group or community. By extending their social worlds, these “technologies of separation” (Gamble 2010) enabled humans to geographically disperse, until they eventually colonised the globe.

In studying the archaeological record by way of the social brain hypothesis, its proponents do not treat material signification in semiotic terms. Yet according to Gamble (2010), neither do they subscribe to the internalist perspective that considers storage as the pivotal quality of material symbols. Instead, they draw on externalist approaches to cognition, in treating symbolic material culture as a cultural adaptation used for purposes of social extension (*ibid.*). By communicating affective messages, symbolic artefacts would have helped integrate inherently psychological beings into their social groups. However, despite attempting to implement a radical notion on cognition, the authors seem to actually apply a traditional representationalist take on the mind, as they attribute the affective messages communicated by material symbols to a powerful social brain. For instance, it is suggested that the symbolic ornamental beads would have required at least second-order, and perhaps up to fourth-order, intentionality. As Gowlett and his colleagues (2012, pp.706–707) speculated, fourth-order intentionality would have been exhibited by the specialists who provided beads indicative of group membership to wearers who would have expressed third-order intentionality in the form of: “I intend

(first order) that you believe (second order) that my intentions are friendly (third order).”

As seen in the introductory chapter (section 1.4.2), Henshilwood and Dubreuil (2011) also share the notion that symbolically communicative artefacts such as ornaments would have required the capacity for theory of mind, as well level-2 perspective taking. The evidently representationalist notion of the mind all these scholars adopt – even if unintendedly so – inevitably led them to assume a linguistic approach to material signification, according to which meaning is predefined before being imbued in material culture. Given that this linguistic approach is inherently problematic, the social brain hypothesis appears to be unsuitable for studying past forms of material signification.

5.1.2 Semiotic approaches

Having considered a variety of symbolically-oriented approaches towards the evolution of material signs, I now turn to accounts which have taken into consideration iconic and indexical forms of signification. While outlining the semiotically-oriented evolutionary frameworks, I aim to evaluate their semiotic dispositions, and thus gauge their suitability for tracing the emergence of material signification. With this goal in mind, I start by considering Noble and Davidson’s (1996) “symbolic naming” (section 5.1.2.1), continue with Deacon’s (1997) “symbolic recoding” (section 5.1.2.2), and conclude with Rossano’s (2010) “enhanced working memory capacity” (section 5.1.2.3).

5.1.2.1 Noble and Davidson’s “symbolic naming”

In their preeminent book *Human Evolution, Language and Mind: A Psychological and Archaeological Inquiry*, psychologist William Noble and archaeologist Iain Davidson (1996) proposed that material symbols acquire their significative meanings through the symbolic practice of *naming*. In explaining how this ability comes about, the authors advanced a radical, for its time, approach founded on social perception. While the pioneering importance of their framework is undisputed, Noble and Davidson still

associated the nature of material signification with language and symbolism. In order to evaluate their interesting synthesis of linguistic and pragmatic elements, let us briefly consider the evolutionary narrative they put forth.

Noble and Davidson started by suggesting that aimed throwing at a target, would have led to an inevitable posture at the end-phase of the throw, which would have provided the basis for pointing. Pointing would have become established because it would have been taken to communicate information about the whereabouts of prey, predators, or human antagonists without revealing the position of the pointing individual. This behaviour would have in turn been embellished by moving one's hand in order to outline a distinctive feature of the target. Such gesturing would have been useful in distinguishing prey from predator for other individuals that are present. According to the authors, the repetition of "iconic" gestures in contexts beyond their use would have eventually led to their accidental or incidental imprinting upon plastic media, such as mud-banks. The propensity of hominids for imitative behaviour would have made it likely for traces of imitative gestures about prey animals to be noticed, making the "sign" an entity in itself. While the imitative gestures would have communicated something about the prey, they would have done so via means of associative learning. On the other hand, the deposition of imitative traces in plastic media would have enabled hominids to recognise the traces as distinct significative entities that can be detached from the immediate contexts of association and transposed to other contexts, while still maintaining their reference to now absent signifieds. Given their ability to function away from their referents, the authors suggested they would have functioned symbolically, as names. At this point, the initially iconic traces would have been open to manipulation that would have introduced an increasing degree of arbitrariness in their relations to their referents. Such changes would have taken place as long as all their users 'remained in the 'language game'' (ibid.,

p.224). The authors added to this that the vocal accompaniments of the manual gestures would have also become symbolic through similar means. Given that this symbolic use of visual and vocal communicative signs would have allegedly been the only way to exchange thoughts, the authors conclude that the human mind was brought forth through precisely this kind of linguistic behaviour.

While Noble and Davidson are commendable for being the first to evade the representational approach that treats the mind as a natural entity that is passively expressed on material culture, their semiotic approach towards the nature and emergence of material signification could have been improved further. Regarding their approach towards the nature of signification, it must be acknowledged that, whereas most archaeologists who draw on Peirce's basic typology treat the perception of similarity involved in icons as more-or-less automatic, Noble and Davidson aptly recognised that signs also depend on conventional knowledge about their communicative function. As they characteristically put it: 'The intention to portray some general or specific aspect of something leads to its 'complete' depiction once the conventionally defined image of that feature is fashioned' (*ibid.*, p.77). In saying so, it seems that they treated the icon as a combination of some kind of relevance between the image and what it depicts, and a conventional component that is required in order to appropriately conceptualise this relevance. While I commend their recognition of the fact that icons may consist of more than just resemblance, I disagree with their conceptualisation of 'icons as symbols' (*ibid.*, p.72) on the basis of the shared conventional knowledge they require. This conventional component does not make the icons symbolic – it is essentially the sign function, which can be combined with all types of semiotic ground (i.e., iconic, indexical, and symbolic) to create a proper sign.

Having misconstrued sign function for symbolism, they are unavoidably led to a problematic account on the emergence of material signs. Given that icons are referential and require knowledge in order to be properly understood, Noble and Davidson postulated that the conventional relation between the image and its referent can only be conveyed and agreed upon via linguistic means (*ibid.*, p.80). They thus maintained that a linguistic system of categories is an essential prerequisite for the creation of icons. It seems though that resorting to linguistic systems in order to explain the creation of non-symbolic referential signs may not be necessary when developing an approach based on social perception. As we have already seen (section 1.4.3), Garofoli (2015) did not have to evoke language in order to explain the emergence of material signification. While a ‘naming’ capacity would have been helpful for agreeing on meanings, it would not have had to precede the creation of the earliest signs that would have emerged via abductive means.

5.1.2.2 Deacon’s “symbolic recoding”

In his influential book *The Symbolic Species: The Co-Evolution of Language and the Brain*, Deacon (1997) approximated the co-evolution of language and executive brain capacities by evoking the invention of a mnemonic strategy, which is based on the *symbolic recoding* of associatively-learned facts. In his evolutionary account, he adopted a “Baldwinian” perspective on evolution, according to which a greater degree of ontogenetic learning abilities would be selectively favoured in social species such as hominins. It follows from this that individuals capable of language should be favoured at the expense of non-speakers. Deacon thus suggested that the appearance of early primitive language would have sped up the evolutionary process by creating a feed-back loop between the evolution of language and the evolution of the human brain. However, unlike Mithen’s strongly modular perspective, Deacon’s approach contradicted or at least

relativised modularism by illuminating the fact that, although Wernicke's and Broca's areas play a fundamental role in the production and understanding of language, lexical semantics and enunciation depend on the interconnectedness of these cognitive modules with further brain capacities. By opposing the widely-held preoccupation with linguistic grammar and its core module, he set out to emphasise the broader semiotic implications of human grammar. He therefore drew on Peirce's semiotic theory in an attempt to link semiotic and linguistic capacities. Specifically, Deacon correlated the evolutionary ascent of hominins from icons to indices, and then to symbols, with the evolution of greater degrees of consciousness. In doing so however, he utilised an unorthodox understanding of Peirce's icon, index, and symbol that, as we shall see, has been extensively critiqued by Sonesson (2006). Given that Deacon's evolutionary framework 'is probably the most important attempt to integrate cognitive science and semiotics that has been presented so far' (ibid., p.135), let us proceed with a detailed examination of his semiotic shortcomings in the following paragraphs.

Starting with iconicity, Deacon defined it as the fact of there being no distinction – that is, the perception of the same “stuff” over and over again. For instance, in the case of camouflage, a bird sees the moth's wing as “just more bark”. The iconicity in this example rests on the fact that the bird failed to make a distinction between the moth's wings and the tree's bark. Deacon (1997, p.76) therefore suggested that '[i]conic resemblance is not based on some prior ground of physical similarity, but in that aspect of the interpretation process that does not differ from some other interpretive process.' He then goes on to add that iconicity is the identification of a category. As Sonesson pointed out, Deacon is essentially referring to the *principle* of iconicity (Firstness). He therefore only considers what Peirce (CP 4.447) termed a *pure icon*, which 'can convey no positive or factual information'. These are icons that only appear in thinking, if ever, when one is

immersed to such a degree in an iconic sign that they lose consciousness of the distinction between the thing perceived and what it stands for. For instance, a painting may elicit a pure icon only for a fleeting moment, when the distinction of the real and the copy disappears (CP 3.362). However, Sonesson (2006, pp.167–168) argued that such icons are not really iconic signs. As we have already seen (e.g., Table 3.2), an iconic sign requires not only the grounds of physical similarity (Secondness) that Deacon dismissed by saying that '[i]conic resemblance is not based on some prior ground of physical similarity', but also the sign function (Thirdness), according to which the thing serving as the Expression is taken to stand for the thing serving as the Content. It thus becomes clear that, in treating icons at the level of iconicity (Firstness), Deacon failed to account for their ascent to sign function (Thirdness), which is the level that concerns us when exploring the evolution of early material signification.

Moreover, as was discussed in the previous chapter (section 4.1.2), Deacon also misconceptualised indices by reducing them to mere associations. He defined indexicality as the conditioned reflex generated through the repeated correlation between two icons (in his aforementioned sense of categories). For example, the repeated correlation of smoke and flames (i.e., Deacon's index) presupposes the repetition of the phenomenon categorised as smoke and that categorised as flames (i.e., Deacon's icons). Such a conceptualisation of indices led Sonesson to argue that Deacon is actually referring to indexical grounds (Seconds) as if they are signs (Thirds). Indexicalities and sign function are however distinct variables. In the pragmatic terms adopted in the first part of the dissertation, the association between smoke and fire is a primordial perceptual fact that can be considered an actual perceptual context involving spatiotemporal contiguity. The sign function associated with these indexical grounds entails explicitly situating smoke and fire on different levels of differentiation or directedness. Smoke and fire should be

seen as things that do not overlap in space/time and which are of different nature. In addition, if smoke is to be seen as the Expression of the sign, it must be more readily perceptible than the fire, but less important than it. This truly pragmatic semiotic reveals that, in treating indices as conditioned reflexes, Deacon remained at the level of indexicality (Secondness),²² and therefore did not adequately account for how indexicalities first became stabilised as actual signs (Thirds).

Finally, as was briefly discussed in the previous chapter (section 4.1.3), Deacon also misconceptualised symbols by placing them indiscriminately into systems, such as those characteristic of language. Specifically, he suggested that in order for such systems to be formed, the systematic relationships *between* indexical signs (in Deacon's sense of learned associations) must be first recognised and learned as additional indices. Only then can a shift of emphasis consolidate the logical relationships established between the sign tokens into formal systems of higher-order relationships. These symbolic systems dictate not only the combinatorial relations each sign token has with the other tokens, but also their correlative relations to their objects of reference. According to the intended Peircean-inspired framework advanced by Deacon, recognising a higher-order regularity in the mess of associations, and making the shift from conditioned associations (i.e., the relations between the initially indexical sign tokens and their objects of reference) to symbolic associations (i.e., the relations between the now symbolic sign tokens and other such tokens) is essentially a mnemonic strategy developed in order to offload redundant details from working memory.

²² Deacon is not only mistaken in conflating indexicality with indexical sign function; according to Sonesson (2006, p.177), he is also mistaken in tying indexicality to conditioned reflexes. For one, an actual perceptual context involving two things does not have to be repeated over time for the indexical grounds of contiguity/factoriality between them to be discerned. And secondly, conditioned reflexes are not the only forms of indexical grounds – some indexicalities are generated through unconditioned reflexes, whether innate or not. As exemplified by Sonesson: '[A]n indexical ground is formed not only between the sound sequence "food", and the edible substances that a rat may be conditioned to associate with it in the Skinner box, but also between these same substances, and the smell, colour, or other properties which the animal would use in real world circumstances as an identifying clue of the food' (ibid.)

In order to illustrate this radical transformation in the mode of representation, Deacon (1997, p.84ff) discussed a set of experiments that aimed to train chimpanzees to use simple symbols. These experiments required teaching chimpanzees a number of paired associations between simple abstract shapes (i.e., keyboard lexigrams) and activities or objects, in order to study their ability to use the lexigrams in simple verb-noun combinations (i.e., syntactic relationships). The chimpanzees initially learned the individual associations between the verb and food/drink lexigrams, but failed to grasp the system of possible combinatorial relationships of which these correlations were a part. However, they had not been explicitly trained to avoid inappropriate combinations, such as “banana juice give”. The experimenters thus decided to help them understand the system by training them on the meaningless combinations as well. Eventually, the chimpanzees learned how to systematically avoid all the incorrect possibilities and use the lexigrams in a correct way. At this point, they had moved beyond the conditioned associations between the lexigrams and the objects or events, and had actually formed a set of logical relationships of exclusion and inclusion between the lexigrams. In terms of Deacon’s semiotic perspective, they had essentially transposed indexicality into the internal domain of language for the purpose of simplifying their memory load. Having defined the symbolic relations between the lexigrams, they were now able to understand that the correlation between a lexigram and an object or event depends on its symbolic relationships to other symbolic tokens. In this regard, chimpanzees had learned how to use lexigrams symbolically. As Deacon informs us, chimpanzees had been able to develop reference: i) by appreciating the hierarchic relationship between two levels of indexicality (i.e., the lower-order one between lexigrams and objects/events, and the higher-order one between lexigrams); and ii) by recognising the iconic similarity shared by the system of relationships between the objects of reference, and the system of

relationships between the lexigrams. Having conceptualised these two key characteristics of the symbolic referential level, the chimpanzees were thereafter able to enrich their symbolic knowledge by quickly incorporating a novel lexigram and its relation to an object of reference into the pre-existing system, rather than trying to learn it as an individual lexigram-object correlation. Since nature seldom offers such helpful logical systems which could help organise our lives, we are forced to create artificial systems by shifting our emphasis upon encountering a systematic set of tokens, and recoding it in a symbolic and systematic way. Once such an insight has been gained, the individual has effectively crossed what Deacon (1997, p.79) has referred to as the ‘symbolic threshold’.

Deacon’s semiotic interpretation of these experiments elucidates his problematic conceptualisation of symbolism, and Peirce’s theory in general. For one, he treated symbolicity and systematicity as co-dependent variables – the chimpanzees were seemingly unable to grasp proper symbol use until they understood the system in which these functioned. Moreover, in unintentionally depriving icons and indices from proper sign function (as previously demonstrated), he appears to have reserved sign function for the symbolic and systemic level. Only once at this level were the chimpanzees supposedly able to understand the true function of the lexigrams as a sign tokens. This intendedly Peircean approach in which symbolicity, sign function, and systematicity are treated as one and the same has been heavily critiqued by Sonesson (2006, p.183), who recognised that ‘[c]ontrary to Deacon’s self-understanding, his semiotics is really Saussurean at heart.’ According to Sonesson (2006, pp.183–184), Deacon (1997) clearly advanced a structuralist perspective when he postulated that ‘the correspondence between words and objects is a secondary relationship, subordinate to a web of associative relationships of a quite different sort’ (ibid., p.70), and when he proposed that symbols do not form ‘one-to-one associations’ but ‘many-to-one associations’ and ‘one-to-many associations’ (ibid.,

p.96). As Sonesson pointed out, while the Peircean doctrine recognises that the three parts of a sign (i.e., Sign, Object, Interpretant) can be dissolved into new signs that are themselves made up of signs (and so on and so forth indefinitely), it does not tell us that such chains of signs – even when symbolic – are linked together through anything other than one-to-one associations. Sonesson (2006, pp.184–186) explained that neither all signs nor all symbols (in the Peircean sense of the terms) belong in systems. For instance, visual signs such as pictures and gestures such as the V-sign do not belong into any system. Moreover, as we saw in previous chapter (section 4.1.3), symbolic signs such as white walking sticks and flags in admiral ships are clearly not part of elaborate systems, such as those Deacon had in mind when discussing non-linguistic symbolic practices such as games, norms of etiquette, and ceremonies. To this extent, it becomes clear that symbolicity, sign function, and systematicity should be treated as independent variables when using Peirce’s semiotic theory to study the evolution of the human mind.

In brief, the above critical points reveal that, despite his intentions, Deacon did not employ a Peircean semiotic framework in his evolutionary framework. Specifically, by reducing icons to principles (Firsts), and indices to grounds (Seconds), he failed to account for their emergence as signs (Thirds). He seems to have reserved sign function for symbols alone, which he subsumed with systematicity. However, these are all independent variables, and so their emergence should be separately considered when applying Peirce’s semiotic theory to the evolution of cognition and signification. For these reasons, it can be concluded that Deacon’s evolutionary epistemology is inappropriate for studying the origins of past material signification.

5.1.2.3 Rossano’s “enhanced working memory capacity”

In a recent paper entitled *Making Friends, Making Tools, and Making Symbols*, Rossano (2010) explored the role of an *enhanced working memory capacity* (Wynn and Coolidge

2007) in the creation of complex symbolic systems by bringing Peirce's semiotic theory back into the discussion about modern human origins. Specifically, he classified the available Palaeolithic archaeological evidence as iconic, indexical, or symbolic, and proposed that the transition from the earlier-appearing icons and indices to the later-emerging symbolism was driven by sociodemographic pressure. His approach is similar, albeit more underdeveloped than that advanced by Deacon, and as will shall see is prone to the same semiotic problems.

Like Deacon, Rossano misunderstands icons by reducing them to perceptual cuing. In his view, the mineral pigments applied to the bodies of early hominins would have been iconic because their meaning would have been closely tied to their perceptual appearance – either the pigments' own appearance if it was used to mimic blood, or their wearers' appearance by enhancing their facial expressions and bodily contours. As we have seen though, icons depend on more than perceptual cuing – they are a relation based on similarity in combination with sign function. Rossano fails to make this distinction, and thus account for the cognitive and semiotic mechanisms behind the emergence of iconic signification.

Similarly to Deacon, he also misconceptualised indices by reducing them to associative learning. For instance, imposed form and/or style are indexical because hominins would have learned to associate them with the people that made them; composite tools would have been indexical in the sense that their assembly process would have required attending to signs indicating the future viability of the tool (e.g., the viscosity of the adhesive); and beads would have been indices because they would have functioned as indicators of their wearers' social affiliations. Yet as we have already seen, an indexical sign is more than an associative relation between two things, because it

entails sign function. Having overlooked this distinction, Rossano was unable to properly account for the emergence of indexical signs.

Finally, Rossano (2010, p.S93) misconceptualised the nature of Peircean symbols by defining them as signs whose meaning is not directly perceptible and can thus be understood ‘only from within the cultural context of their creation.’ In his view, such culturally defined signs include: the sorcerer from Les Trois-Frères cave, the lion man of the Hohlenstein-Stadel, the geometric forms in Australian rock art, and various therianthropes in European cave art. However, we have seen that secondary icons and abductive indices also require prior cultural knowledge, if one is to properly discern the relevance between the sign and what it stands for. It thus follows that identifying the aforementioned archaeological findings as symbolic, based on the fact that they required prior cultural knowledge in order to be understood, is inaccurate.

Having misconceptualised symbols as signs that function in highly cultural environments, it is not surprising that Rossano explained the emergence of symbolism as an adaptive mechanism elicited by sociodemographic pressure. Specifically, his argument unfolds as such: The stable social/developmental environments in which *Homo sapiens* lived would have reduced the stress endured during childhood, when humans are particularly receptive to learning elaborate symbolic systems. Such secure environments would have also created greater opportunities for mother-infant joint engagement. These safe settings would have thus eased the selection pressure against greater cognitive development and working-memory capacity in particular, which is believed to have been imperative to understanding complicated symbolic systems. Executing cognitively demanding rituals would have also been socially advantageous in the increasingly larger and more complex social groups of *Homo sapiens* because they would have promoted

social cohesion. Therefore, individuals with increased working memory would have been more adept at further developing these ritualistic adaptive mechanisms.

