

WITNESS. STANDING STONES AND THE COSMIC ORDER

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IN
ANTHROPOMORPHISM
IN NATURE AND MATERIAL CULTURE:
APPROACHING A FUNDAMENTAL OF HUMAN COGNITION
Dragos Gheorghiu and Vincent Paladino (eds.)

This paper contains a summary of many of the ideas that I have had, discussed or encountered about standing stones over the years and much of which has been published or are *in press*. In particular, this includes the possible anthropomorphic connotations and roles that standing stones might have played in the communities that built them. It begins with a very short review of some of the interpretations on standing stones known to date, firstly the oldest known standing stones, or their first appearances in some regions and then those of Britain, followed by a discussion of the author's research results that incorporate standing stones connection to Nature. The chapter finishes with the ideas on the place that standing stones had within societies within Scotland, namely as active individuals of their communities.

In the Beginning ...

Standing stones appear on their own or with other monuments. The variety of accompanying and associated monuments is great, including megalithic tombs, cairns, cists, earthworks and even buildings or settlements (Bradley 1998, 2011, 2012; Burl 2000; Fergusson 1872; Kirchner 1955; Müller 2014; Rodriguez & Marchesi 2015; Scarre and Oosterbeek 2019; Schultz Paulsson 2017), and their forms are often well known and/or regionally defined (Barnatt 1989; Beier 1991, 1992; Brophy et al. 2013; Burl 1976, 1993, 2000; Calado, M. 2002; Furholt and Müller 2011; Higginbottom et al. 2015; Kirchner 1955; Nobles and Brophy 2011, 2014; Richards 2013 (ed); Schuldt 1972; Wright 2007; Martinsson-Wallin & Wehlin 2017). The dates of these accompanying monuments are various, being built before, at the same time as, or after, the standing stones.

However, the first appearance of standing stones in the European context is still rather mysterious. As with the megalithic tradition generally, it is thought that standing stones may well have appeared in the Early Neolithic both in Brittany and Iberia (Calado, M. 2002, Calado, D. et al 2010; Cassen dir. 2009 in Cassen 2010; Large 2014; Scarre and López-Romero 2019: 100, 219; Schultz Paulsson

2017), with Early Neolithic dates for the Douet alignment on the island of Hoëdic, Brittany and the arguable date of Meada, Portugal (Oliveira 1997 in Scarre and López-Romero 2019:100; Large and Mens 2009; Large 2014 in Scarre 2019: 219). More to the point, as perhaps at Goberkli Tepe, they could have been significant for, and associated with hunter-gathers (Calado, M. 2002: 26-29; Bradley 1998). For instance, we find small standing stones in front of the Mesolithic graves (J and K) in Hoëdic (Case 1976; Cassen 2011: 4; Scarre 1992; Scarre *et al.* 2003: 76 in Schultz-Paulsson 2017: 30). Calado argues that despite the fact that there are standing stones located on the basement of archaeological settlement material close by (Fontainhas for instance), neither in Brittany nor Alentejo ‘do we find standing stones *in* those cultural contexts from which the Neolithic *material cultures* could be derived’ (Calado, M. 2002: 29; current author’s emphasis). In more recent times, this picture has changed somewhat, though without absolute clarification (*see discussion below*).

Despite cultural period difficulties, Calado also argues there is possible evidence that standing stones in these areas existed prior to megalithic tombs. For example, there is a standing stone socket associated with the very ancient tumulus of Le Petit Mont in Arzon (Leconnec 1994; Calado, M. 2002: 26) and an Iberian megalithic grave clearly superimposed upon two standing stones already in place (Granja de S. Pedro, Almeida and Ferreira 1971:168 in Calado, M. 2002: 26). There is also remodeling of tombs with previously constructed stones, possibly menhirs or stelae, in Iberia and Brittany (Scarre and López-Romero 2019: 189). Trying to differentiate between what might be a menhir with a singular identity within a tomb and what may have been a supporting structure seen as part of the complex without its own identity is difficult, even with excavation and dating (e.g. in Morbihan, Gouezin 2015, 108, plans in Figs. 3-6). Possibly one of the clearest examples for establishing which monument came first is an alignment of stelae at Carnac, of which the Grand Menhir is thought of as the centre or the end (Cassen 2010:111). Cassen states that the oldest stele dated by radiocarbon (4900 – 4700 cal BC) had not been moved from its original place, but re-used several centuries later as the main orthostat in the funeral room of Table des Marchands dated towards 4000 cal BC (Le Roux et al. 2006; Cassen dir. 2009 in Cassen 2010). Relevantly, Schultz Paulsson’s more recent modelling of