In putting forth this account, Rossano evoked cultural pressure as the driving force of complicated symbolic rituals, having distinguished signs into icons and indices as if they are readily perceptible, and symbolic when they are understood from within a cultural context. This superficial semiotic approach is problematic because it reduces the former set of signs to the underlying grounds, and reserves sign function for symbols alone. As demonstrated in the discussion on Deacon's theory, we must make a clear distinction between principles, grounds, sign function, and systematicity, if we are to trace the emergence of material signification and symbolism. Given that Rossano did not make these distinctions, it is safe to say that his semiotic approach was also misguided.

5.1.3 Gleaning the theoretical tendencies in the debate on human origins

The above overview reveals that the nature of the material sign has been poorly understood by the proponents of both the symbolic and the semiotic approach. With the exception of Gamble (2007), whose metaphor-based theory is actually closer to Peirce's pragmatism than he may be aware of, the scholars who opted for a strictly linguistic conceptualisation of material signification failed to grant non-symbolic modes of signification with some much deserving merit. Yet icons and indices have been misconceptualised even by scholars, such as Deacon (1997) and Rossano (2010), who explicitly drew from Peirce's semiotic theory. It appears to me, that the general misconception regarding the nature of material signification is an unavoidable consequence of the Cartesian thinking that pervades the broader domain of evolutionary cognitive archaeology. As has been recognised by Malafouris (2013, p.25), the separation of cognition from materiality and practice has its basis on two main theoretical assumptions – namely, the methodological individualism that identifies the human

individual as the analytic unit and ontological locus of the human mind; and the equation of the “cognitive” with the “symbolic” according to the dictates of a representational notion of the mind. Indeed, it became evident throughout the examination of the presented perspectives on the evolution of the mind that they tend to conceptualise the meaning of significant artefacts as the epiphenomenal product of brainbound symbolic representations. As I shall demonstrate here, this common Cartesian disposition is manifested in the representational perspective the scholars assumed towards three main theoretical issues – that is, the nature of cognition, the relation between the mind and material culture/signification, and the process of agency. This deeply entrenched representational perspective ultimately led them to adopt a neo-Darwinian outlook on evolution and modernity. On this note, I start by considering the dictates of representationalism.

The representational approach to cognition is deeply rooted to the so-called mind-body problem inherent in Cartesian dualism. The interaction between these two substances has long been attributed to a mechanism that transforms perceptual stimuli into inner representations, which are then used as mental templates that guide action. This representational view of mind provided the foundations for a computational notion that gained traction with the invention of the digital computer. According to the computational theory of mind, cognitive processes are best treated in information-processing terms, as formal operations on syntactically structured representations (Fodor 1975). Faced with these developments in cognitive science, cognitive archaeologists have understandably drawn upon their theoretical assumptions in studying ancient minds (Mithen 1998a). The representational and computational perspectives outlined in the examined evolutionary approaches attest to the dominance of the Cartesian dictum (e.g., Deacon 1997; Donald 1991; Hoffecker 2011; Klein 2009; Mithen 1996). Notably though, this representationalist

tradition was challenged by Noble and Davidson (1996), who favoured a “social construct” model of the mind that posits a conception of the mind as socially distributed. Along similar lines, Gamble (2007; 2010; Gamble et al. 2014) defended a form of embodied and distributed cognition, which is taken to have enabled the social extension of humans across the globe. Yet while seemingly anti-Cartesian, Gamble’s approach retains its dualistic outlook, as evidenced for instance by the clear line drawn between Palaeolithic material and emotions (Gamble et al. 2011).

The tendency of most scholars to adopt a dualist notion entails treating the meaning of material culture as the epiphenomenal product of a brainbound mind. Social anthropologist Tim Ingold (2010) dubs this dominant ontological notion as the *hylomorphic* model of creation, because form is allegedly imposed upon the material world by agents with preconceived designs in mind. Having subscribed to such a perspective, Hoffecker (2011, p.x) suggested that ‘the data of the archaeological record is largely a trail of fossil thought.’ Material signs, in particular, are considered to have functioned as external storage devices upon which human agents offloaded symbolic content through the projection of mental representations outside the brain. Their use as such was purportedly a product of an inventive process that transformed objects into symbolically-coded devices used for communicative purposes (e.g., Deacon 1997; Donald 1991; Hoffecker 2011; Klein 2009; Mithen 1996; Rossano 2010). It is indeed long held that symbolism was developed as it ‘solves an adaptive problem for humans that is probably related to information-processing requirements’ (Lindly and Clark 1990, p.252). To this extent, demographic phenomena (e.g., increased population size and migratory connectivity) underpinned by climate change are posited to have played a key role in the appearance of cultural innovations (d’Errico and Banks 2013; Kuhn 2012; Lombard 2012; Powell et al. 2009; Shennan 2001; Zilhão 2007). While changing

demographic conditions may have exerted strong selective pressures that catalysed the emergence of material signs, the signified concepts were allegedly innate representations harboured by cognitive modules. By adopting such a form of representational nativism, many scholars inevitably resorted to neurocentric arguments that treat symbolic innovation as the product of previously evolved neurocognitive capacities. For instance, Donald (1991) evoked an enhanced motor control system, Mithen (1996) focused on cognitive fluidity, Klein (2009) defended an executive brain mutation, Rossano (2010) maintained the need for an enhanced working memory capacity, and Gamble and his colleagues (2014) supported the presence of theory of mind. While each proposal is unique in its own right, they all converge in viewing some kind of adaptive neural development as the prime mover of symbolism.

This Cartesian outlook on the nature of the mind, its relation to material signification, and agency, is regularly contextualised within a neo-Darwinian evolutionary theory that seeks to explain the origins of modernity. Most of the scholars, whose evolutionary accounts were reviewed, defined evolution as change in the information coursing through two interacting, yet distinct, trajectories: the biological and the sociocultural. As they recognise, the sociocultural world of humans is unique in its magnitude. In the characteristic words of Hoffecker (2011, p.84): ‘More than any other organism that has ever trod the Earth, modern humans are the product of information, rather than genes (or, because genes are themselves a form of information, an alternative and more mutable type of information).’ This information is manifested as memes, which are snippets of cultural knowledge that are transmitted between individual minds. Like its biological counterpart, culture is also subjected to selective pressures. To this extent, only advantageous – in terms of fitness – practices are maintained and passed on to the following generations, where they are subject to change. Yet despite moving along a path

of its own, culture is always subject to the pre-existence of a sufficiently capable neurocognitive apparatus. The paleoanthropologist Ian Tattersall (2009, p.114) typically suggested that ‘in evolution, form has to precede function, if only because without form there can be no function.’ Based on this representational logic, scholars have been using the behaviours gleaned from the archaeological record as proxies for already established cognitive capacities. In order to trace the evolution of the mind, they thus resort to the compartmentalisation of technologies within specific time periods, and associate these behaviours with evolving cognitive stages. These pre-fixed stages can involve a wide variety of mental abilities, such as memory representation (Donald 1991), cognitive fluidity (Mithen 1996), semiotic capacity (Deacon 1997; Rossano 2010), creativity (Hoffecker 2011), and theory of mind (Gamble et al. 2011; 2014). Yet despite the apparent multivocality, the creation of symbolic artefacts for communicative purposes is unanimously recognised as the pinnacle of modern human behaviour and, by extension, cognition (Hopkinson 2013). For this reason, it is important to evaluate the representationalist, nativist, neurocentric, and neo-Darwinian assumptions through which the origins of symbolism and modernity are evidently approximated.

5.2 The optimal theory for tracing the emergence of past material signification

While evoking a representational mechanism in order to explain the relationship between cognition and material culture may be the predominant approach in evolutionary cognitive archaeology, Malafouris (ibid., p.237) has argued that its proponents commit the *representational fallacy*. In order to overcome this problematic assumption, Malafouris (2004; 2007a; b; 2008a; b; c; d; 2010a; b; c; d; 2011a; 2013) and Renfrew (2004; 2006; 2007) have therefore developed the Material Engagement Theory – a

theoretical framework that has already been briefly introduced (section 1.4.3). As remarked by Malafouris (2013, p.35): ‘The aim of MET is to restate the problem of the interaction between cognition and material culture in a more productive manner by placing it upon a new relational ontological foundation.’ To this extent, this evolutionary epistemology conceptualises evolution as the change that takes place over space and time in the constitutive entwinements between malleable biological and cultural components. Such a theoretical perspective can only emerge by overcoming the “epistemic neglect of the object”, which leaves material culture outside of the functional cognitive architecture (Malafouris 2013, p.10), and accepting that mind, signification, and agency are the emergent and relational products of our engagement with the material world. The view according to which the human mind and material culture co-emerged from the complex dynamical interactions between brains, bodies, and things has been recently gaining traction, with an increasing number of archaeologists defending it (Barrett 2013; 2014; Boivin 2008; Coward and Gamble 2008; Garofoli 2015; Gosden 2008; Knappett 2005; 2011a; Overmann 2013).

Given the present state of research, I shall now explore this promising theoretical direction. Specifically, I start by considering the reasons why the generally adopted neo-Darwinian approach to evolution needs to be replaced by a developmentally-inclined evolutionary epistemology (section 5.2.1). As will be argued, this shift in perspective requires addressing three misconceptions inherent in the representational dictum – namely: that the mind computes symbolic representations (section 5.2.2), that the significant concepts it imbues in material culture are innate (section 5.2.3), and that agency is a strictly human capacity (section 5.2.4). By outlining the MET’s theoretical standpoint on these three points, I plan to ultimately demonstrate the compatibility of Malafouris’ and Peirce’s theoretical frameworks, which should therefore be

synergistically fused in order yield a powerful analytic tool for tracing the evolution of material signification (section 5.2.5).

5.2.1 Metaplasticity

The neo-Darwinian approach, according to which cultural phenomena are described in biological terms such as adaptation and natural selection is problematic, because biological and cultural evolution are not parallel, yet distinct processes – they are instead intimately entwined dimensions of the same ontogenetic process (Ingold 2013; Tallis 2011). In his polemic against the neo-Darwinian dictum, Ingold (2013, p.8) argued that:

[Evolution] can only be understood topologically, as the unfolding of the entire tapestry – of the all-embracing matrix of relationships wherein the manifold forms of life that we call ‘cultural’ emerge and are held in place. Within this matrix, the becoming of every constituent both conditions and is conditioned by the becomings of other constituents to which it relates. These mutually conditioning relations together comprise what we can call an ontogenetic or developmental system.

In this light, adopting a linear and deterministic stance towards evolution has been detrimental to scholarly inquest because it fails to appreciate the sheer complexity of the developmental process, and its role in the ontogenesis of bio-cultural phenotypes.

Indeed, recent advances in biology and psychology have dispelled the notion that phenotypic traits, including behaviour, are predetermined by our genes, due to the growing evidence that developmental processes play a fundamental role in phenotypic stability and variability. For one, a general theoretical perspective on development, heredity, and evolution, known as developmental systems theory (DST), suggests that each generation of humans is constructed through their interaction with an array of developmental resources (Griffiths and Gray 1994; Griffiths and Stotz 2000; Oyama et al. 2001). Similarly, according to probabilistic epigenesis (PE), phenotypes emerge through bidirectional influences within and between four levels of analysis: the genetic, the

neural, the behavioural, and the environmental (physical, social, cultural) (Gottlieb 2003; 2007). Adding to these post-genomic metatheoretical models, neuroconstructivism informs us that brain development actually depends on experience-dependent factors (Mareschal et al. 2007; Westermann et al. 2007; Westermann et al. 2006). In fact, due to its remarkable degree of neuroplasticity, the human brain is shaped by the cultural world throughout the human life span (Wexler 2008). According to the neuronal recycling hypothesis, cultural innovations are able to invade evolutionarily older cortical maps, and inherit many of their anatomical and connectional constraints (Dehaene and Cohen 2007).

In view of these insights, cognitive archaeologists must abandon the notion that the human brain has remained the same since speciation, and embrace the idea that it has been subject to continuous change (Malafouris 2010d; 2013; Malafouris and Renfrew 2008). According to the theory of material-engagement, the brain is not a hard-wired modular organ with a genetically predetermined and universally shared set of capacities that are only superficially influenced by culture. It is instead a remarkably plastic organ that is inextricably enfolded with material culture, as things actively constitute, mediate, and shape our ways of experiencing the world. These enactive and constitutive entwinements between neural and cultural plasticity can bring forth a wide variety of cognitive properties. The human mind is indeed exceptionally plastic, but it is also reciprocally open to cultural influence and variation through active engagement with a plastic material world. According to Malafouris (2013, p.46), this system-wide *metaplasticity* that makes change and alterability the natural state of the human mind, is a distinctly human feature, and should thus be the primary focal point of cognitive archaeology. To this end, the MET refutes the search for behavioural and cognitive modernity, and focuses on tracing the ongoing evolution of historically situated

metaplastic phenotypes. In doing so, it proposes the following three hypotheses about: the nature of the mind, the emergence of signification, and the process of agency.

5.2.2 Extended mind

According to Malafouris (2013, p.29), viewing human cognition as a computational device that is inherently disembodied from the world is inaccurate because it disregards its ecological situatedness, and cannot therefore account for most real-life cognitive tasks, which require an embodied engagement with the material world. This critical point has been raised by a range of novel theoretical perspectives, which conceive the cognitive system as: extended (Clark and Chalmers 1998), embodied (Chemero 2009; Lakoff and Johnson 1999), situated (Clancey 1997; Suchman 1987; Wilson and Clark 2009), distributed (Hutchins 1995), mediated (Vygotsky 1978; Wertsch 1991), dynamical (Van Gelder and Port 1995), and enacted (De Jaegher and Di Paolo 2007; Hutto 2011; Thompson and Stapleton 2009). While these strands may exhibit important differences in their theoretical commitments, they converge in opposing the Cartesian mind-body dichotomy and the conventional mind/brain tautology. In leaving cognitivism behind, they refute the separation of thought from embodied action and hence from its surrounding environment (Malafouris 2013, pp.58–59). By these lights, matter is granted with some much deserving merit in the generation of cognition.

Within cognitive archaeology and from the vantage point of the MET, material culture is therefore viewed as '*potentially co-extensive and consubstantial with mind*' (ibid., p.77, emphasis on original). This constitutive entwining of cognition and material culture is the basic premise behind the *hypothesis of the extended mind*. According to this theoretical postulation, it is possible for humans '*to think through things, in action, without the need of mental representation*' (ibid., p.237, emphasis on original). This idea bears great parallels with the enactive approach in cognitive science

and philosophy of mind. The biologist and philosopher Francisco Varela and his colleagues (1991, p.9) advanced the term *enactive* in order ‘to emphasize the growing conviction that cognition is not the representation of a pre-given world by a pre-given mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs.’ According to the theory of enactivism, emotional, perceptual, and conceptual meaning is brought forth through a relational process of interaction between neuronal, bodily, and environmental elements (Colombetti and Thompson 2008; De Jaegher and Di Paolo 2007; Krueger 2014; Parthemore 2013; Thompson and Stapleton 2009). In this light, the mind is not to be found within the confines of the brain, but embodied in an organism and embedded in the world. For the proponents of MET and enactivism, this world is not an external realm that transmits information to an internal processor, but an emergent product of an organism’s coupling with the environment. To this extent, cognition conditions the existence of objects, and reciprocally objects play a constitutive role in cognition.

5.2.3 Enactive signification

Overlooking the active role of material culture in shaping cognition inevitably leads to explaining the acquisition of concepts through the problematic prism of representational nativism. As has been noted by the philosopher Otávio Bueno (2013, p.329), saying that concepts are innate merely locates them within the mind; it does not explain how they were formed in the first place. Aiming to study the process of concept acquisition from the long-term societal perspective of archaeology, Renfrew (2001b, p.129) set out to describe how early concepts would have been brought forth through a – fundamentally enactive – process that he termed *substantialization*. According to his *hypostatic* approach, engaging with the indissoluble reality of substance characteristic of material structures enables the co-emergence of concepts and their significative materializations.

For instance, the concept of “weight” and its quantifiable equivalencies were brought forward together through a process of substantive engagement (ibid., p.133).

In order to account for the cognitive mechanism behind this process, Malafouris (2013) advanced the *hypothesis of enactive signification*, which attributes the emergence of the material sign to a process of embodied “conceptual integration” between physical and mental spaces. By grounding the representational function generally associated with material symbols on an enactivist foundation, the MET’s semiotic component illuminates the fundamental role of the material world in the development of early significative concepts. For instance, the materiality of numerical devices from the Neolithic of the Near East transformed elusive conceptual problems into simple perceptual tasks by making the properties of numbers tangible and manipulable. Eventually, long-term material engagement with increasingly sophisticated numerical devices brought forth numerical thinking. The resulting symbolic system was hence the product of the constitutive entwining of brains, bodies, and things, rather than a mnemonic strategy deliberately invented to ease memory load. As asserted by Malafouris (2013, p.110, emphasis in original): ‘This ability that enables humans to conceptualize the quantity 10 in the absence of language or symbol does not refer to a process of learning but to a process of *enactive discovery and signification*.’

5.2.4 Material agency

The generally held notion, according to which the ability to bring about changes in the world is a capacity of humans alone, has been disputed by an increasing number of archaeologists who consider it a non-anthropocentric process (Boivin 2008; Gosden 2005; Jones and Boivin 2010; Knappett 2002; 2005; Knappett and Malafouris 2008). Due to their fundamental role in the exercise of agency, inanimate objects are generally treated as secondary agents, as per Alfred Gell’s (1998) pioneering anthropological approach – with

humans maintaining primacy due to their capacity for intentionality. As Knappett (2005, p.22) characteristically put it: ‘Artifacts such as traffic lights, sleeping policemen, or catflaps might be described as possessing a kind of agency; yet it would be much harder to argue that they manifest intentionality.’

For the MET though, intentionality is not a fixed property of humans either. According to the *hypothesis of material agency*, agency is the emergent product of situated activity (Malafouris 2013). As Malafouris sees it, if we are to accept that agency is about causal events in the physical world, rather than about representational events in our mental world, we must speak of *intention-in-action*; for he suggests that ‘[i]n the case of “prior intention” no such correlation [between intentionality and agency] can be made before this intention becomes realized in the world—that is, before it meets its relevant condition of satisfaction’ (ibid., p.139). Whether such a condition can be met or not depends on the pertinent affordance. To give a pertinent example: whether or not my intent to drink something can be agentively manifested depends on whether my interaction with a particular object affords drinking. It follows from this that intentionality and affordance are not the properties of humans and things respectively, but constitutively entwined products of material engagement. Of course, this should not be taken to suggest that humans and things are ontological equivalents with regard to agency, for humans possess a “sense” or an “experience” of agency – which is why Malafouris (2013, p.215) notes that ‘it is not causality but consciousness that differentiates the human sense of agency from agency proper.’ It is thus important that we decouple the experience of agency from the act of bringing about change in the world, if we are to understand intentionality and affordance as the emergent properties of material engagement.

5.2.5 MET's compatibility with Peirce's semiotic theory

Evidently, by refuting the representational view of the mind and bringing things to the forefront, the MET does away with archaeology's unhealthy preoccupation with methodological individualism, and equation of the "cognitive" with the "symbolic". In fact, the essential role that it grants to the material aspect of cognition makes it ideal for explaining the evolutionary ascension of human culture through Peirce's ten semiotic levels. The integration of the two frameworks is indeed possible, because Malafouris' and Peirce's theories appear to be largely compatible.

Both scholars have renounced the idea that meaning is a fixed property of objects, and opt for the notion that sees it as the emergent product of relational processes. Specifically, Peirce viewed semiosis as an irreducible process involving the triadic relation between a Sign, its Object, and its Interpretant (CP 5.484). In other words, a Sign is logically meaningful when its relation to what it stands for, is interpreted. Similarly, Malafouris (2013, p.117) suggests – albeit from an archaeological perspective – that '[m]eaning does not reside in the material sign; it emerges from the various parameters of its performance and usage as these are actualised in the process of engagement.' His enactivist approach, according to which meaning is brought forth through embodied interaction with the material world, is evidently complementary with pragmatism, which grounds the meaning of abstract mental concepts to concrete experience. This is not surprising considering that Peirce, as well as other pragmatists, can be seen as a philosophical precursors to the theory of embodied and situated cognition (Atã and Queiroz 2013; Gallagher 2009). According to the philosopher Carl Hausman (2012), Peirce had favoured a process philosophy, according to which metaphysical reality is evolutionary, rather than static and substantial. After all, the "kernel of pragmatism" is the idea that 'the *whole* meaning of an intellectual predicate is that certain kinds of events

would happen, once in so often, in the course of experience, under certain kinds of existential conditions' (CP 5.468, emphasis in original). In this regard, the preoccupation of Peirce with a dynamic ontology of the mind appears to overlap with the goals of a MET-inspired archaeology of mind, which 'more than anything else, signifies this distinctly human search for understanding the intimate links between being and becoming' (Malafouris 2013, p.1).

On the face of it then, Peirce's and Malafouris' theoretical perspectives appear to be largely compatible. Their pragmatic and enactive theories can therefore be synergistically fused for the purpose of yielding a methodological framework suitable for tracing the diachronic evolution of past material signs.

5.3 Summary

In this chapter, I set out to examine the epistemologies that aimed to explain the evolution of the human mind, in order to identify the most suitable approach for studying the origins of prehistoric material signs. A semiotic evaluation of nine distinct approaches revealed that the nature of material signification has been grossly misconceptualised. For one, material signs have been treated in linguistic terms by most scholars. As we have already seen, reducing material signification to linguistic terms is problematic because it overlooks the role of materiality in the generation of meaning. Yet it seems that the nature of material signs has even been misconceptualised by scholars that drew upon Peirce's semiotic theory. For instance, in his famous integration of cognitive science and semiotics, Deacon (1997) reduced the meaning of icons and indices to simple perception, reserving – what Sonesson (2006) has identified as – sign function for symbols alone. Moreover, he mistakenly associated symbolicity with systematicity, when in actuality

they are independent variables. It thus became clear that a properly Peircean semiotic theory has yet to be properly employed by an evolutionary epistemology.

Besides converging on a linguistic conceptualisation of material signification, scholars tended to attribute the creation of material signs to a representational mechanism. In their view, significant artefacts are the secondary products of brainbound processors, which computed symbolic representations before agentively projecting them into the world. This representationalist and computationalist perspective is founded on a Cartesian way of thinking. According to this dualist doctrine, there is an essential distinction to be made between the non-physicality of mind and the physicality of matter. The creation of material culture is therefore explained by way of a hylomorphic model, which attributes new cultural forms to innate mental templates harboured by cognitive modules. For the proponents of representational nativism, it is this neural substrate that is ultimately responsible for generating the significant meaning that is agentively imbued in material signs. In this regard, cultural evolution is seen as an epiphenomenal trajectory whose progress is closely dependent on the prior evolution of adaptive biological structures, such as enlarged brains, dexterous hands, and developed vocal tracts. It thus follows that any archaeological evidence for modern human behaviour is automatically considered a reliable proxy for cognitive modernity.

As we saw though, the scholarly consensus commits the representational fallacy by adopting a Cartesian outlook on cognition, and a neo-Darwinian perspective on evolution. This unhealthy tendency towards biological reductionism has been detrimental to scholarly inquest, because according to recent developmental perspectives, such as developmental systems theory, probabilistic epigenesis, and neuroconstructivism, the interaction between biological and cultural entities is much more intricate than that assumed by the neo-Darwinian dictum. Phenotypes are not the transcribed products of

genetic or cultural codes – they are instead the dynamic products of complex developmental processes that involve bidirectional influences within and between genetic, neural, behavioural, and environmental levels of analysis. In studying the evolution of ontogenesis, we must thus appreciate the plasticity of the individual components, as well as the plasticity of their variable inextricable enfoldments. Given that metaplasticity is exclusive to humans, Malafouris proposes it should replace modernity as the focal point of cognitive archaeology. As maintained by the MET, tracing the transformation of metaplastic phenotypes across the prehistoric landscape requires abandoning the Cartesian notion of cognition, and recognising that mind and matter are constitutively entwined. It follows from this that material signification is not the epiphenomenal product of predefined concepts, but an emergent product of our engagement with the material world. To this extent, it would be wrong to attribute the creation of material signs to human agents. Like cognition and signification, agency is also the emergent and relational product of material engagement. Evidently, this anti-Cartesian hypostatic perspective is highly compatible with Peirce's own vantage point. His pragmatic semiotic theory can thus be integrated with an enactive evolutionary epistemology, in order to yield an analytically-precise framework that is capable of tracing the nature and emergence of past material signification.

To this extent, I devote the following chapter to outlining a pragmatic and enactive theory of cognitive semiotics.

Chapter 6

Outline of a pragmatic and enactive theory of cognitive semiotics

Chapter outline

In the previous chapter, it was concluded that it would be misguided to maintain a representational and neo-Darwinian outlook on the evolution of cognition, and that the most analytically precise way to trace the evolution of material signification is by combining Peirce's semiotic theory with Malafouris' theory of material-engagement. In this chapter, I thus draw on the theories of these and other scholars in order to outline a pragmatic and enactive theory of cognitive semiotics that can help explain the evolution of past material signs. However, before delving into the semiotic workings of this evolutionary epistemology, I consider certain phenomenological points about the nature of cognition, and the material ontologies and topologies with which the human mind is associated (section 6.1). Once the appropriate background has been set, I proceed with outlining a pragmatic and enactive theory of cognitive semiotics that is suitably geared to trace the nature, as well as the emergence of past material signification from the moment of its creation to its distribution across the prehistoric landscape (section 6.2).

6.1 Phenomenological background

According to the MET, the evolution of the human mind appears to have taken place through an intricate and dynamic process that was driven by material engagement. As Malafouris (2013, p.244) succinctly put it:

The functional anatomy of the human mind (which includes the whole organism, that is, brain/CNS and body) is a dynamic bio-cultural construct subject to continuous ontogenetic and phylogenetic transformation by behaviourally important and socially embedded experiences. These experiences are mediated and sometimes constituted by the

use of material objects and artifacts (e.g., the blind man's stick) which for that reason should be seen as continuous, integral, and active parts of the human cognitive architecture.

In order to study the evolution of signification from such a vantage point, we must elucidate a couple of points made in the above passage: i) that the evolution of the human mind depends on the formation of behaviourally important and socially embedded experiences; and ii) that these experiences are mediated and constituted by material culture. Given the active role of the material world in the enactment and constitution of cognition, we must also consider some material ontologies and topologies that will later prove helpful in contextualising the evolution of material signification. In addressing these issues, I start by drawing on Malafouris' and Peirce's theories for the purpose of illuminating how meaningful experiences emerge as habits, before turning to the ways in which they are induced and shaped by the material world (section 6.1.1). I then draw upon the work of Gosden and Knappett, in order to differentiate things from objects, and meshworks from networks (section 6.1.2).

6.1.1 Habitual experiences enacted and constituted by matter

Given the dependence of our cognitive evolution on behaviourally important and socially embedded experiences, the first issue that needs to be addressed is how experiences are conceptualised. According to recent philosophical work, concepts are not innate – they are instead formed empirically through perception (Bueno 2013). In turn, empirically emergent concepts structure subsequent experience, including that involved in the formation of further concepts (Parthemore and Morse 2010). In order to explicate this process from a pragmatic point view, we must turn to the notion of *habit*, which has been fruitfully employed by semiotic archaeology (section 2.2.2.1).

According to Peirce (CP 5.480), *habits* are motivated dispositions to act in a certain way under certain circumstances, and are to be considered as *beliefs* when they are deliberate or self-controlled.²³ Consider for instance the following characteristic example:

...the primitive man must have been sometimes asked by his son whether the sun that rose in the morning was the same as the one that set the previous evening; and he may have replied, “I do not know, my boy; but I think that if I could put my brand on the evening sun, I should be able to see it on the morning sun again; and I once knew an old man who could look at the sun though he could hardly see anything else; and he told me that he had once seen a peculiarly shaped spot on the sun; and that it was to be recognized quite unmistakably for several days.” (ibid.)

As this passage tells us, rules and laws such as the fact that it is the same sun that shines every day, are established as habits. In fact, they become meaningful ‘by virtue of imparting a quality to reactions in the future’ (CP 1.343), as in the belief that the same sun will be shining tomorrow. While this idea may seem highly unlikely to change any time soon, not all semiotic habits are permanent – far from it, actually.

Unlike behavioural habits, semiotic habits are constantly changing. As Peirce (CP 1.324) put it: ‘We are continually bumping up against hard fact. We expected one thing, or passively took it for granted, and had the image of it in our minds, but experience forces that idea into the background, and compels us to think quite differently.’ Indeed, our daily encounters with people and things require that we are open to habit-change. Peirce (CP 5.476) described this as ‘a modification of a person’s tendencies toward action, resulting from previous experiences or from previous exertions of his will or acts, or from a complexus of both kinds of cause.’ In a world comprised of continuously changing relations, we are forced to constantly habitualise physical facts and thus change our thinking in the process. In order to understanding this metamorphosis of mind from

²³ Unlike Bourdieu’s *habitus*, which associates meaning with “practical sense” acquired through the unconscious embodiment of unreflexive practices, Peirce’s *habit* conceives meaning as beliefs acquired through the process of sign interpretation (Vladiv-Glover and Frederic 2004).

the perspective of archaeology, we must thus attend to the active role of the material world.

This brings us to the second issue outlined earlier: appreciating the way in which human experiences are mediated and constituted by the use of material objects and artefacts. To this end, we must turn to the *Blind Man's Stick (BMS) hypothesis* – a theoretical exercise that will help us re-evaluate the borders commonly drawn between brains, bodies, and things (Malafouris 2008b). In the words of Gregory Bateson (1973, p.318): ‘Consider a blind man with a stick. Where does the blind man’s self begin? At the tip of the stick? At the handle of the stick? Or at some point halfway up the stick?’ In addressing this classical phenomenological example, Malafouris (2008b, pp.404–405) suggested that we focus on two major questions: i) ‘What does the stick do for the blind?’; and ii) ‘Does the biological boundary of the skin apply in the case of the blind?’ In response to the first question, he argued that the stick enables the blind to see by effecting a cognitive reorganisation of the cortex in which cortical areas normally associated with vision are repurposed to accommodate tactile processing. As for the second question, it appears that a skin-delineated boundary is unproductive, as the stick is incorporated through practice by the blind to such a degree that it becomes transparent. Given that tactile sensation is somehow projected at the point of contact between the tip of the stick and the outside world, it would seem reasonable to accept that the stick is as important for the blind’s perceptual system as its neural components. After all, the removal of the stick would deprive the visual cortex from stimulation, and the blind from an enhanced sensory experience. Seemingly then, the stick does more than enacting visual experiences – it also plays a constitutive role in perception. To this extent, the theory of material-engagement seeks to take material culture seriously by ‘being systematically concerned with figuring out the causal efficacy of things in the *enactment*

and *constitution* of human cognition’ (Malafouris 2013, p.8, emphases in original). In order to study the evolution of the human mind, it thus draws upon an enactive sensorimotor contingency theory (O’Regan and Noë 2001) which according to Malafouris (2007a, p.295; 2013, p.203) has two main implications:

For one, it allows us to treat perception as a form of “skillful interactive engagement” – that is, as a form of action rather than a form of “internal” representation. The outside world does not have to be re-presented inside the brain, because it functions as its own “external” representation. Human perception therefore depends on mastering different ways to probe the environment, as in the case of using a stick for visual purposes. This essentially entails amassing practical knowledge about the sensory consequences of different behaviours. While it has not been long since this notion has been supported by empirical evidence (O’Regan and Noë 2001), it is certainly not a new idea. Peirce (CP 8.144) had proposed long ago that ‘the starting point of all our reasoning is not in...sense-impressions, but in our percepts.’ In line with the enactive sensorimotor account, he did not consider these perceptual judgments to be brainbound, but ‘out in the open’, for ‘[i]t is the external world that we directly observe’ (ibid.). As the philosopher Ciano Aydin (2015, p.85) pointed out, Peirce believed that the cognitive process is incited by what is traditionally called the “object”, rather than by the “subject”. From a semiotic point of view, it is the actual relevance or ground between the Sign and its Object that incites the formation of meaningful Interpretants. As we have seen, Peirce’s pragmatic maxim is based on the idea that conceptions (Thirds) are induced by establishing order and regularity in the practical effects of actual things or events (Seconds). It follows from this that perception is generated by bringing oneself in relation to an actuality (which is itself a relation and a property). In other words, cognition is generated by engaging with the physical world. To this extent, Peirce maintained that ‘thought is an *action*, and that

it consists in a *relation*' (CP 5.399, emphases in original) – a view that is clearly reflected in the MET, as Malafouris (2013, p.77) maintains that the mind is brought forth through our relational engagement with the material world.

This brings us to the second implication of adopting an enactive sensorimotor account: if perception is a mode of probing (rather than representing) the outside world, then we can conceptualise artefacts as continuous prosthetic parts of this probing mechanism, and therefore as cultural extensions of the human brain (Malafouris 2007a, p.295; 2013, p.203). The transparency with which external tools can be integrated in the human cognitive system has led the philosophers Andy Clark and David Chalmers (1998) to the formulation of the “parity principle”. As they have famously proposed: ‘If, as we confront some task, a part of the world functions as a process which, *were it to go on in the head*, we would have no hesitation in recognizing as part of the cognitive process, then that part of the world *is* (so we claim) part of the cognitive process’ (ibid., p.8, emphases in original). Again though, this idea is not new since Peirce (CP 4.551) had insightfully proposed that ‘[t]hought is not necessarily connected with a brain.’ In an attempt to illustrate how thinking is actively shaped by the physical characteristics of exosomatic entities, he advanced the following telling example:

A psychologist cuts out a lobe of my brain (*nihil animale me alienum puto*)²⁴ and then, when I find I cannot express myself, he says, “You see your faculty of language was localized in that lobe.” No doubt it was; and so, if he had filched my inkstand, I should not have been able to continue my discussion until I had got another. Yea, the very thoughts would not come to me. So my faculty of discussion is equally localized in my inkstand. (CP 7.366)

Even though Peirce would have retained his reasoning faculties without his inkstand, some kinds of thought can only be induced through pen and paper, as many writers would attest to. Clearly then, thinking involves the participation of more than cortical areas.

²⁴ A play on the saying *nihil humani a me alienum puto*, which translates to ‘nothing human is alien to me.’

Unfortunately though, the idea that material culture is constitutive to previously unavailable forms of cognition never became widely accepted – which is why, more than a century later, Malafouris (2013, p.229, emphasis in original) calls attention to the fact that *'[t]he mind is more than a brain.'*

According to both scholars, cognition escapes the confines of the skull and inundates the outside world because mind and matter are not disconnected entities. As had been seminally proposed by Peirce (CP 6.277), 'we ought to suppose a continuity between the characters of mind and matter'. So what exactly does this mean? That thinking can be constituted in part by material objects, such as the blind man's stick or Peirce's inkstand, is an understandable position – even if somewhat radical for most scholars. The idea however that matter has some kind of mind is a harder pill to swallow, especially outside the context of modern day quantum mechanics. Granted though that meaning is produced through habits, it would not be unreasonable to see matter as 'nothing but mind that had such indurated habits as to cause it to act with a peculiarly high degree of mechanical regularity, or routine' (ibid.). A parity principle would thus follow in that 'the reaction between mind and matter would be of no essentially different kind from the action between parts of mind that are in continuous union, and would thus come directly under the great law of mental association' (ibid.).²⁵ Having dismissed the ontological demarcation between mind and matter, Peirce (CP 7.565, emphasis in original) 'proposed to make *synechism* mean the tendency to regard everything as continuous.' The ontological position that 'all is fluid and every point directly partakes

²⁵ In order to protect his metaphysical perspective from misinterpretation, Peirce (CP 6.277) stated the following: 'This hypothesis might be called materialistic, since it attributes to mind one of the recognized properties of matter, extension, and attributes to all matter a certain excessively low degree of feeling, together with a certain power of taking habits. But it differs essentially from materialism, in that, instead of supposing mind to be governed by blind mechanical law, it supposes the one original law to be the recognized law of mind, the law of association, of which the laws of matter are regarded as mere special results.'

the being of every other' (CP 5.258n2) is clearly reverberated in the Blind Man's Stick hypothesis, for according to Malafouris (2013, p.244), 'the ontological unity of the blind man and the stick offers a powerful metaphor that enables us to conceptualize minds and things as *synechēs* (continuous).' In replacing the common misconception that cognition is brainbound with the notion that it is the emergent product of dynamic bio-cultural coalitions, Peirce and Malafouris effectively converged on the idea that the mind has no physical location (Aydin 2015; Malafouris 2013, p.85). According to this locationally-neutral account of cognition, 'we ought to say that we are in thought, and not that thoughts are in us' (CP 5.289, note 1), for 'the mind does not inhabit the body, it is rather the body that inhabits the mind' (Malafouris 2008d, p.115).

6.1.2 Material ontologies and topologies

Given the active role of the material world in the enactment and constitution of mind, I now shift my attention to some concepts that can help account for the ontological and topological status of the materials involved in the evolution of material signification. In considering the characteristics of things, as well as their relations with humans through webs of connection, I intend to further elucidate in this section the fundamental role of the material world in bringing forth human social life – or what Chris Gosden (2008, p.2003) has termed *social ontology*.

To this end, I start by considering the important phenomenological distinction between two material ontologies that are often used interchangeably in archaeology: *things* and *objects*. According to Gosden (2004b, p.39), things are embedded in relations, they form assemblages, their value cannot be conceptually classified, and they are inalienable, whereas objects are disembedded from social relations, they are individualized, their value can be conceptually classified, and they are alienable. Yet despite their differences, these two forms of material being can inhabit the same element,

for they are actually perception-dependent aspects (Knappett 2010b). Thingness stems from experiencing seamless integration into an embodied process, as in the case of the blind man's stick, whose 'primary function was that of a *pathway* instead of a *boundary*, or else a *thing* instead of an *object*' (Malafouris 2013, p.244, emphasis in original). Objecthood, on the other hand, is achieved by way of explicit conceptualisation. As Sander van der Leeuw (2008, p.223, emphasis in original) put it: '*things in the material world are carriers of potential information and it is their link with concepts in the world of ideas (knowledge) that transforms them into objects that do carry significant information.*' Once the concept of an object has been formed, transitioning between objecthood and thingness becomes feasible, because these two states of being are inherently connected to one another. Consider experiencing the opposing factors of acceleration and deceleration – the former transforming objecthood into thingness, while the latter having the opposite effect. A decrease in speed gives us time for explicit conceptualisation, thus transforming thingness into objecthood. In fact, according to Knappett (2010b), things can be objectified in at least three ways:

The first means of objectification is "*naming*". Using language for the purposes of naming commonly perceived things distances them from their own being, effectively turning them in the objects of a subject (Schwenger 2001). As the literary scholar Peter Schwenger (2001, p.102) pointed out: 'Conventional language and habits of perception proceed in parallel toward a facile familiarity that contributes to the death of the thing.' Yet things can also be objectified by being named in script, even when it entails an imagistic aspect, for according to Knappett (2008), things had been turned into objects by way of pictography and text during the Aegean Bronze Age. Some examples of image-induced transformations include the use of Linear A pictographic representation of pottery shapes, while instances of text-induced transformations include the use of Cretan

Hieroglyphic on the sealings of the Chamaizi vases, and direct inscriptions or incisions of Linear A on pithoi.

The second means of objectification is by making an *image* of the thing (Knappett 2010b). Singling out an object from the flow of life and presenting it in order to emphasise some of its relationships can be achieved by way of display – as is the case in museum and gallery exhibits (Gosden 2004). Display is also particularly pertinent when engaging in prehistoric matters, because early traces from the British Neolithic, Bronze and Iron Ages suggest that human remains were displayed within the landscape, stones were displayed in circles and henges, hillfort ramparts were made, and ornaments were worn (ibid.). Another form of imaging entails changing the scale of artefacts, as in the case of the Cretan Bronze Age miniature versions of pithoi (Knappett 2012); while objectification can also take place through the production of skeuomorphic artefacts, such as the Cretan Bronze Age skeuomorphs made in the image of metal and basket prototypes (Knappett 2002).