the dates shows that the beginning of the *termini post quos* activities regarding the erection of the alignment as a whole, indicated by the Recent Castellar layer on the alignment, is calculated to ~5170 cal BC (2017:61). However, was this layer placed here by the people who destroyed the alignment or the erectors of the alignment? Be that as it may, as Gouezin points out, perhaps what is notable within the greater life-cycle of the genre of standing stones is *at some point* they participated fully in a process ‘of implementation and constant reorganization of the sepulchral spaces’ (Gouezin 2015: 108).

With Brittany’s standing stones or menhirs attributed to a first appearance around ~5170 cal BC (Schultz Paulsson 2017:61), we can see that they lasted for at least three millennia to 1600 cal BC (Cassen dir. 2009 in Cassen 2010; Cassen et al 2013; Large 2014 in Scarre and López 2019: 100, 21). Other areas, like Switzerland, have a later start (from approximately 4500 -3,700 B. C.; Bocksberger 1964; D’Anna et al 2006, Wüthrich 2007). Further, whilst a specific end date was not mentioned, Grau Bitterli et al 2002 and Burri-Wyser et al 2012 discuss the refashioning and reuse of some menhirs and stelae in Switzerland between 2900 BC. and 1900 BC. The Neolithic menhirs of Switzerland are also associated with tombs, but in particular with cemeteries. Further, single menhirs, or even groups of menhirs, are located nearby settlements in such places as the Jura terraces above Lake Neuchâtel (*pers comm* Markus Spring). Examples of the cemetery association includes a discontinuous alignment of nine standing stones still standing in their original position next to a necropolis, distributed over 28 meters in length along a NE-SW axis, six of which were said to be engraved including representation of a fitted *axe* and at least two orants (Bocksberger 1964).

On Gotland in northern Europe, standing stones seem to appear at the beginning of the late Bronze Age, dated to c. 1300 BC (Martinsson-Wallin & Wehlin 2017: 241, 243). Here the ‘south stones’ were erected and ritual activities were carried out on the south side of cairns. This was also a time when ‘the earlier burial grounds were covered with stones to form cairns, and a new burial and ritual type of site emerged, the stone ship setting’. (Martinsson-Wallin & Wehlin 2017: 243). Intriguingly, this overlaps with the likely dates for the appearance of the simpler standing stone monuments that

began to appear across western Scotland, including the islands (see below). According to Wehlin and Schönback ‘the south stone structures were *additions to the cairn milieu* (2012:94–113 in Martinsson-Wallin & Wehlin 2017: 243). It is suggested that these stones just outside the perimeters of the cairns or larger stone settings marked the primary grave when the grave was ‘sealed’ under a dry wall heap (Lindquist 1976:124 in Martinsson-Wallin & Wehlin 2017: 243). The standing stones are seen by Martinsson-Wallin & Wehlin as markers for these graves connecting to local genealogies, mythologies and inhumation practices tied to land, with a focus as places for ritual behaviour including flaking and making fires (Martinsson-Wallin & Wehlin 2017: 252).

Finally, Kirchner’s 1955 research in central Europe also reveals that there is likely a very strong and significant connection between tombs and menhirs. He suggests that there must have existed menhirs in tombs which functioned as a proxy for the dead, and that over time these stones developed an autonomic function. Specifically, he suggests they longer had to be placed within a tomb but were able to stand outside the tomb whilst maintaining their ‘religious function’. It would seem that this apparent micro-change in location, though, could reflect reflect a macro-change in the belief system, enabling more than one active purpose or practice for these standing stones. Essentially, Kirchner argues that these standing stones *still* represent the people who have died, but now they *live in the menhirs* and can maintain an ongoing connection with those who are living and their community by existing outside of the tombs once they are sealed.