Finally, the third means of objectification is by *fragmentation* (Knappett 2010b). Fracturing a thing turns it into an object because it brings to the forefront of perception the qualities that had originally made it useable, but which had not been explicitly cognised by their user. It thus follows that these qualities could have been harnessed by way of deliberate breakage. According to John Chapman (2000), still functioning artefacts appear to have been, in fact purposefully fragmented, dispersed across the landscape, and deposited rather than discarded, in order to socially enchain people. Along these lines, Knappett (2010b) speculates that Cretan Bronze Age rhyta may have been deliberately fragmented for the purpose of being distributed, thus establishing social relations between individuals. In order to understand the distribution of things and objects

across past landscapes, we must now consider two kinds of pertinent material topologies which have been brought together by Knappett (2010a; b; 2011a; b).

From a definitional point of view, *meshworks* are fields comprised of entangled lines of bodily movement and material flow, whereas *networks* are topological structures composed by a series of identifiable nodes with connections between them (Ingold 2007; 2008; 2012; Knappett 2005; 2008; 2010a; b; 2011a; b; 2012; 2013). On this account, the two topologies exhibit some important differences. For one, the lines of meshworks are actually trails along which perception, action, and ultimately life takes place, whereas the lines of networks are essentially connectors that link pre-existing entities, such as humans and artefacts. A second interrelated difference consists of the fact that, in the context of the former topologies, action is the outcome of the agentive entwinement of bodily movement and perception along the lines of meshwork milieux, whereas in the context of the latter topologies, action is the product of agency that is distributed across networks' interconnected elements. Despite their differences though, these two kinds of material topology can be taken to complement one another by addressing different spatial scales. Much in line with synechism, Knappett (2010b; 2011a; b) recommends we use their tension productively, rather than polarize on either approach; only then can we appreciate how things occupying the meshworks inhabited by humans end up as objects distributed across far-reaching networks. To this end, the strength and weaknesses of these material topologies are evaluated in what remains of this section, in order to better illuminate their applicability to archaeological issues.

Starting at the smallest scale, meshworks provide us with a useful ecological context upon which the process of material engagement can be taken to unfold, because of their emphasis 'on the co-responsive movement of occurrent things along their manifold lines of becoming' (Ingold 2012, p.437). As is explicitly revealed in its

periphrastic title, Ingold's (2008; 2012) topological concept is based on the idea that *Skilled Practice Involves Developmentally Embodied Responsiveness (SPIDER)*.

Although Ingold might not be very fond of “cognition” as a notion,²⁶ the ecological scope of his topology is much in line with the situated emergence of the human mind that is maintained by the MET. Moreover, the elemental continuity underpinning the lines of the meshworks seems reminiscent of the continuity described by Peirce, for according to his discourse on infinitesimals, ‘the fact that there is room for any multitude [of points] at every part of the line, makes it *continuous*’ (CP 3.568, emphasis in original). In this regard, the metaphysical dictates behind the meshwork appear to be compatible with the synechistic underpinnings of the cognitive semiotic framework at hand.

However, this is not exactly the case, because the conceptualisation of agency in the context of meshworks is incompatible with the MET's hypothesis of material agency. From the perspective of the SPIDER, a physical movement is coupled with a movement in attention, which in turn constitutes the movement an action, and the actor an agent. In this regard, agency is treated as an exclusively organismal property, requiring material culture as a condition for the expression of skilled action. To use Ingold's (2008, p.213) own example: a spider weaves a web and exploits its properties of stickiness and tensile strength in order to catch flies. Therefore, the web, while not an agent in itself, allows the agentive spider to skillfully exert its agency. In Gell's (1998) terms, the spider is a “primary” agent because it is an intentional being that is capable of initiating actions, whereas the web is a “secondary” agent because, despite playing an integral role in the formation, mediation, and the exertion of agency, it is essentially an intentionless artefact. As we have already seen though (section 5.2.4), the theory of material-engagement does

²⁶ Tim Ingold was invited to be the discussant at the TAG 2013 session, entitled *The Material Dimensions of Cognition*, which was organized by Duilio Garofoli and myself. During a debate with Colin Renfrew, he opted for the notion of “kinaesthesia” rather than “cognition”, on the basis that experience is the product of movement. In this sense, he remarked that the study of cognition could be seen as a branch of geology.

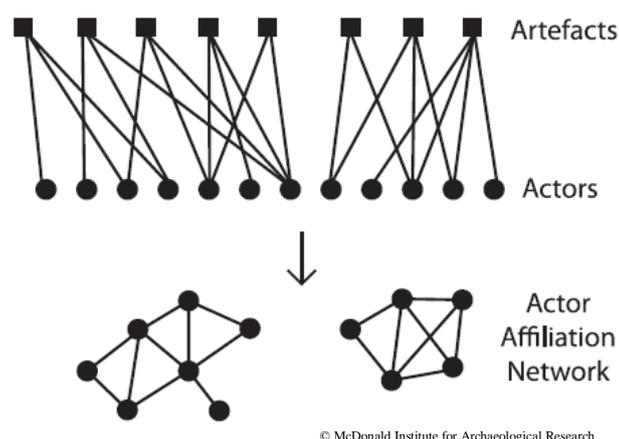
not consider intentionality an organismal property. For the MET, intentions are the emergent products of real-world engagement in which they meet relevant criteria of satisfaction by being coupled with pertinent affordances. What remains exclusive to the organism is simply the experience, or better yet, the awareness of agency. Adhering to this logic, meshworks are best associated with a MET-inspired notion of agency in the context of the current cognitive semiotic theory. While this epistemic tweaking may have sufficiently addressed the issue of agency in meshworks, the SPIDER remains insufficient in another respect: its micro-scale focus renders it unsuitable for tracing the spatiotemporal extension of social relations, notably referred to by Gamble (1998) as the ‘release from proximity’.

For a topological approach that can examine the relations between elements distributed across a larger-scale field, we must turn to a socio-technical paradigm known as the *Actor-Network-Theory (ANT)* (Knappett 2008; 2010b; 2011a; Latour 2005). According to one of its leading proponents, John Law (2009, p.146), the ANT has been founded on the following theoretical assumptions about the nature of networks: i) their elements define and shape one another; ii) they involve both human and non-human actors; iii) their materiality is as important as their sociality; iv) their success depends on all elements fulfilling their role; v) their power is a function of network configuration and in particular the creation of “immutable mobiles” (i.e., objects circulating in space whilst keeping their form and shape fixed); and vi) they extend themselves and translate distant actors into the same web. Based on these premises, it would appear that the ANT can provide our evolutionary epistemology with a heuristic device that is geared towards tracing networks of material engagement across the prehistoric landscape.

Yet a theoretical drawback still remains. While the ANT’s notion of distributed agency may be closer to the MET than the SPIDER’s organismal take on agency, it is not

entirely compatible with the theory of material-engagement. According to Malafouris (2013, p.128), the actor-network approach succumbs to ‘the problem of the prime mover’ – that is, it traces the starting point of all networks to the intentionality of a human agent or institution. As we have already seen though, the MET sees intentionality as the emergent product of material engagement. To this extent, the use of networks in the context of the cognitive semiotic framework at hand should be associated with MET’s non-anthropocentric take on material agency. While this epistemic recalibration may help address an important theoretical incompatibility, the ANT also falls short in a methodological way – which is why Knappett (2008, p.143) suggested that it should be integrated with a “network” perspective ‘that can tackle structure and topology more systematically.’

To this end, he drew upon the heuristics of Social Network Analysis (SNA), which allow us to visualise the connections of a person with other people by way of sociograms (Knappett 2010a; 2011a; 2012). As can be seen in figure 6.1, these graphic representations can be used to illustrate two-mode networks (i.e., networks where there are two kinds of nodes that connect with nodes of the same kind by way of the other kind), which can in turn be projected into one-mode networks (i.e., networks where all the nodes are of the same kind, while their links are all of another kind). Unfortunately though, not only does this approach prioritize networks’ relationality on the expense of their spatiality, it also fails to recognise the pivotal role of materiality (Knappett 2013).



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Figure 6.1 A two-mode affiliation network of artefacts and actors, projected to a one-mode network of actors (after Knappett 2010a, p.85, Fig.8.3).

In this light, it appears that the network approaches considered above should be integrated in order to address each other's weaknesses. As Knappett (2011a, p.8) suggested: 'By combining SNA with ANT we can bring together people and things both methodologically and theoretically.' The socio-material network approach yielded from this synergism is indubitably more spherical than either of the two network theories alone, for it manages to abridge material interactionism (i.e., human-object interactions) with sociality (i.e., face-to-face social interactions). While the ANT confers us with some invaluable theoretical underpinnings (i.e., materiality and enactment), the SNA can contribute its structural methodological tools (i.e., sociograms). The yielded amalgamation can be effectively used to trace past engagements across a range of scales: i) the micro-scale, which pertains to the proximate interactions unfolding within a household, ii) the meso-scale, which concerns the interactions between households in a community and between communities in a region, and iii) the macro-scale, which relates to regional interactions. It should be noted here that, due to its proximal range, the former scale is inherently associated with meshworks. Knappett (2011a, p.69) suggested however that networks can also be employed for the purpose of examining the micro-scale, as they provide us with a deliberate methodological strategy that can capture the chaotic essence

of proximate interactions. In what follows, micro-scale networks shall thus be utilised for the purpose of tracing the emergence of material signification; while meso- and macro-scale networks will be used to contextualise the subsequent lives of material signs.

6.2 Pragmatic and enactive signification

Having set the required phenomenological foundations, I now bring together Peirce's pragmatic and Malafouris' enactive theory on signification. By doing so, I aim to outline a cognitive semiotic framework that is suitable for studying the evolution of past material signs. To this end, I start by explaining why Peirce's pragmatic semiotic theory is suitable for describing the nature of material signification (section 6.2.1), before examining how Malafouris' hypothesis of enactive signification can be employed in tracing its emergence (section 6.2.2). After accounting for the nature and emergence of material signs, I continue tracking their lives across people and spacetime. Specifically, I consider Barrett's account of how significant artefacts would have been communally assimilated (section 6.2.3), before finally drawing upon Knappett's work in order to explore how they would have been spatiotemporally distributed (section 6.2.4).

6.2.1 The pragmatic nature of the material signs

As has been extensively demonstrated in the first part of this dissertation, Peirce's semiotic theory is especially useful for describing the nature of material signs. To this extent, I proposed that it should be used in lieu of the linguistic idiom often adopted by archaeologists. In this section, I argue that this semiotic framework is also more adept at accounting for the nature of material signification than the theory of material-engagement. Before doing so though, let us first examine the notion of the material sign as it is found in the context of the MET.

In his semiotic exploration of the Upper Palaeolithic cave paintings, Malafouris (2007a; 2013) suggested that such material signs brought forth the capacity for “external” representation, which is generally associated with symbolism. For most archaeologists, Upper Palaeolithic cave paintings are uncontested evidence of a representational ability and, by extension, a symbolic capacity. However, according to Malafouris (2007a; 2013), to maintain that Upper Palaeolithic humans would have understood cave paintings in the same way we would, should not be taken for granted because they would have been uninitiated to the function of representational media. He argued that ‘it is one thing to say that the people of the Upper Palaeolithic were creating representations – they certainly appear as representations to the modern observer – it is another to say that the Palaeolithic people were aware or knew they were making representations in some arbitrary symbolic sense’ (Malafouris 2007a, p.292). According to the MET, it was only after engaging with these material signs that Palaeolithic humans were eventually able to grasp their representational and symbolic relation to what they depict. Based on this enactive logic, the rhinos painted on the walls of Chauvet Cave qualified as “external” representations only once they had been conceived to stand for actual rhinos.

While I unequivocally accept the idea that the earliest depictions were not the product of preconceived “internal” symbolic representations, I disagree with the notion that all kinds of “external” representations are inherently symbolic. In the context of the MET, icons and indices are “motivated” (Malafouris 2007a, p.293; 2013, p.96) in that they bring forth an arbitrary signifier that functions by way on convention. As Malafouris (2007a, p. 293) pointed out, the symbolic artefact ‘is taken to embody a sort of visual code or language and thus invites reading.’ Yet as we have already seen in the past few chapters (sections 4.1.2 and 5.1.2), to deprive icons and indices from representation and conventionalisation is problematic, because it entails reducing icons and indices to their

underlying grounds, thus reserving sign function proper for symbols alone. From a semiotic point of view, material signs are a combination of iconic/indexical grounds and sign function. It hence follows that both icons and indices can “represent” by standing for something else in some respect or capacity (i.e., similarity, contiguity/factorality). In fact, some secondary icons and abductive indices require a considerable degree of conventional knowledge in order to be properly understood. Of course, primary icons such as the cave paintings at Chauvet, would not have depended on much conventional knowledge in order to be properly understood as signs, because the similarity between the painted and the actual rhinos is greater than their difference.²⁷ Nevertheless, as iconic *signs* they would have still “represented” animals in a concept-mediated referential manner. To this extent, it becomes clear that “representation” can characterise non-symbolic material signs as well.

Besides informing us on this important fact, a detailed version of Peirce’s semiotic theory also allows us to make useful distinctions within the iconic, indexical, and symbolic levels. In his paper focusing on the pre-symbolic era of Palaeolithic images, what Malafouris (2007a) treated as symbolic throughout his discourse can be seen taking three distinct forms: concept (represented by a Palaeolithic image once this state is eventually reached), proposition (stemming from the reading of some elaborate cultural message), and symbolic system (pertaining to the formal, spatial, or thematic relationships between the Palaeolithic images). Seen through the scope of Peirce’s tenfold typology, a symbolic concept is a denotative symbolic rule (a Rhematic Symbolic Legisign), a proposition is an informative symbolic rule (a Dicentic Symbolic Legisign), and a symbolic system is essentially a symbolic syllogism (an Argumentative Symbolic

²⁷ It should be noted here that I am not claiming that humans would have been *a priori* familiar with the representational function of cave paintings. I am merely positing that the direct perception of the underlying iconic ground between the painted and the actual rhinos would have enabled humans to grasp the sign function of this primary icon through a relatively straightforward manner.

Legisign). Yet the usefulness of Peirce's framework is not just its terminological clarity. Its usefulness rests on allowing us to account for the interplay between these distinct levels. As we have already seen (Figure 3.3), a denotative symbolic rule (a Rhematic Symbolic Legisign) can be associated with a denotative indexical rule (a Rhematic Indexical Legisign) in creating an informative symbolic rule (a Dicentic Symbolic Legisign). Symbolic propositions can in turn be combined in yielding a symbolic syllogism (an Argumentative Symbolic Legisign). To illustrate these relations of semiotic embodiment by way of an archaeological example, I return to the case of the depicted rhinos. Let us suppose that the rhino drawings had been symbolic due to an arbitrary association between the rhinos and some kind of divine power. Divine power is an arbitrary concept that is neither true nor false, and is as such dictated by a denotative symbolic rule (a Rhematic Symbolic Legisign). This rule about divinity can be associated with the rhino through a denotative indexical rule (a Rhematic Indexical Legisign) in yielding an informative symbolic rule (a Dicentic Symbolic Legisign). In turn, the symbolic proposition that the rhinos possess divine power, can be embodied by a symbolic syllogism (an Argumentative Symbolic Legisign), such as a rhino-centred ritual. What these relations of semiotic embodiment reveal is that we need a framework sensitive to important distinctions that cannot be registered by the popular icon-index-symbol triad. I thus posit that the increased analytical precision of Peirce's tenfold typology can help us properly appreciate the emergence of material signification.

6.2.2 The enactive emergence of material signs

While Peirce's framework is invaluable in describing the nature of the material sign, Malafouris (2013, p.96) pointed out that it cannot explain how a substantive entity becomes a material sign, and a symbolic one at that. Addressing the becoming of the material sign is an issue of primary importance to archaeologists. Yet as we saw in the

previous chapter, the linguistic and representational approach adopted by most scholars fails to account for the origins of material signification. In view of this lacuna, Malafouris (2013, p.51) advanced the *hypothesis of enactive signification*, which as we have already seen (section 5.2.3), treats the material sign as a semiotic conflation and co-habitation through matter that enacts and brings forth the world. Within the context of the MET, this working hypothesis is at ‘the crux of material semiosis and thus of the meaningful engagement of cognition with matter’ (ibid., p.99). Unfolding at the brain–artefact interface (Malafouris 2010a), this cognitive and semiotic process is best conceived taking place within a meshwork. Given however that the processes unfolding in the meshwork are especially difficult to depict due to its inherently entangled nature, diagrams that resemble micro-scale networks with mental and material nodes shall be utilised in this section in order to envisage the act of *semiogenesis*.

To understand the cognitive mechanism that drives this semiotic process, we must turn to cognitive projections. As discussed by Malafouris (2013, chapter 5), cognitive projections, otherwise seen as conceptual mappings, are direct implicit ontological correspondences between experiential domains. There are two kinds of such conceptual mappings: metaphorical projections and integrative projections. While the former are projected by a familiar to an unfamiliar phenomenal domain for the purpose of explication, as in the case of image schemata (e.g., container schema), the latter are projected partial structures by two pre-existing phenomenal domains with ontological correspondences into a novel third space. In his cognitive theory of conceptual blending, linguist and cognitive scientist Gilles Fauconnier (1997; Fauconnier and Turner 2002) has referred to this last space as the *blend*. While generally considered to be an internal phenomenon, the external world is indeed incorporable into such cognitive processes; for as has been demonstrated by the cognitive scientist Edwin Hutchins (2005), material

material anchor.’ Think of the previously used example of the word “camel” where the manifestation of the word acts as a cue for the conceptualisation of the animal, but does not lend any of its material qualities to the concept. Contrastingly, the non-discursive properties of material signs confer the stability and durability required for bringing forth the possibility for meaningful engagement. To this extent, Malafouris (2013) posits that material anchoring affords the perceptual understanding of otherwise elusive concepts though their direct spatiotemporal manipulation. From a semiotic point of view, humans would have been able to form significative concepts by perceiving the iconic and/or indexical ground (i.e., relevance) established between things, for it has been noted by Sonesson (2006) that the sign is based on a mapping between different spaces (Figure 6.3). In other words, humans would have been able to conceive objects as “external” representations of concepts after attending to the similarity, contiguity, and/or factorality that connect a material and a mental space. These material signs would have been truly significative because the material Expression and the conceptual Content were doubly differentiated, in that the material object and the concept did not overlap onto each other, and were of different nature. They would have also been in a doubly asymmetrical relation, given that the material object is directly given and non-thematic, whereas the concept is only indirectly present and thematic. This means that, while the material object may have been directly available for engagement, the concept would have been more in focus. By habitually taking a material object (i.e., the Expression) to stand for something else in some way (i.e., Content), early humans would have thus essentially formed their first significative beliefs.

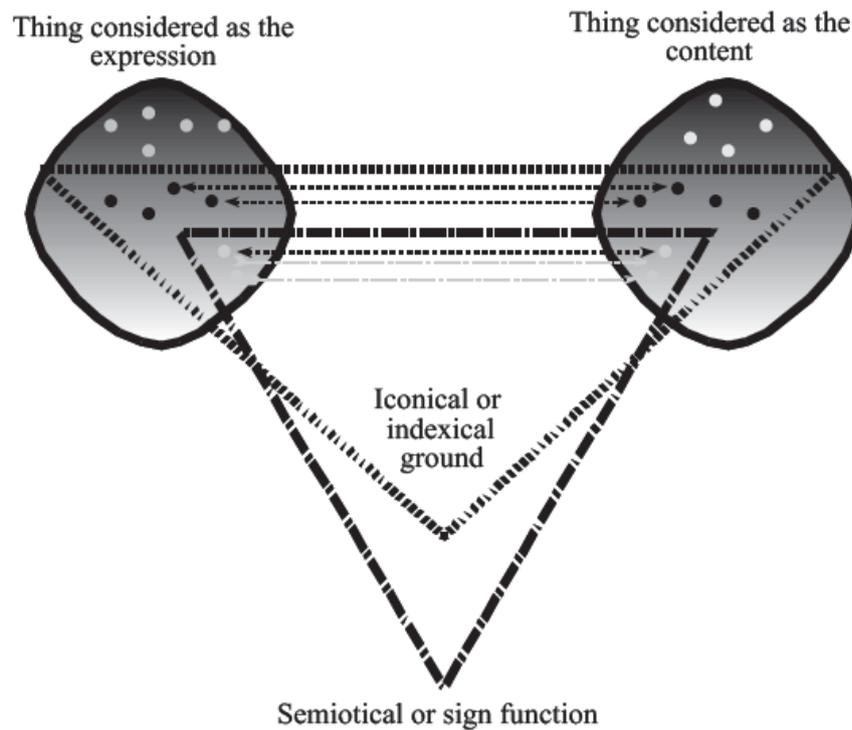


Figure 6.3 The sign as a mapping between different spaces, based on different principles of relevance, iconic and/or indexical ground and the sign function. The points are properties of the two things thus put into relation. The arrows are mappings between such properties (after Sonesson 2006, p.170, Fig.1).

In order to illustrate the cognitive semiotic process that brings forth material signs by way of an archaeological example, let us reconsider in more detail the evolution of the Near Eastern accounting system during the Neolithic (Malafouris 2013, pp.111–116). The earliest numerical devices consisted of clay tokens that assumed a variety of shapes (the cone and sphere signified a small and large basket of grain respectively, the ovoid indicated a jar of oil, and the tetrahedron denoted a unit of labour). These kinds of tokens would have functioned as the material anchors for two kinds of metaphorical projection: for one, basic numerosity would have been objectified through their one-to-one correspondence with units of goods; and secondly, an approximate quantity of a good would have been associated with their shape, as in the case of the tetrahedron which signified a unit of labour. These cognitive and semiotic properties would have played a pivotal role in the emergence of the later-appearing envelopes, which are hollow clay

balls containing tokens, the number and type of which is visible on their surface through the imprints made on the wet clay. As such, envelopes would have been characterised by the activation of two semiotic properties: indexicality, because the imprints of the tokens were physically associated with the enclosed tokens, and the iconic ground, for the imprints resembled the tokens. These semiotic grounds would have been open to perception, and would have therefore provided the foundations for abductive thinking. Such an abduction is evident in the pictographic tablets that succeeded the envelopes, as these clay tablets exhibit numerals next to the inscriptions (rather than impressions) of the tokens. Clearly then, the Near Eastern numerical devices had driven the transition from numerical approximation to representational numbers. From the vantage point of the MET, they had functioned as tangible material anchors upon which the conceptual problem of counting was integrated via projection, thus allowing its direct manipulation and manual resolution in real time and space.

The corollary of such an enactive evolution of signification is that meaningful concepts and their material manifestations co-emerge through increasingly elaborate semiotic forms. This *semiotic emergence* is primarily underpinned by a biosemiotic mechanism that Hoffmeyer (2007; 2014a; b) has referred to as *semiotic scaffolding*. As he defined it, this semiogenic mechanism focuses the energy flow or behaviour of a system to a rigidly limited repertoire of semiotic possibilities, or guides the system's behaviour in realising a definite semiotic sequence of events (Hoffmeyer 2007, p.156). For instance, the aforementioned numerical devices can be considered semiotic scaffolding tools in that they afforded particular kinds of meaningful engagement, which guided the numerical system from the lower-order capacity of approximation to the higher-order ability of representation. According to Hoffmeyer (2014b, p.108), higher-level semiotic structures confer their users with increased productivity, spatial and temporal range, efficiency, and

precision. This seems to have been indeed the case in the Near East during the Neolithic, given that pictographic tablets were clearly more productive, efficient, and precise than tokens. The more intricate forms of meaning associated with the tablets had actually been scaffolded upon the vaguer meanings associated with tokens – which attests to the fact that semiotic systems provide subsequent generations with the ability to develop stronger semiotic mechanisms. As recognised by Hoffmeyer: ‘Each new jump to higher level semiotic scaffolding tends to homogenize cultural performances at the lower level while opening up for new complexity and expressivity at the higher level’ (ibid.). Indeed, the transition from tokens to envelopes would have homogenized the use of tokens (which were now contained in and imprinted on the hollow clay balls), while paving the way for the numerical inscriptions found on the pictographic tablets. It is important to clarify here that the scaffolding through these levels would not have been deterministic in any way, for cultural systems may unfold along a variety of possible pathways. To this extent, Hoffmeyer (ibid.) recommends treating semiotic scaffolding in catalytic terms. From this point of view, it would thus be safe to conclude that the Near Eastern numerical devices created during the Neolithic catalysed the emergence of numerosity.

6.2.3 The communal assimilation of material signs

In order to establish how early material signs had been assimilated by groups of people, we must shift our focus to meso-scale networks. As we have already seen, besides the prevalent notion that wants significative messages to have been linguistically shared, the idea that significative meanings were communally established by way of social perception has also been put forth. For instance, Noble and Davidson (1996) proposed that the earliest material signs would have been the products of associative learning (section 5.1.2.1). Yet despite introducing social perception in the debate on modern human origins, they maintained that language would have still been necessary for sharing

the symbolic meanings of material signs. Garofoli (2015) on the other hand, advanced a more radical account that is mainly founded on situated cognition and long-term material engagement (section 1.4.3). While Garofoli's theoretical approach focused only on ornamental signs, John Barrett (2013) advanced a more general account on the communal assimilation of material signs. Specifically, he sought to explain how the meanings of past material signs became established by evoking the capacity for joint attention.

According to Barrett (2013, p.11), an awareness of joint attention would have been developed through face-to-face encounters with some degree of eye contact. In his view, these social interactions had been made possible due to anatomical developments such as full bipedalism, opposable thumbs and pointing fingers, complex facial musculature, and eye colouration: the grip and dexterity of the hand would have enabled the complex exploration of materials and bodies, while gaze direction and pointing would have helped share the emergent insights. As Barrett sees it, joint attention would have enabled copying and teaching, thus maintaining a shared embodied empathy between social agents in their practical comprehension of material qualities. It thus becomes clear that the sharing of perspectives would have been imperative in our cognitive becoming, because 'joint attention creates a kind of 'perceptual common ground' in joint action, linking two minds to the same actualities' (Sebanz et al. 2006, p.70).

Granted the importance of joint attention for the emergence of material signs, Barrett implies, but fails to explicitly identify in cognitive terms, another two capacities that would have been involved in the sharing of significative meanings. The first of these cognitive capacities is the ability for action simulation. As the cognitive scientist Natalie Sebanz and her colleagues (2006, p.71) suggested, action observation provides a more direct mechanism for understanding the actions and goals of others than joint attention, since '[a] multitude of studies has shown that during observation of an action, a

corresponding representation in the observer's action system is activated'. The neurophysiological mechanism underlying this action simulation is known as the mirror-neuron system (Rizzolatti and Craighero 2004). The sensorimotor system has actually been explicitly implicated in the embodied formation of abstract concepts (Gallese and Lakoff 2005). This neural exploitation of pre-existing sensorimotor brain mechanisms for novel purposes sheds new light on the embodied emergence of concepts. In fact, these cognitive systems facilitate the understanding of others' actions by enabling not just the simulation of observed actions, but also their mapping on representations of one's own intentions (Blakemore and Decety 2001). This brings us to the capacity of joint intentionality – the second cognitive ability (besides action simulation) that would have complemented joint attention in the assimilation of novel material signs. What Barrett (2013, p.8) refers to as 'commonality of purpose' entails being able to recognise the intentional state of an actor and keeping it separate from one's own state, before relating the intentions in a way that guides joint action (Knoblich and Sebanz 2008, p.2025). Given that both joint attention and action simulation are embedded in this process of joint intentionality, Knoblich and Sebanz (2008) consider it a higher level cognitive capacity that was fundamental for the emergence of human culture.

On this note, let us briefly consider how the evolution of the human mind has been linked to the mirror-neuron system. According to the neuroscientist Michael Arbib (2011), the expansion of a basic mirror-neuron system enabled the complex level of imitation involved in the emergence of pantomime and thence protosign.²⁸ Surprisingly, the fundamental role of mirror-neurons in imitative learning has been generally overlooked by archaeologists, with but a few exceptions of scholars that have focused on

²⁸ Arbib (2011, p.263) defined the protosign as 'a set of conventionalized manual gestures that were both faster to produce and less ambiguous to interpret (e.g., separate distinctive gestures for "bird" and "flying").'

the tool record. For instance, the complexity of the manufacturing techniques used for Acheulian tools, along with paleoneurological evidence on Broca's area, has led Ceri Shipton (2010) to identify a propensity for imitation and shared intentionality from around 2 million years ago onwards. This estimate is in line with Matt Grove and Fiona Coward's (2008, p.396) suggestion that it is with *Homo erectus* that we begin to see physical and social adaptations associated with a distinctly human lifeway.

Based on above, it can thus be suggested that imitative learning, underpinned by the mirror-neuron system and the capacity for shared intentionality, appears to have played an important role in the transmission of human culture. In fact, joint attention, action simulation, and joint intentionality can help account the communal assimilation of meaning without resorting to language, which most prehistorians evoke in order to explain the transmission of "symbolic" meaning. As has been put by Sebanz and her colleagues (2006, p.71): 'Without relying on symbolic communication, individuals could be 'on the same page' action-wise by sharing representations of actions and their underlying goals.' It is also worth recognising, at this point, that mirror-neurons have not only been implicated in the understanding of others' goals and actions, but also in the comprehension of their emotions (Carr et al. 2003; Gallese 2001; Gallese et al. 2007; Leslie et al. 2004; Schulte-Rüther et al. 2007). From a semiotic point view, it would thus be fair to say that the mirror-neuron system must have been implicated in the spread of logical, as well as emotional Interpretants.

6.2.4 The spatiotemporal distribution of material signs

In order to trace the distribution of material signs across space and time, we must finally shift our attention to the macro-scale. As has been recognised by Knappett (2010a, pp.85–86), the spatial characteristics of icons and indices vary widely. While iconic relationships between artefacts can sustain a relational proximity (also thought as a kind

of virtual existence) over long distances, indexical relationships exist primarily in physical space. For example, iconic connections such as those characteristic of stylistic linkages and sympathetic magic are not spatially restricted, whereas indexical connections such as those required for the performance of contagious magic depend on contiguity. Yet besides their spatial differences, icons and indices also exhibit very distinct temporal properties (Knappett 2010a, pp.86–87). Given that the former occupy the relational sphere unhindered by physical restrictions, they are easily imitated and rapidly assimilated, and are prone to rapid cascades. Fads constitute a characteristic example of such horizontal transmission, since they are promptly popularized. Indices on the other hand, which rely on contiguity and require lengthier engagement, are not prone to rapid cascades. Artefacts and practices that involve apprenticeship are demonstrative of such vertical transmission, because learning the required associations is a physically-demanding and time-consuming task. Evidently then, icons and indices are prone to quite distinct spatiotemporal configurations.

Recognising how these semiotic interconnections would have extended beyond regional localities requires studying the distribution of meaning via means of inter-artefactual networks. To this end, Knappett (2012) advanced a methodology that is geared towards describing *semiotic networks*. His ‘situated semiotic’ perspective is founded on an abridgement of James Gibson’s (1979) ecological psychology and Peirce’s semiotic theory: while the former school of thought is suitable for describing the “firsthand” perception of an artefact’s directly present affordances, the latter theoretical framework can account for an artefact’s indirectly present associations through “secondhand” experience. Seen from the perspective of Sonesson’s ecological semiotics, “secondhand” experience is the cultural knowledge often required in order to properly understand the sign function of an artefact. As demonstrated in the first part of the dissertation,

discerning the iconic ground that links an iconic sign with what it stands for can require familiarity with a specific interpretive system, while making sense of an indexical ground linking an indexical sign with something else can also depend on prior cultural knowledge. Given that the physical structure of an object may thus not suffice for the decipherment of its function, resorting to one's experiential knowledge is often necessary. It is thus imperative that we do not neglect the role of humans in the generation of meaning when studying inter-artefactual networks. As Knappett (2012, p.91, emphasis in original) pointed out: 'In inter-artefactual relations, it is crucial to think about the identity of the *links*: this is where to find the 'hidden' humans.'

To this end, he sought to illuminate the semiotic relationships comprising these links by evaluating their degree and quality on the basis of four criteria: *frequency*, *fidelity*, *distance*, and *directionality*. These properties are best exemplified through Knappett's own case study on the miniaturised ceramic vessels from the Aegean Bronze Age (ibid., p.92). Starting with the frequency with which a semiotic relationship occurs, he noted that certain vessels, which are only found in miniature form, are rare, while others are frequently scaled down from their 'canonical' form. The fidelity between the miniaturised and canonical forms may vary, given that some small-scale vessels are only minimally similar to their full-scale equivalents, whereas others retain much of the originals' details. Depending on the degree of similarity they entail, associations can extend over short or long distances. As previously mentioned, links based on similarity tend to transcend their spatial locality, whereas connections based on contiguity are typically restricted to spatial proximity. In order to illustrate this distinction by means of the Cretan ceramic vessels, Knappett noted that while small-scale artefacts from peak sanctuaries duplicate forms usually found in quite distant settlements, miniatures can also be found next to their full-scale counterparts. Finally, it need be recognised that semiotic

relationships can also be characterised by directionality, for while some canonical forms had been scaled down, certain miniatures do not seem to have been reproduced in full scale. On this note, it is safe to conclude that taking into consideration the four properties of the relationships that maintain semiotic networks can help archaeologists trace the distribution of significative meaning across both time and space.

6.3 Summary

This chapter outlined a pragmatic and enactive theory of cognitive semiotics that is suitably geared to trace the nature and emergence of past material signs. But before delving into its semiotic workings, we contextualised this theoretical framework onto an appropriate phenomenological background. Initially, the Peircean notion of habit was put forth in order to explain how the experiences that shape our evolution emerge as meaningful regularities, which guide our expectations about the future. As we saw, these general rules do not remain static, but are subject to continuous change brought upon by new real-world facts. To this extent, the material world plays an integral role in bringing forth evolutionary change. As the BMS hypothesis helped demonstrate, material culture is fundamentally involved in the enactment and constitution of the human mind. In other words, not only does it incite cognition, it actively shapes the kind of thoughts that can be had. Based on this logic, both Peirce and Malafouris reject the idea that thinking takes place inside the confines of the brain, and adopt a locationally-neutral notion of cognition, according to which mind and matter are essentially continuous.

Given the pivotal role of materiality in the emergence of cognition, an important distinction was made between two kinds of material ontologies: things and objects. While the former are seamlessly integrated into embodied processes, the latter are explicitly conceptualised. Since these ontologies are perception-dependent, the same artefact can

appear to occupy both states of material being. In fact, a transformation from thingness to objecthood can transpire in at least three distinct ways: naming, display, and fragmentation. These metamorphoses of things into objects are actually associated with the transition between two kinds of material topologies: meshworks and networks. Simply put, the former are made out of entangled lines of bodily movement and material flow, whereas the latter consist of interconnected human and material elements. As we saw, the ecological aspect of meshworks makes them ideal for situating real-life processes of material engagement. In doing so however, we must replace the organismal notion of agency that Ingold adopts with the MET's non-anthropocentric hypothesis of material agency. Only then can we appreciate the constitutive interactions between humans and things taking place at the micro-scale. In order to illuminate the distribution of these engagements in larger scales, we must adopt a network perceptive that grants materiality with some much deserving merit. In doing so though, we must avoid tracing the beginning of networks to the intentionality of humans, because intentionality and affordance are in fact the emergent products of material engagement. The spatiotemporal situatedness of this process can be properly contextualised by integrating into our network approach a structural methodological tool that allows us to visualise the relations created between humans and objects in micro-, meso-, and macro-scales alike.

Once the required phenomenological foundations had been set, we proceeded to outline a cognitive semiotic framework that is suitably geared to study the evolution of past material signification. It was specifically proposed that the nature of material signs is best described through a pragmatic semiotic theory that not only accounts for the representational nature of icons and indices, but it also endows us with the analytical precision required for tracing the relations between different kinds of meaning. According to the hypothesis of enactive signification, material signs emerge through a process of

embodied conceptual integration that is based on the anchoring of cognitive projections to material culture. From a semiotic perspective, the evolution of material signification is marked by the transition from the perception of relevance to its conception as significative. For instance, a series of Neolithic numerical devices enabled humans to transform the elusive conceptual problem of counting into a directly perceptible and therefore manageable task. In doing so, they essentially functioned as semiotic scaffolds that drove the mind from number sense to concept of number.

Such material signs would have been assimilated by others through joint attention and shared empathy. As we saw though, action simulation and joint intentionality would have also been implicated in the communal understanding of material signification. To this extent, the mirror-neuron system seems to have played an important role in the process of assimilation. It was in fact proposed that the increased ability of humans for social perception may be able to account for the creation of the earliest signs without having to evoke the prior existence of language. Unimpeded by linguistic restrictions, significative relations of various iconic and indexical sorts would have been distributed across space and time. Their proclivity towards a particular trajectory would have largely depended on their nature: iconic relations would have been especially susceptible to horizontal transmission, whereas indexical relations would have tended towards vertical transmission. The distribution of meaning across these spatiotemporal trajectories can actually be described through inter-artefactual semiotic networks, whose semiotic relationships can be evaluated on the basis of their frequency, fidelity, distance, and directionality.

Having ultimately accounted for the evolution of material signs from their creation in meshworks all the way to their distribution across large-scale networks, we

can now apply this cognitive semiotic framework to the case of early body ornamentation.

Chapter 7

Application of a pragmatic and enactive theory of cognitive semiotics

Chapter outline

In the previous chapter, I outlined a pragmatic and enactive theory of cognitive semiotics that is geared towards tracing the evolution of past material signification. In this chapter, I apply it to the case of early body ornamentation in order to illuminate from a developmental point of view the evolution of the significative concepts generally associated with shell beads. To this end, I begin by tracing the practice of body ornamentation from its incidental origins until the discovery of the earliest ornamental signs, and the eventual formation of symbolic rituals (section 7.1). Given the aesthetic dimension of these ornamental practices, I then explore the creation of aesthetic ideals and the role of habitualised feelings in inducing a sense of belongingness that strengthened social cohesion and drove cognitive evolution even further (section 7.2).

7.1 The emergence of ornamental signification and symbolic systems

Let us start our evolutionary narrative by looking at the evidence from Blombos Cave, for the purpose of gauging whether the shell beads could have been utilized as body ornaments and, by extent, as material signs about 75 kya. The collection of the required shells would have required both time and effort, given that today the closest *Nassarius kraussianus* estuaries can be found at the Duiwenhoks and Goukou, located 20 kilometers west and east of Blombos Cave, respectively (there is no evidence for closer paleo-estuaries) (d'Errico et al. 2005, p.10). The collection of the tick shells would not have been primarily warranted by the consumption of their soft tissue, as they only produce 0.814 grams of meat per 100 specimens (d'Errico et al. 2005, p.10). They hence seem to

have been collected solely for the production of beads whose manufacture would not have been a trivial task, as specialized skills would have been required. For one, in the event that the perforations of the shells had been anthropogenic rather than natural, Middle Stone Age humans would have had to perforate the interior wall of the body whorl with a pointed tool, perhaps made of bone (d'Errico et al. 2005, p.15). Experimental perforations attest to the fact that careful and controlled actions would have been required for this practice (d'Errico et al. 2005, p.18). Stringing the beads would have also been an elaborate affair, whose form evidently changed over time (Vanhaeren et al. 2013). The vast majority of these beads demonstrate use-wear typical of regular contact with an acidic aqueous solution (Vanhaeren et al. 2013, p.512). According to the reporting archaeologists, this acidity can be attributed to several sources, such as human sweat, daily manipulation of acidic liquids, or some kind of special treatment of the beadwork (ibid.). Regardless of what factor(s) caused the evident use-wear, their deposition in clusters suggests that they formed beadworks lost or discarded during single events (Vanhaeren et al. 2013, p.513). This practice was not short-lived; the fact that *Nk* shell beads have been recovered from four stratigraphic levels suggests that their use may have spanned a period of hundreds, if not thousands, of years (Vanhaeren et al. 2013, p.514). Since this skill- and time-demanding practice appears to have been transmitted over generations, it would have likely held a special place in the cultural system of the Blombos inhabitants. Given the unlikelyhood that early shell beads were primarily used as abaci (section 1.3.2.1), I posit that the earliest beadworks took on an ornamental role, where they came to mediate significant meaning by standing for something else in some respect or capacity. Although we may be prevented from making a definitive claim about what that would have been because we have no direct access to past minds, it is difficult to see why and how the laborious activities of shell collection and bead manufacture

would have been maintained over multiple occupation episodes had a significant understanding of the discovered artefacts not been communally shared.