Fathoming past notions of standing stones of Britain

From the *Late* Neolithic onwards in the British Isles a form of megalithic structure that was essentially fully exposed and open to public view appeared (Burl 1993; Bradley 1998; Richards 2013a). From the beginning, like in Europe, standing stone structures appeared on their own *or* with other monuments or buildings, such as The Ness of Brodgar (Figs 1A & 1B; Fergusson 1872; Kirchner 1955; Bradley 1998; Burl 2000; Bradley 2011, 2012; Müller 2014; Towers et al 2015). It is possible that the *very first* standing stones of their European counterparts appeared as the *only* structural form in their immediate vicinity before being either incorporated into tombs as found in places like Germany

and Brittany today (Cassen 2010; Large 2014; Scarre and López-Romero 2019: 100, 219; Schultz Paulsson 2017).

Research has shown us that standing stones as a group in Britain have continually had the same three associations and/or relationships across Scotland and elsewhere in the British Isles: the dead (often cremated), the landscape and astronomical phenomena and research in the past often focused upon one or more of these elements (Higginbottom et al 2015), with another very common element being white stones or quartz crystal or indeed standing stones made from quartz (e.g. Coles 1906; Lebour 1914; Martlew and Ruggles 1993; Burl 2002, Darvill 2002, Gillings 2015; Nicholas et al 2017). A most fascinating point from Cooney is that rather than the standing stone being there to mark a burial, cremations may have been placed at the special site of the standing stone (2000: 135). A similar comment is made in passing on the Scottish monument database, which, talking about the site of Orwell, the 1973 record states that: ‘The discovery of cists and cremation patches in the same field in the early 19th century suggests that the stones have acted as a focus for such burials (1973)’ (The author of the comment is unclear: <https://canmore.org.uk/site/27912/orwell>). Without commenting whether the monument or the burials appeared first, Fergusson relates that ‘Out of (say) 200 stone circles which are found in these islands, at least one-half, on being dug out, have yielded sepulchral deposits (1872: 49)’. Much later Cooney, discusses how standing stones in and outside passage tombs at Bryn Celli Dhu (2000: 134) uphold some parallel with the anthropomorphic stelae placed inside and on the left of the end of the passage tombs (Giot et al 1979: 177-9 in Cooney 2000: 134), and perhaps a similar assessment might be said of the re-used stelae of Table des Marchands. That standing stones could be *representations* of ‘people, ancestors or mythical beings’ is mooted by Bradley (2011: 52), but he doesn’t go as far to say that they could be living parts of a community and both Richards (2013) and Bradley (2011) uphold that standing stones surrounding passage graves may have been the inspiration for later stone circles. A related idea was in evidence at least as far back as Fergusson, who suggests that stone circles with avenues may well have evolved out of chambered passage tombs, essentially retaining the *outer* geometric pattern, perhaps of the mounds (1872, pp.

51–52 in Higginbottom 2020: 28 - open access article), whilst Cummings and Richards (2013 in Richards ed 2013), argue that such circles are there to protectively enclose them. Together, these notions find parallels with Burl's ideas which suggest that stone circles grew out of specific monuments for the dead. In 1982, Burl proposed that if the enlarged forecourts of chambered tombs are from whence circles originate, we might then expect the early rings to possess human bone given that their ancestry lay with the tombs (Higginbottom 2020: 33). The earliest known standing stones of Scotland, the great stone circles, have just such signs: cremated bones found in the central hearth of the circle of Stenness, Orkney (Ritchie 1976) and the signs of the existence of burial mounds in one of the quarters of the circle of Callanish, Lewis (Ashmore 2016). Thus the creation of these standing stones entails the dead from the very beginning. If the early stages of Stonehenge really primarily included megaliths rather than wooden posts then the same can be seen here, too, in this great southern monument (Parker Pearson et al 2009: 25, fig.2). Whilst a variety of standing stone monuments were built in Scotland since the Late Neolithic (eg: Bradley 2000: 160-61; Noble 2006; Brophy and Noble 2012; Sheridan et al 2010: 47; Bradley 2016: 119), it wasn't until the Middle Bronze Age (Middle Bronze Age) that a large number of short *linear* monuments *or single menhirs* appeared in various areas across Scotland but most especially in the west. They were often smaller than those of the Late Neolithic (either in numbers of stones or height of stones), as too were the monuments of the Chalcolithic and the Early Bronze Age, and were made up of single menhirs, pairs and small rows (Figs 2A-D). These appear in relatively large numbers, or at least they appear in numerous locations across the landscape, and they were still connected with the dead, either with burial cairns or within view of cairns or tombs and/or very often with *cremation remains placed as foundation deposits* or deposited separately up against the outside edge of stone pit (Higginbottom et al 2015: 600-01).