This then raises an interesting question: as far as we can tell from the archaeological record, why does this significant function appear to be exclusively fulfilled by *Nassarius kraussianus* shells? The enormous biodiversity of South African waters and the fact that several species of shellfish had been consumed by the Blombos inhabitants during the Middle Stone Age (Henshilwood et al. 2001b) suggest that they would have had an array of other options for manufacturing ornaments. Among the vast number of options available, *Nassarius* shells appear to have been chosen due to their small size, rounded shape, and smooth texture (Bar-Yosef Mayer 2015, p.82). Even before their conceptualization as material signs, these shells afforded—in Gibson's (1979) ecological sense of the term—the manufacture of beads and beadworks. Yet the archaeological evidence does not suggest that the Blombos inhabitants came to understand the suitability of *Nk* shells for the manufacture of beadworks through experimentation on other types of shells. The dense shell midden that has been found in an earlier stratigraphic layer at Blombos (d'Errico et al. 2005, p.7) has not yielded any other types of perforated shells. For instance, two 100,000-year-old *Haliotis midae* shells discovered in the same layer as the midden had been used as pigment containers (Henshilwood et al. 2011). It seems that their flattened-bowl shape afforded their use as containers rather than ornaments. I am thus led to propose that the Blombos inhabitants might have deliberately chosen the *kraussianus* species due to prior experience with significant beadworks that had been made of perishable materials.

The ethnographic literature abounds with examples of ornamental beads manufactured from materials that are largely undetectable in the Middle Stone Age archaeological record, such as insect body parts, and plant materials such as small tubers,

rolled-up fragrant leaves, seeds, seed pods, nuts, fruits, and wood (Ruddle 1973; Mehra et al. 1975; Francis 1984; Carey 1986; Dubin 1987, 2009; Simak and Dreibelbis 2010).

Granted that such raw materials would have been more directly available than *Nk* shells, the earliest ornamental beads were in all likelihood made out of perishable materials.

These beads were probably predated by even simpler forms of ornamentation, which have been ethnographically observed to include furs, skins, and feathers (Mayr 1907; Turner 1980; Carey 1986). As has been recognized by the archaeologist Robert Bednarik (2008, p.292), ‘if the earliest-found representatives of a class of material evidence are among the most deterioration-resistant types of that class, then the probability of significantly older, less resistant types is very high indeed.’ Given though that these types of ornamentation do not survive in the archaeological record, if we are to appreciate how the significant function of ornaments could have been grasped before humans resorted to shell beads, we are bound to turn to the only preservable form of ornamentation that predates them – ochre.

As we have already seen (section 2.1.2.1), powdered ochre is generally considered to have been used for the purpose of body decoration (Marean et al. 2007; Watts 2002; 2009). For some archaeologists, red (as well as black) pigments were part of symbolic color systems that were dictated by the neuro-optical infrastructure of humans (Hovers et al. 2003). Others see red ochre body painting as an adaptive attempt of female coalitions to mask menstruation and therefore prevent males from picking and choosing between them based on that regard (Knight et al. 1995; Power 2009). Both of these views, however, are incompatible with the approach adopted in this thesis. The former is a nativist account, according to which the creation of perceptually founded semantic categories is determined by universal features hardwired in the brain. While the constraints dictated by the human nervous system may form part of the story, this

perspective fails to acknowledge the pragmatic constraints imposed by human uses (Deacon 1997, p.119). On the other hand, the latter is a neo-Darwinian approach that explains the emergence of ochre-using symbolism on the basis of sexual selection alone. In doing so, it reduces the evolutionary process to purely biological terms and thus disregards the deeply constitutive entwinement of biological and cultural evolution (Ingold 2013). For these reasons, the origins of ochre-based decoration need to be further explored from the vantage point of Peirce's semiotic theory and Malafouris's theory of material engagement.

While powdered ochre first appears at Blombos Cave at around 100 kya (Henshilwood et al. 2011), two other sites – namely, Pinnacle Point and Border Cave – place its regular use in South Africa to approximately 170–150 kya (Marean et al. 2007; Watts 2009). According to Ian Watts (2009, 80), who is the ochre specialist at Blombos Cave, red ochre use in southern Africa seems to have become established with the spread of *Homo sapiens*. And, while powdered ochre has been mainly associated with decoration, we must acknowledge that some archaeologists have suggested that it could have been also used for “practical” tasks, such as tanning and preserving hides, conferring medicinal qualities, and manufacturing ochre-based adhesives used in the hafting of tools (Velo 1984; Wadley et al. 2004; Wadley 2005; Lombard 2007; Wadley et al. 2009). Given that pigments could have been used for such non-decorative purposes, it is possible that Middle Stone Age humans had been engaging with ochre before body decoration was even realized.

While utilizing ochre for subsistence-settlement purposes, they would have had the opportunity to smear pigment on their bodies for no apparent reason, perhaps even by accident at first, in turn inciting others to imitate this behaviour, despite the fact that it lacked functionality. Even our closest primate relatives, the chimpanzees, are capable of

performing such seemingly non-adaptive behaviour. According to the primatologist Edwin van Leeuwen and his colleagues (2014), an adult female chimpanzee was observed selecting a stiff, straw-like blade of grass, placing it in her ear, adjusting its position, and leaving it there during subsequent activities. Most of her group members imitated this behaviour upon encountering another chimpanzee that was already engaging in it; and in fact two of these individuals were observed engaging in this behaviour even after the inventor had died. The authors were therefore led to conclude that non-adaptive behaviour is also prone to imitation by chimpanzees. Along parallel lines, it seems likely that Middle Stone Age humans could have observed and imitated the behaviour of a pigmented inventor for a prolonged period of time.²⁹ As has been noted by Gosden (2004, p.44): ‘Presenting of objects through display makes people conscious of, and thoughtful about, the objects on display and extra sensitive to their special qualities.’ Consistently applying ochre pigment on their bodies would have therefore enabled humans to contemplate its qualities and relations, and thus form new significative concepts.

For one, ochre pieces could have provided the basis for the emergence of iconic concepts such as “value,” had they been difficult to procure. From a cognitive point of view, the ochre pigment would have come to provide the material anchor for the automatic and transparent cognitive projections that blended the mental and the material domains until establishing the ochre pigment as a sign for “value” (Figure 7.1). This new material sign would have been a sign in the strict sense of the term as it would have satisfied Sonesson’s criteria. For one, it would have been composed of two distinct parts (the ochre pigment is the Expression, and its “value” is the Content), which would not overlap in time and/or space (while the ochre pigment is in the here and now, its “value”

²⁹ While it is not hereby implied that non-human primates are a frozen representation of a former stage in human cognition, imitation would have also played a key role in the development of *Homo* (see Sonesson’s [2012, pp.86–89] arguments in section 5.1.1.1).

is spatiotemporally extended) and would be perceived to be of different nature (the ochre pigment is material, whereas the “value” is mental). Moreover, these two entities of the material sign would have been in a doubly asymmetrical relation (despite the fact that it is the ochre pigment that comes to one’s immediate attention, it is its “value” that is the focal point). At this point, ochre pigments and “value” would have been subjectively differentiated, in that the former would have been directly given and non-thematic, whereas the latter would have only been indirectly present and thematic.

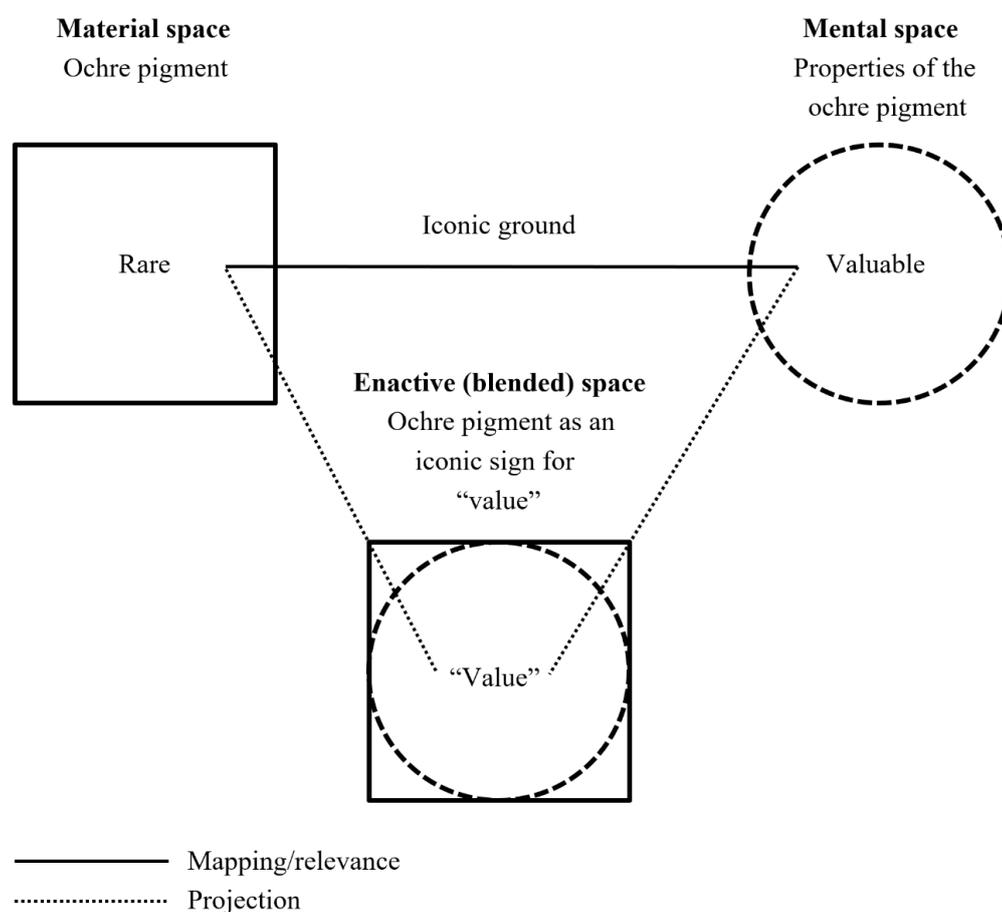


Figure 7.1 “The iconic material sign for “value” as a conceptual blend with ochre pigment as a material anchor (after Iliopoulos 2016a, p.264, Fig.4).

From a semiotic perspective, ochre pigments would have become iconic signs for some kind of “value,” because matter and mind would have shared a certain quality of rarity/exclusivity that is intrinsic not just to the concept itself but to the objects as well.

As Renfrew (2001, p.133) pointed out, value is “intrinsic” to prestige materials because ‘the material becomes the “valuable” only when it is noticed.’ But such materials are not iconic in the sense of pictures; they are instead closer to the notion of secondary iconicity, because their interpretation would have depended on being familiar with the conventional idea that their rarity makes them valuable for a group of people. As noted by Renfrew (2001, p.134): ‘The concept of “value” generally implies some measure of “agreed value” as determined between individuals: it is a social concept.’ In terms of Peirce’s tenfold typology, a social concept such as “value” would have been signified by rare ochre pigments through a denotative iconic rule (i.e., a Rhematic Iconic Legisign – level 5) whose meaning would have been: *‘Such ochre pigments signify their “value”.*’ This habit of interpretation would have been hereafter used to guide the interpretation of future instantiations or Replicas of ochre pigments (i.e., Rhematic Iconic Sinsigns – level 2), essentially allowing for the deliberate creation of “value” by way decoration (Munn 1986).

The iconic concept of “value” would have in turn provided the basis for the emergence of the concept of “wealth” through the indexical grounds established by the act of wearing valuable ochre pigments.³⁰ The perception of contiguity between ochre pigments and wearers would have enabled the transfer of qualities from ornaments to humans. This is, for instance, the case with self-decoration in Mount Hagen, Papua New Guinea, where men adorn themselves with parts taken from birds of prey and trees in order to become ‘as powerful as the things they wear’ (Strathern and Strathern 1971, p.138). Since the indexical grounds between the prestige materials and the individual are

³⁰ “Wealth” is certainly not the only concept that can be semiotically related to “value” (e.g., “identity” can also be linked with it). In fact, “wealth” is perhaps best reserved for the more advanced cultural system of later prehistory. However, it is hereby considered as it is one of the concepts that the archaeological literature generally associates with early body ornamentation, and this chapter aims to elucidate the origins of these concepts.

spontaneously established upon the act of wearing, the ochre pigments would have performatively imbued their wearers with “value.” In turn, the decorations would have begun to signify the wearer’s “value” via abductive means to others around her/him. Seen this way, the accumulation and demonstration of valuable property through ornamentation would have ultimately led to the conceptualization of “wealth.”

This novel concept (relating in this instance to ochre acquisition) would have emerged through a perceptual association between pigmented individuals and their control over valuable ochre resources. From a cognitive perspective, wearing valuable ochre pigment would have enabled a process of conceptual blending that established the ochre pigment as a sign for its wearer’s “wealth” (Figure 7.2). This newly emergent material sign would have satisfied the criteria for proper sign function. For one, it would have been composed of two distinct parts (the ochre pigment is the Expression and the wearer’s “wealth” is the Content), which would not go over into each other in time and/or space (while the ochre pigment is in the here and now, the wearer’s “wealth” is spatiotemporally extended), and would be perceived to be of different nature (the ochre pigment is material, whereas the wearer’s “wealth” is mental). Moreover, the material and mental entities comprising this novel sign for “wealth” would have been in a doubly asymmetrical relation (despite the fact that it is the ochre pigment that comes to one’s immediate attention, it is the wearer’s “wealth” that is at the centre of attention). At this point, ochre pigments and “wealth” would have been subjectively differentiated, since the former would have been directly given and non-thematic, while the latter would have only been indirectly present and thematic.

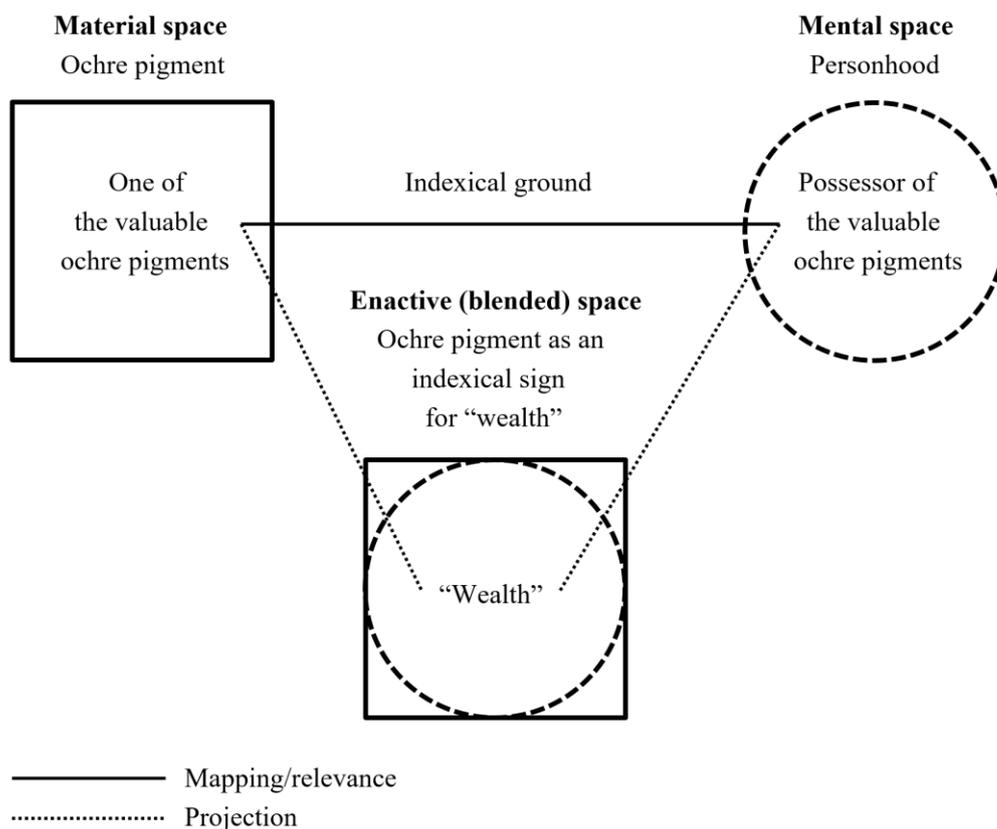


Figure 7.2 The indexical material sign for “wealth” as a conceptual blend with ochre pigment as a material anchor (after Iliopoulos 2016a, p.266, Fig.5).

From a semiotic point of view, ochre pigments would have become performative indices because they would have conferred “wealth” on their wearer. Yet they would have also been abductive indices since they would have referenced the wearer’s “wealth” to others. In terms of Peirce’s tenfold typology, a denotative iconic rule according to which ochre pigments are signs of “wealth” (i.e., a Rhematic Iconic Legisign – level 5) would have been combined with a denotative indexical rule that indicates the wearer whose “wealth” is of concern (i.e., a Rhematic Indexical Legisign – level 6), in order to form an informative indexical rule (i.e., a Dicentric Indexical Legisign – level 7) whose meaning would have been: *‘Such ochre pigments signify their wearer’s “wealth”.*’ This convention would have been henceforth used to guide the interpretation of subsequent instantiations of pigmented individuals (i.e., Dicentric Indexical Sinsigns – level 4).

Along similar lines, an x number of other concepts pertaining to the wearers could have emerged through habitualization, which would have provided the semiotic scaffolding required for the evolution of symbolic signification. Their cohabitation in the same sign-vehicle would have eventually brought forth general concepts such as “status,” for properties not implicated in any of the original domains can also emerge in a blended space (Figure 7.3). The ochre pigment would have thus been seen as a novel material sign in the strict sense of the term, given that it would have fulfilled the criteria already set above. For one, it would have been composed of two distinctive parts (the ochre pigment is the Expression, and the wearer’s “status” is the Content), which would not overlap in time and/or space (while the ochre pigment is in the here and now, the wearer’s “status” is spatiotemporally extended) and would be taken to be of different nature (the ochre pigment is material, whereas the wearer’s “status” is mental). Moreover, the two general entities comprising the material sign for “status” would have been in a doubly asymmetrical relation (despite the fact that it is the ochre pigment that comes to one’s immediate attention, it is the wearer’s “status” that is of importance). At this point, ochre pigments and “status” would have been subjectively differentiated, given that the former would have been directly given and non-thematic, when the latter would have only been indirectly present and thematic.

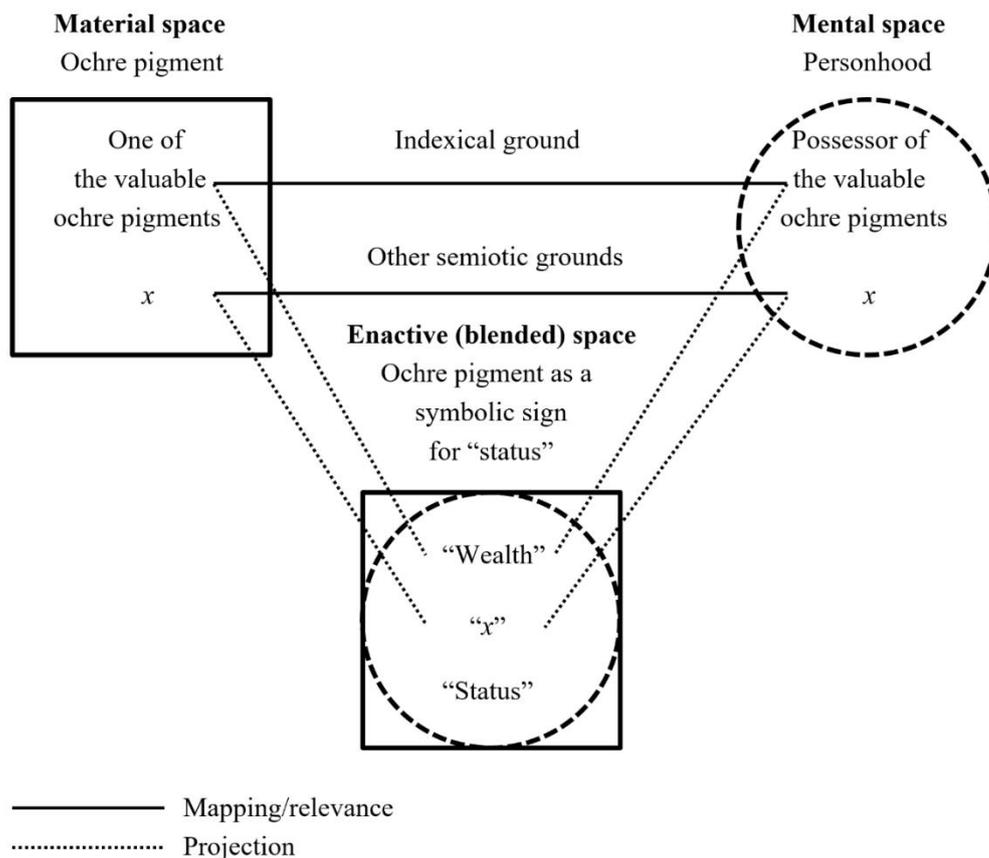


Figure 7.3 The symbolic material sign for “status” as a conceptual blend with ochre pigment as a material anchor (after Iliopoulos 2016a, p.267, Fig.6).

From a semiotic viewpoint, the interpretation of ochre pigments as signs for “status” would have come to be guided by a denotative symbolic rule (i.e., a Rhematic Symbolic Legisign – level 8), due to the purely arbitrary nature of the law linking matter and mind. When the pigments would have been applied on the body, this denotative symbolic rule would have been associated with a denotative indexical rule (i.e., a Rhematic Indexical Legisign – level 6) that indicated the persons whose “status” is of concern, either by conferring it on them or by referencing it to others. The meaning of the resulting informative symbolic rule (i.e., the Dientic Symbolic Legisign – level 9) would have therefore been: *‘Such ochre pigments signify their wearer’s “status”.*’ Such a symbolic proposition would have in turn premised the development of symbolic syllogisms (i.e., Argumentative Symbolic Legisigns – level 10), such as rituals.

According to Deacon (1997, p.402), repetition of the same set of actions with the same set of objects over and over again in a ritual performance enables the transition from explicit and concrete Sign-Object associations to implicit Sign-Sign associations. In this light, the repetitive sets of actions involving ornamental signs would have eventually culminated in the topmost level of signification with the formation of cultural narratives.

In order to be maintained, these shared syllogisms would have required long-term stability, which would have been better conferred by durable materials such as shells. Thus, the concept of “status” could have been affixed onto standardizable shell bead ornaments. Due to the purely arbitrary nature of symbolism, however, it is impossible to determine whether specimens, such as the Blombos beads, were in fact symbolic. That said, the stability conferred by durable and standardized shell beads would have certainly contributed to the eventual flourishing of symbolic narratives – if not at Blombos, elsewhere. The plethora of bead types recovered from numerous European Aurignacian sites (Vanhaeren and d’Errico 2006) would have provided ample opportunities for the creation of various rituals. That ornament-based symbolic practices ultimately became very elaborate is clearly evident from the ethnographic record, for ornamental assemblages such as regalia are central to a wide variety of rituals (Steiner 1990; Drewal and Mason 1997; Carey 1998; O’Hear 1998; Ebeigbe 2004). Their essential role in symbolic cosmotheories has been characteristically identified by ornamentation expert Lois Sherr Dubin (2010, p.16), who wrote: ‘Regalia, the major form of visual artistic expression among all African societies, is a complex assemblage of body decoration, clothing, masks and ornaments that comes alive through ritual and dance. All the elements form an elaborate system of correspondences that gives order to what is significant in each group’s world.’

While such systems may at first seem to generate only logical Interpretants (i.e., Thirds), it is important to acknowledge that they also function at a much more primal level, for they also incite emotional Interpretants (i.e., Firsts). Ornament-based symbolic systems are in fact strongly linked with the aesthetic appreciation of material forms, as is exemplified by the Hageners' rituals, where 'aesthetic judgements are in fact closely related to the symbolism of the decorations' (Strathern and Strathern 1971, p.11). Another illustrative case from Papua New Guinea comes from the Trobrianders, who adorn their infants, because 'shell decorations add a fundamental degree of power to the baby's potential social beauty' (Weiner 1988, p.59). Most notably though they decorate their canoe board-prows in order to overawe their overseas Kula partners. According to Gell (1992, p.44), such *technology of enchantment* 'is supposed to dazzle the beholder and weaken his grip on himself.' The Trobrianders would thus utilise the decorations of the canoe board-prows, which attested to their magical power, as a means of inducing specific psychological responses. In doing so, they were able to extract more valuable shells or necklaces than their Kula partners would be inclined to offer. In this regard, the feeling experienced by the Kula partners was an emotional interpretant. It is thus evident that the Trobrianders deliberately incited such monadic Interpretants in concert with the triadic Interpretants involved in the interpretation of symbolism, in order to tap deeper into the psyche of others, and therefore reap greater social benefits. Given this synergy between concept and feeling, it seems necessary that the issue of how decorative material forms come to be aesthetically appreciated be further pursued in order to also illuminate the aesthetic dimension of early ornamental signs.

7.2 The emergence of ornamental aesthetics and belongingness

According to some archaeologists whose work has already been considered, it is possible that early shell beads also served an aesthetic purpose (Garofoli 2015; Gowlett et al. 2012; Henshilwood and Dubreuil 2011). Despite the plausibility of such a case however, the Blombos artefacts have yet to be examined through the use of an explicitly aesthetic theory. Given the pragmatic and enactive foundations of our cognitive semiotic approach, this omission is addressed in this section by bringing together Peirce's and Malafouris' approaches to aesthetics.

To this end, let us start by outlining Peirce's – admittedly underdeveloped – approach to aesthetics and art, as interpreted by Lefebvre (2007). For Peirce, aesthetics are not just about the appreciation of art and the beautiful, but about the formation of ends or ideals. But before considering these artistic ideals, we must first appreciate how ideals are generally formed. We must thus start at the Peircean quality of feeling – the lowest sign level in the above tenfold typology (the Rhematic Iconic Qualisign). According to Lefebvre, perceiving a quality of feeling makes its regularisation more likely. Once regularised, qualities of feeling are associated with other qualities of feeling therefore forming a general *idea*. Granted that Reason is that which 'always must be in a state of incipency, of growth' (CP 1.615), an idea that spreads, grows, and incites other feelings is deemed to be reasonable. It thus adheres to the supreme ideal, for 'the only thing that is admirable in itself, independently of any reason, is reason itself' (Lefebvre 2007, p.324). Considering the aforementioned idea is therefore admirable in itself, it becomes habitualised even before the consequences of adopting it are inductively evaluated. Because it grows through habit, Peirce termed it *habit of feeling* (CP 1.574). Such habits are hierarchised into *ideals*, against which future ideas are evaluated. Habits of feeling, and thus ideals, are consequently subject to change elicited by chance, spontaneity, and

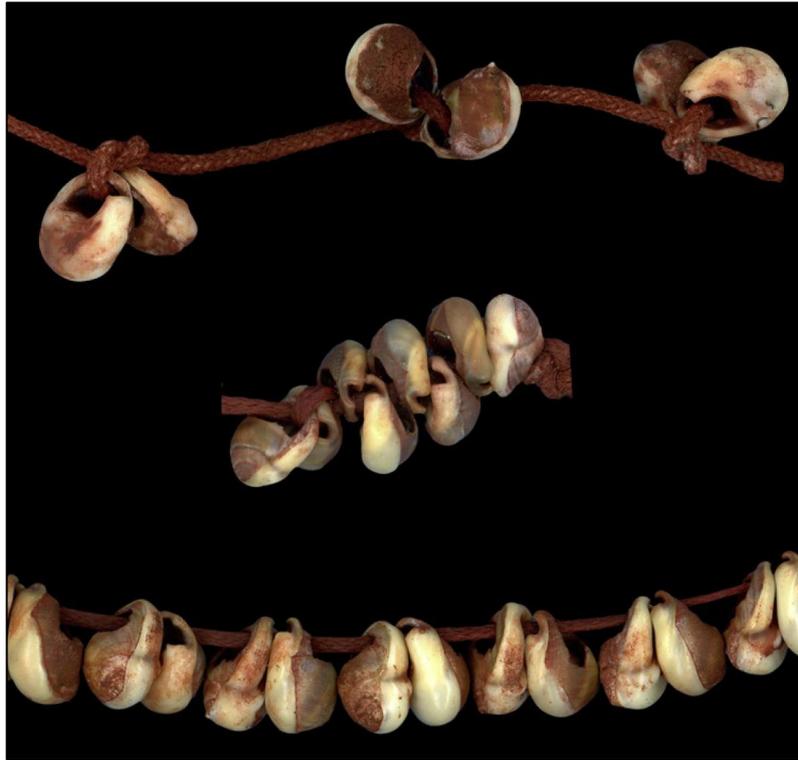
creativity. On the other hand, the more they grow and consolidate, the more qualities of feeling they attract. It is this constant incipency of Reason that we find admirable in the ideals involved in feeling, and therefore art.

In light of Peirce's Reason-governed aesthetics, the creation of art is about reproducing perceived qualities of feeling on the basis of habitually established ideals (Lefebvre 2007). To this extent, artists are preoccupied with the fulfilment of their ideals. As we have already seen (section 4.3.3), their works of art are signs (Thirds) which elicit feelings (Firsts) on the basis of their iconicity. In other words, they allow us to appreciate how well they stand for themselves. It is this quality of a sign *qua* sign that makes art attractive, because it enables Reason to contemplate upon itself by way of mind (Thirdness). As Lefebvre (2007, p.340, emphasis in original) sees it: 'To develop, cultivate, and nourish the habit of interpreting works of art may...appear to be nothing short of cultivating *a taste for signs*.' By contemplating on their ability to use and interpret signs, humans are thus able to embody the habits of feeling incited by the iconic nature of artworks in habits of action and thought.

From this pragmatic point of view, it can be said that the habitual interpretation of the aforementioned canoe board-prows as signs to present the Trobrianders with valuable shells or necklaces, is a habitual thought that is actually founded upon an aesthetic ideal or habit of feeling, which is mediated by significative decorations. As anthropological work has already shown, decorated canoe board-prows are used for the purpose of mediating the agency of their makers (Gell 1992; 1998). However, while it may be important to acknowledge that a thing can have agency as an aesthetic object (Gell 1998), Malafouris (2011a, p.176, emphasis in original) has also emphasised that '*a thing can become an aesthetic object because it has agency*.' Recognising both of these dimensions requires that we recognise the aesthetic of agency. We must hence strive to appreciate

how the aesthetic process continuously unfolds throughout the trajectory of active material engagement (Malafouris 2011a). As has been recently suggested by enactive strands of cognitive science, emotion is indeed grounded in situated embodied action (Colombetti and Thompson 2008; Krueger 2014; Slaby 2014; Stephan et al. 2013). Given therefore that the totality of situated praxis in the hypothetical exploratory trajectory described in the previous section led to an aesthetic mode of material signification, the emergence of ornamentation can be considered what Malafouris (2011a, pp.182–183) has termed an *enactive discovery*. While early body ornaments could have very well become agentic due to their aesthetically pleasing nature (Garofoli 2015), it should also be recognised that they could have become aesthetically pleasing because of their agentic nature. For instance, the use of early body ornaments to decorate one's body could have come to be guided by aesthetic ideals as they would have conferred the adorned individual with agentic power through their significative function. Eventually of course, these ideals would have been abandoned and replaced by other ideals.

Such a change of ideals must have taken place at Blombos Cave. According to the experimental study conducted by the prehistoric archaeologist Marian Vanhaeren and her colleagues (2013), the beads unearthed from the upper two levels appear to have been knotted in floating pairs of dorsally joining shells, whereas those recovered from the lower two levels seem to have been continuously strung with alternate orientation of the shells (Figure 7.4). This change in the mode of stringing beads reveals a transformation of the ideals (i.e., “good taste”) that governed their aesthetic appreciation (and probably their conceptual interpretation). In other words, the habit of feeling (and possibly conceptual thought) elicited by the ornaments changed at least once for the Blombos Cave inhabitants. In this regard, their aesthetic taste for signs appears to have been culturally influenced by chance, spontaneity, and creativity.



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Figure 7.4 Experimentally produced *Nassarius kraussianus* beadworks (adapted from Vanhaeren et al. 2013, p.503, Fig.2). Seen in the first row, shell beads such as those unearthed from the upper two levels of the Blombos Cave are knotted in floating pairs of dorsally joining shells. Seen in the second and third rows, shell beads such as those recovered from the lower two levels of Blombos Cave are continuously strung with alternate orientation of the shells.

Indeed, according to Gosden (2001), the aspects of material forms that the senses have been educated to appreciate, depend on the sensorium in which these operate – thus making aesthetic judgements culturally-specific. As he pointed out, identifying the senses that appear to have been emphasised might illuminate the nature of the social groups in which the discovered artefacts operated. He thus suggested that ‘an emphasis on the intimate contact of touch, taste or (to a lesser extent) smell might indicate that objects exercised their effects in and on small groups, whereas a regular appeal to sight or hearing might allow for social effects within a larger, more distanced group’ (ibid., p.165). Given that ornaments are mainly appreciated through vision, they seem to have functioned within sizeable and perhaps distant social groups.

This might have been the case in South Africa, where ornaments such as those found at Blombos had been worn. However, since Blombos Cave is the only South African site that has to date produced *Nk* shell beads, there is currently no solid reason to suggest that the Blombos beads functioned within sizeable and perhaps distant social groups. On the other hand, the Moroccan archaeological record seems to allow for such a postulation, due to the fact that perforated *Nassarius* shells – of the *gibbosulus* species though – have been discovered at four Middle Palaeolithic sites. According to d’Errico and his colleagues (2009, p.16055), the fact that three of these (i.e., Taforalt, Ifri n’Ammar and Rhafas) are located 40–60 km inland, in combination with the relatively small number of beads they have yielded, and the discovery of unperforated shells at Taforalt, suggest the presence of organised exchange networks. The possibility of sociocultural links between these sites is further reinforced if we consider their cultural and temporal proximity. Not only are they all associated with the Aterian technocomplex, but the ages of the shell beads also demonstrate significant overlap (i.e., 85–82 kya ago at Taforalt, 82 kya ago at Ifri n’Ammar, and 80–70 kya ago at Rhafas) (ibid.).

Unfortunately, given that Taforalt is the only site that has yielded a considerable number of perforated *Nassarius* shell beads (i.e., twenty-seven) – with the other two sites yielding only limited evidence (i.e., one and three beads respectively) – illuminating the semiotic networks that may have been established during the Middle Palaeolithic proves tentative at best. Keeping in mind the restrictions posed by the available record, it may be said that the *gibbosulus* species was the tick shell most frequently used when making beads (i.e., 24/27 at Morocco, 1/2 at Ifri n’Ammar, and 2/3 at Rhafas). As for the fidelity between these artefacts, the reporting archaeologists have yet to identify any distinct site- or layer-specific trends. In terms of distance, the distribution of *Ng* shell beads across sites ranging from 40 to 60 km inland seems to reveal the presence of space-transcending

iconic relationships between the beadworks dispersed across the landscape. Finally, the directionality of these relationships could be guessed, only if one assumed no important influence of excavation bias. If this were indeed the case, then it could be said that the small number of shell beads found at Ifri n'Ammar and Rhafas, compared to the much greater number of beads found at Taforalt, attests to the primacy of the latter site.

While these may be questionable speculations, it would appear safer to suppose that the interactions of the humans inhabiting these Moroccan sites – or, for that matter, the interactions of the people residing at Blombos Cave, with inhabitants of other proximal sites – would have given them the opportunity to think about and conceptualise their “group affiliation” as an entity with aesthetic ideals of its own. This novel concept would have emerged, in this instance, through a perceptual association between decorated individuals and their possession of particular shell beads. From a cognitive perspective, wearing particular beadworks would have enabled a process of conceptual blending that established the beadwork as a sign for its wearer’s “group affiliation” (Figure 7.5). This newly emergent material sign would have satisfied the criteria for proper sign function. For one, it would have been composed of two distinct parts (the beadwork is the Expression and the wearer’s “group affiliation” is the Content), which would not go over into each other in time and/or space (while the beadwork is in the here and now, the wearer’s “group affiliation” is spatiotemporally extended), and would be perceived to be of different nature (the beadwork is material, whereas the wearer’s “group affiliation” is mental). Moreover, the material and mental entities comprising this novel sign for “group affiliation” would have been in a doubly asymmetrical relation (despite the fact that it is the beadwork that comes to one’s immediate attention, it is the wearer’s “group affiliation” that is at the centre of attention). At this point, beadworks and “group affiliation” would have been subjectively differentiated, since the former would have

been directly given and non-thematic, while the latter would have only been indirectly present and thematic.

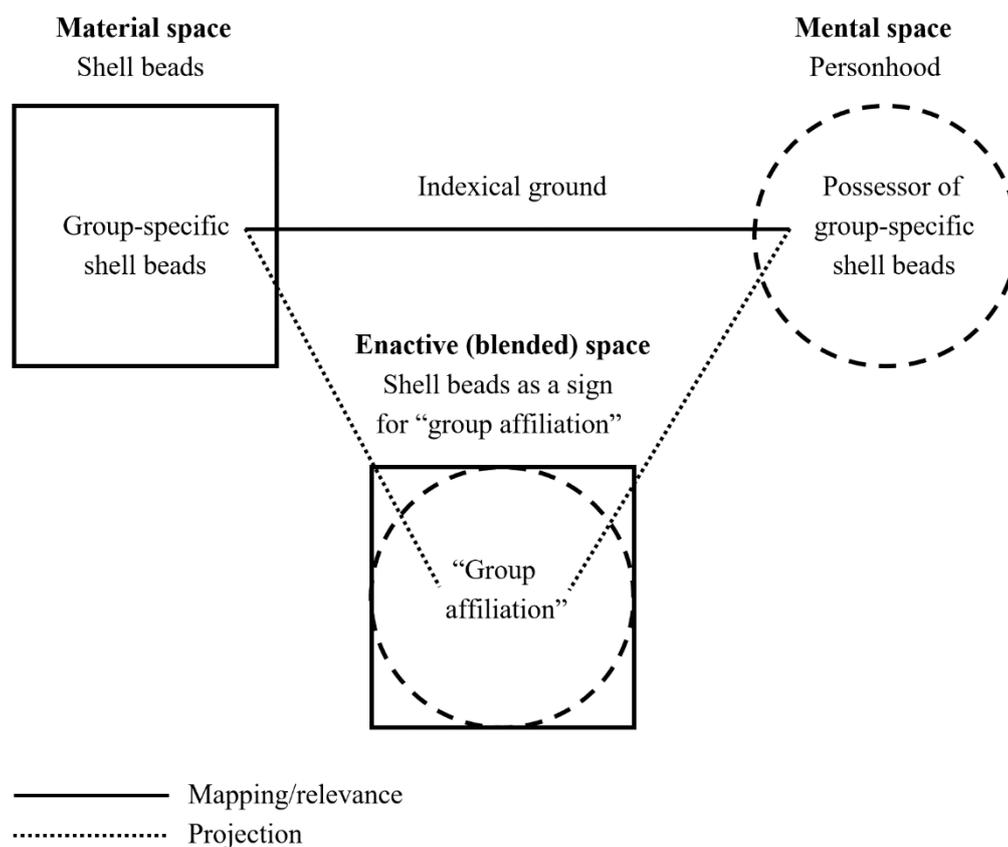


Figure 7.5 The indexical material sign for "group affiliation" as a conceptual blend with shell beads as a material anchor.

The interpretive habit through which a beadwork would have been understood as a sign for such a concept would have been a denotative iconic rule (a Rhematic Iconic Legisign – level 5), which, once the beads had been worn, would have been associated with a denotative indexical rule (a Rhematic Indexical Legisign – level 6) indicating the wearer whose "group affiliation" is of concern. The meaning of the resulting informative indexical rule (the Dicentric Indexical Legisign – level 7) would have therefore been: *'Such beadworks signify their wearer's "group affiliation".'* This informative indexical rule would have been used to guide the interpretation of informative indexical instantiations of decorated individuals (i.e., Dicentric Indexical Sinsigns—level 4). Due to

the dual functionality of indexical signs, these ornaments would have referenced “group affiliation” to outsiders, while concominantly conferring it to members of the group.

To this extent, beadworks would have come to elicit a sense of belonging through the generation of not just logical, but also emotional Interpretants. In terms of Peirce’s theory of aesthetics, ornaments would have strengthened the belongingness felt by their wearers, who would have experienced a habituated quality of feeling as a group-specific ideal. This habit of feeling would have in turn strengthened a group’s cohesion. As has been argued by the prehistoric archaeologist Clive Gamble (2007; 2010; 2012; Gamble et al. 2011), the amplification of emotions during the Palaeolithic strengthened and extended the social bonds between hominins. Ornamental shell beads would have certainly played a significant part in this release from proximity by helping early social groups, such as the occupants of the Moroccan sites or the Blombos Cave inhabitants, create their own identity and therefore pave their own evolutionary path.

7.3 Summary

In this chapter, a pragmatic and enactive theory of cognitive semiotics was applied to early body ornamentation, so as to illuminate from a developmental perspective the evolution of the significative concepts with which they are generally associated.

Specifically, I started by considering the archaeological context at Blombos Cave. The maintenance of ornamentation over several occupation events, the difficulty in procuring the raw materials, their negligible caloric output, and the specialisation involved in their manufacture, led me to suggest that the Blombos beads may have been used as material signs. It is postulated that, amidst the great variety of available shells, the small size, globular shape, and smooth texture of the *Nassarius kraussianus* tick shells would have made them particularly suitable for the manufacture of beadworks; and given that we

have no evidence of experimentation with other kinds of shells found in earlier layers, I am led to believe that Middle Stone Age humans had prior experience with beadworks that were not however degradation-resistant. As the ethnographic literature reveals, a great variety of perishable materials can be used to make ornamental beads. Since we cannot however base our evolutionary narrative on artefacts that have not been preserved in the archaeological record, I turned to ochre – the only available form of ornamentation that predates shell beads. Prehistorians have attributed the use of red ochre for body painting to both, the neuro-optical infrastructure of humans, and an attempt by females to mask menstruation. Yet from the perspective of the MET, these nativist and neo-Darwinian accounts appear to be misguided.

To this extent, I put forth an account according to which the origins of ochre-based ornamentation were incidental, or perhaps accidental. As we saw, the unintentional display of ochre pigment on one's body could have been imitated for no apparent reason, thus giving humans the opportunity to conceptualise its qualities and relations. From a cognitive point of view, the pigment would have functioned as a material anchor for a process of conceptual blending that brought forth new significant concepts, such as "value". Semiotically put, the interpretation of actual ochre pigments (Rhematic Iconic Sinsigns) would have come to be guided by denotative iconic rules (Rhematic Iconic Legisigns). These general rules about the signification of "value" would have in turn provided the foundations for the emergence of further concepts. For instance, the indexical grounds of contiguity established between a valuable pigment and its wearer would have enabled the performative transfer of "value" from the ochre onto its wearers, whose value would have been in turn abductively understood by others. The resulting use of ochre pigments as signs of their wearer's "wealth" (Dicentric Indexical Sinsigns) would have thus come to be guided by informative indexical rules (Dicentric Indexical

Legisigns). Eventually, the accumulation of similarity and contiguity-based concepts on the same sign-vehicle would have scaffolded the emergence of symbolic concepts, such as “status”. In fact, the association of the denotative symbolic rule that guided the interpretation of “status” (Rhematic Symbolic Legisign) with a denotative indexical rule that indicated the person whose “status” of concern (Rhematic Indexical Legisign) would have enabled the formation of informative symbolic rules (Dicentric Symbolic Legisigns). These symbolic propositions could have in turn been integrated in symbolic syllogisms such as rituals (Argumentative Symbolic Legisigns), which would have been best maintained through durable and standardisable materials such as shells. While we cannot establish whether the Blombos beads were in fact part of such cultural narratives, we can certainly say that they would have afforded their creation. Once this would have become the case, the emergent symbolic meanings would have conferred humans with the power to influence not just the thoughts, but also the feelings of others.

In this light, I proceeded to explore the aesthetic dimension of body ornamentation by drawing upon Peirce’s and Malafouris’ aesthetic theories. As we saw, Peirce had proposed that the regularisation of feelings enables the formation of habits of feeling, which are in turn hierarchised into ideals. Art is therefore about the fulfilment of these ideals in order to incite particular qualities of feeling. From this pragmatic point of view, it can be said that ethnographic peoples have been employing decorations for the purpose of manipulatively inciting habits of feeling to others. Yet while it may be important to acknowledge that the aesthetic function of ornamentation may have enabled the exertion of agency, Malafouris deems it equally important to recognise that the agentic function of material culture can also lead to its aesthetic appreciation. For example, early body ornamentation might have come to be guided by aesthetic ideals precisely because of the agentic power it conferred upon its wearers. These ideals would have been naturally

subject to change, as in the case of the Blombos beads, whose change in the mode of stringing beads reveals at least one transformation in the aesthetic ideals of the cave's inhabitants. Such a change may have been the outcome of cultural influences, for the visual sensorium in which the ornaments operated suggests the presence of sizeable and possibly distant social groups. This must have been especially the case in northern Africa, since *Nassarius gibbosulus* shell beads have been found at four Moroccan sites. Although the available archaeological evidence is scarce, it was postulated that three of these sites may have been part of a semiotic network maintained through the use of *Ng* shell beads. As was suggested, the ornament-mediated exchanges of the humans involved in this inter-artefactual network would have enabled them to form a concept of "group affiliation" as a denotative iconic rule (Rhematic Iconic Legisign). This concept would have been associated with wearers through a denotative indexical rule (Rhematic Indexical Legisign) in order to yield an informative indexical rule (Dicentric Indexical Legisign). By communicating social identity to non-wearers and conferring it on their wearers, ornaments would have come to elicit a sense of belongingness that strengthened social cohesion, thusly catalysing the cognitive evolution of early human groups.

Chapter 8

Conclusion: Rethinking the nature and emergence of material signification

In this thesis, I set out to explore the nature and emergence of early body ornamentation, which has long been at the forefront of the debate on modern human origins. According to most prehistorians, “non-utilitarian” artefacts such as the Blombos shell beads are inherently symbolic because they are the cultural products of internal symbolic representations harboured by an already modern human brain. By subscribing to this dualist and neo-Darwinian point of view (even if implicitly so), the proponents of the “symbolic” dictum are forced to treat the function and the creation of past material signification in linguistic and representational terms. Yet as we have seen, these theoretical outlooks preclude them from truly elucidating the evolution of the adornment and the mind. For one, a linguistic approach to material signification is not capable of fulfilling Botha’s requirement of a clear explanation as to what the shell beads actually meant, simply because there is no direct access to the mental contents of prehistoric peoples. Moreover, a representational notion that attributes the generation of significative concepts to innate cognitive mechanisms fails to justify how the brain, as a physical system, can know aspects of the world prior to their empirical instantiation. These theoretical insufficiencies are inevitable outcomes of two major misconceptions – the fallacy of the linguistic sign and the representational fallacy.

In order to overcome these theoretical pitfalls, Malafouris (2013) has proposed that we appreciate the active role that matter plays in inducing and constituting material signification. According to the theory of material-engagement, significative concepts should not be seen as innate representations that are imbued onto material culture, but as the emergent products of a conceptual blending process anchored to the material world.

By accounting for the cognitive mechanism that brings forth the material and the mental domains, the hypothesis of enactive signification provides an insightful methodological tool that can help evolutionary archaeologists properly account for the *becoming* of prehistoric material signs. However, in explaining this evolutionary process through a strictly enactive logic, the MET deprives material signification from a representational function. In the words of Malafouris: ‘Material signs do not represent; they enact. They do not stand for reality; they bring forth reality’ (ibid., p.118). While the case of the Neolithic counting system in the Near East clearly attests to the fact that material signification incites and shapes human thinking, it appears that material signs can also stand for other things because representation is not exclusive to symbolism.

To account for the representational dimension of material signification, this thesis proposed that we adopt a pragmatic semiotic theory that manages to bring together the principles of significative equivalency and participation. As Sonesson’s (2006; 2007; 2010a; 2012) work made clear, the sign function of icons and indices is founded on their semiotic ground – that is, the relevance that connects them to something else. For instance, early body ornaments could have stood for “value” in an iconic fashion since they would have shared certain properties with this concept, whereas they may have signified their wearer’s “wealth” in an indexical way because the act of body ornamentation would have established grounds of contiguity between the artefact and the concept. To this extent, it becomes clear that physical qualities and relations partly constitute the significative (i.e., representational) function of material signs.

Tracing the transition from the perception of these properties and affordances to the conception of signification required setting some clear criteria that allow us to differentiate between perceptual and significative types of meaning. Drawing from Sonesson’s work (ibid.), we saw that the relation between significative artefacts and what

they stood for would have been doubly differentiated – that is, early body ornaments and the concepts they signified did not overlap in time and/or space, and were taken to be of different nature. Moreover, they would have been in a doubly asymmetrical relation – that is, the ornamental signs were more directly perceived than what they stood for, but the concepts they signified were more in focus since they were more important. While the mental character of these meanings precludes us from gleaning them directly from the archaeological record, Sonesson's two criteria for signification can be fruitfully used in the reconstruction of evolutionary narratives about the origins of prehistoric material signs.

As we have seen, Peirce's tenfold typology is an especially useful methodological framework for tracing the evolutionary process of semiogenesis, because it helps us move past the unresolvable issue of "what" prehistoric artefacts could have meant, and on to the more tangible question of "how" they could have meant. By accounting for the various iconic, indexical, and symbolic ways in which material signs could have functioned, it can help symbolically-oriented archaeologists appreciate the broader range of the semiotic spectrum. In fact, Peirce's typology can enable prehistorians to trace the relations between the different kinds of signification. It became clear in the previous chapter that the relations of embodiment between the ten levels of signification allowed us to follow with great analytical precision a prehistoric process of semiotic scaffolding from iconic and indexical signs until the emergence of symbolic narratives, such as rituals.

It should be kept in mind of course, that the ascent through Peirce's semiotic levels would not have been linear and stage-like, as a neo-Darwinian line of inquiry would have maintained. Instead, the emergence of material signification need be explored from a developmental perspective that locates the creation of meaning in meshworks of

material engagement. As became evident, the physical aspect of material signification would have enabled its communal assimilation by way of social perception, thus allowing iconic and indexical signs to spread across prehistoric networks. From this topological point of view, archaeologists delving into the debate on modern human origins no longer have to evoke the unsubstantiated existence of language in order to explain the establishment of novel cultural practices, such as early body ornamentation.

It also follows from this semiotically-informed developmental perspective that the symbolic and aesthetic dimensions of past material signs must have co-emerged. By accounting for the relation of embodiment between habits of thought and habits of feeling, Peirce's theory treats both kinds of meaningful rule as the emergent and ever-changing products of the same significative process. It is thus important that we abandon the notion that the aesthetic understanding of ornaments must have preceded their symbolic function. In fact, as we saw in the previous chapter, the agency mediated through the symbolic function of early body ornamentation would have played an integral role in shaping the aesthetic ideals of Middle Stone Age humans. To this extent, the symbolic and aesthetic dimensions of ornamentation are best seen as continuous, in that they partake in each other's being.

Evidently, the multi-layered nature and the multi-step emergence of significative meaning seem to contradict the key belief of the "symbolic" paradigm, according to which '[a]n organism has the ability to symbol or it does not; there are no intermediate stages' (White 1949, p.24). The creation and maintenance of symbolic syllogisms, such as ornament-based rituals, would have been preceded by a transition from the perception of iconic and indexical grounds to the conception of iconic and indexical signs, and a transition from icons and indices to simple symbolic signs. The ability to develop symbolic cultural narratives was therefore not the product of a single qualitative change.

It was rather the culmination of a prolonged evolutionary process that involved: understanding that something can stand for something else in some respect; realising that this relation can be purely arbitrary; and grasping the idea that this relation can belong to a system of other such relations. These semiotic capacities, which have been long subsumed under a “symbolic” ability, are in fact distinct points in our significative evolution – or to be more precise, distinct points in the various significative trajectories of the past.

In this light, the incremental increase in significative abilities in various sites across the prehistoric landscape does not seem to support the crossing of a neurocognitive Rubicon that bestowed mutationally-gifted hominins with a “symbolic” capacity, and therefore a “modern” quality. Besides, as we have already seen, the arbitrariness that characterised truly symbolic artefacts is not embodied in the unearthed sign-vehicles, and cannot therefore be detected. Consequently, trying to illuminate the origins of the “modern” human mind by pinpointing when in time symbolism first emerged is futile. It thus becomes apparent that the notion of “modernity” is unproductive for the study of past material signification. For this reason, I must concur with an increasing minority of scholars that have proposed the elimination of this problematic concept from the study of human origins (Hopkinson 2013; Langbroek 2012; Malafouris 2013, pp.239–243; Shea 2011).

While trying to examine the origins of symbolism from a chronological perspective may be inefficient, approaching human origins from a deeply ontological point of view is in fact possible – yet, as pointed out by Malafouris (2013, p.234), archaeology has made little progress studying the *process* that transforms something into a symbol. I hope to have shown in this thesis that a pragmatic and enactive theory of cognitive semiotics can help prehistorians address this issue, for unlike the “symbolic”

approach it is sensitive to the material dimensions of signification. Rather than treating material culture as the epiphenomenal product of brainbound minds, the theoretical framework advanced here is able to attend to the various ways in which the material world induces and constitutes significative thinking. Due to its metaplastic scope, we were ultimately able to move past the linear and deterministic approach of the neo-Darwinian consensus, and appreciate the complexity and dynamism of semiogenesis. To this extent, it is concluded that the evolution of material signification is best seen as a process of change in the historically situated conceptualisations of significative artefacts and practices.

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Appendix

Abbreviations	
<i>Aa</i>	<i>Afrolittorana africana</i>
<i>Ad</i>	<i>Acanthocardia deshayesii</i>
<i>Cb</i>	<i>Conus bairstowi</i>
<i>Cr</i>	<i>Columbella rustica</i>
<i>Gi</i>	<i>Glycymeris insubrica</i>
<i>Lc</i>	<i>Laevicardium crassum</i>
<i>Nc</i>	<i>Nassarius circumcinctus</i>
<i>Ng</i>	<i>Nassarius gibbosulus</i>
<i>Nk</i>	<i>Nassarius kraussianus</i>
OSL	optically stimulated luminescence
TL	thermoluminescence
U-Th	Uranium-Thorium
–	No information available
?	Uncertainty regarding the <i>species</i>
*	The ‘Use Wear’, ‘Heating’ and ‘Pigment’ sections refer only to perforated shells

Table 1 – Middle Palaeolithic Near Eastern beads

Site	Distance from the sea	Bead Type and Perforation	Date	Dating technique	Techno-complex	Use-wear *	Pigment *	Heating *	References
Es-Skhul, Mount Carmel, Israel	varied from 3 to 20 km	Perforated: 2 <i>Ng</i> shells Unperforated single fragments of: <i>Ad, Lc</i> , undetermined shell, cypraeid	between 100 and 135 kya	Dating via association with anatomically modern human remains found in the same layer	Mousterian	0/2	0/2	0/2	Grün et al. 2005; Vanhaeren et al. 2006
Qafzeh Cave, Israel	30–40 km	Perforated: 7 <i>Gi</i> shells (natural perforations) Shells in fragments: 3 <i>Gi</i>	92± 5 kya	TL	Mousterian	4/7	3/7	0/7	Valladas et al. 1988 Taborin 2003 Zilhão 2007 Bar-Yosef Mayer et al. 2009

Table 2 – Middle Stone Age South African beads

Site	Distance from the sea	Bead Type and Perforation	Date	Dating technique	Techno-complex	Use-wear *	Pigment *	Heating *	References
Blombos Cave, South Africa	~100 m Shells collected from 20 km away	Perforated: 68 <i>Nk</i>	c.72 95% confidence interval: 75.5-67.8 kya	OSL and TL	Stillbay	62/68	4 of the original 41, no report on the next 27	25/68	d'Errico et al. 2005, 2013; Henshilwood et al. 2004; Jacobs et al. 2006, 2013; Vanhaeren et al. 2013
Border Cave, South Africa	80 km	Perforated: 1 <i>Cb</i>	90–66 kya (Millard, 2006) likely date 76 kya (Grün, R. and Beaumont, P. 2001)	ESR	Stillbay	–	–	–	Beaumont et al. 1992 ; Cooke et al. 1945 ; Grün and Beaumont 2001; Millard 2006
Sibudu Cave, South Africa	15 km	<i>Perforated:</i> 3 <i>Aa</i> <i>Unperf.:</i> 3 <i>Aa</i>	>70 kya	OSL	Stillbay	3/3 micro-chipping not neces. usewear	1/3	1/3	d'Errico et al. 2008

Table 3 – Middle Palaeolithic North African beads

Site	Distance from the sea	Bead Type and Perforation	Date	Dating technique	Techno-complex	Use-wear *	Pigment *	Heating *	References
Contrebandiers (cave), also called El Mnasra I, Morocco	17 km	Perforated: 1 <i>Ng</i>	Unknown age, but most likely of Pleistocene, and possibly contemporaneous with the beads from the other three Moroccan sites	Disturbed context and unreliable dating by radiocarbon and U-Th series	Aterian	0/1	1/1	0/1	Daugas 2002; d'Errico et al. 2009
Grotte des Pigeons (cave), Taforalt, Morocco	40 km	Perforated: 24 <i>Ng</i> 3 <i>Nc</i> (?) Unperf./incomplete perforation: 5 <i>Ng</i>	between 73.4 kya and 91.5 kya most likely ≈82.5 kya	OSL and TL and uranium-series	Aterian	20/24 <i>Ng</i> 3/3 <i>Nc</i> (?)	17/24 <i>Ng</i> 3/3 <i>Nc</i> (?)	Yes: 5/24 <i>Ng</i> Maybe: 1/24 <i>Ng</i> 1/3 <i>Nc</i> (?)	Bouzouggar et al. 2007; d'Errico et al. 2009

Table 3 continued – Middle Palaeolithic North African beads

Site	Distance from the sea	Bead Type and Perforation	Date	Dating technique	Techno-complex	Use-wear *	Pigment *	Heating *	References
Ifri n'Ammar (cave), Morocco	59 km	Perforated: 1 <i>Ng</i> 1 <i>Cr</i> (?)	83 ± 5.6 ka	TL	MP industry lacking Aterian tanged tools	1/1 <i>Ng</i> 0/1 <i>Cr</i> (?)	Yes: 1/1 <i>Ng</i> Maybe: 1/1 <i>Cr</i> (?)	1/1 <i>Ng</i> 0/1 <i>Cr</i> (?)	d'Errico et al. 2009; Richter et al. 2010
Rhafas (cave), Morocco	50 km	Perforated: 2 <i>Ng</i> 1 <i>Nc</i> (?) Unperf.: 1 <i>Ng</i> 1 <i>Cr</i> (?)	80–60 kya 80–70 kya more likely	TL	Aterian	2/2 <i>Ng</i> 1/1 <i>Nc</i> (?)	1/2 <i>Ng</i> 0/1 <i>Nc</i> (?)	0/2 <i>Ng</i> 1/1 <i>Nc</i> (?)	d'Errico et al. 2009; Mercier et al. 2007
Oued Djebbana, Bir-el-Ater, Algeria	>190 km	<i>Perforated:</i> 1 <i>Ng shell</i>	>35 kya (perhaps up to 90 kya by dating of the Aterian techno-complex)	single infinite conventional radiocarbon dating for the >35 kya date	Aterian	0/2	0/1	0/1	Cremschi et al. 1998; Morel 1974; Vanhaeren et al. 2006; Wrinn and Rink 2003