To add to his above argument about the origins or influences upon the appearance and creation of circles, Burl states that 'because of Neolithic stone circles links with the (earlier Neolithic) astronomically oriented tombs, their design would include astronomical alignments' (Burl 1982: 152). The

most recent statistical work on the Callanish and Stenness of Scotland, strongly supports the astronomical connections of these stone circles (Higginbottom & Clay 2016a: 2016b). With these conclusive tests we have the first statistical outcomes that strongly support the notion that the 12 astronomical targets found in the standing stone monuments of the Middle Bronze Age, themselves also statistically confirmed (Ruggles 1984; Higginbottom et al 2000, 2003), are to be found first in these earliest-dated standing stone monuments of Britain. These astronomical targets are the rising and settings Sun at the Summer and Winter solstice (n=4), the Sun at or near the equinoctial points (n=2), and the Moon at its most extreme rising and setting points in its cycle in the north and the south (major standstill) as well as the same at the Minor standstill (n=8; Higginbottom et al 2000, Higginbottom 2020). During the Middle Bronze Age, the most frequently encountered alignments are to the Moon and the Sun at the Winter solstice. In agreement with Martlew and Ruggles (1993), it is the full Moon that was the most likely phase for the lunar alignments, given the celestial dynamics and the resulting celestial show that occurs at these times (see astronomical explanations below). Thus we can say that, at this point in our knowledge, the megalithic standing stone communities in the far north of Britain likely have connections to astronomical phenomena that go beyond the earlier chambered tombs of the Orkney Isles and those of Ireland in terms of their complexity.

The Natural Order - astronomy explained

There is no simple relationship between the solar and lunar cycles, to the extent that at a solstice the phase of the Moon varies from year to year, although a full Moon must always occur within two weeks of a solstice and, since the Sun is moving slowly around the time of the solstice, the celestial dynamics of the Sun and the Moon remain largely unchanged throughout this period. If the Sun is at or near the summer solstice, i.e. in the north, then the full Moon, which must be directly opposite the Sun, must be in the south in the vicinity of the winter solstice point. It is in this direction that most distant horizons occur and monument orientations face for approximately half of the Middle Bronze Age monuments of western Scotland researched closely to date (Higginbottom 2020; also see below). The converse is also true, when the Sun is at or near the winter solstice point in the

south, the full Moon must be near the summer solstice point in the north: that is, where the majority of closest horizons occur for these same sites. These solstitial points happen to be close to the most extreme rising and setting points of the Moon in its 18.6-year cycle. Thus, at a single site, we have the possibilities of seeing the Sun setting in the NW at the summer solstice as the Full Moon rises in the SE, which could *also* be at the time of the Moon's most extreme rising point in the south (every 18.6-year occurrence). The coincidence of the first two of these events creates enough light for outdoor activities for 24 hours. At the winter solstice, when the Sun rises and sets in the south, a full Moon can appear opposite, in the northern sky. This is all the more striking because of the Moon's occurrence in deeply dark skies on the longest night of the solar year, and it travels for a time greater than the Sun, bringing light (Higginbottom et al 2015). It is such a Moon at the MajLS, that could be viewed at the single standing stone at Barrapol on Isle of Tiree, in the direction indicated by the alignment with Hough (CT8–CT7), for example. Thus the orientations of these rising and setting points were indicated by the very standing stones themselves (Higginbottom et al 2015). This interest in specific orientations was determined by either the alignments of the monuments' axes (intrasite) or a line between two monuments that were inter-visible (intersite; Higginbottom 2003, Higginbottom et al. 2003; Higginbottom et al 2015). The immediate discussion above on astronomy relates to a simpler concept of astronomical interests used in archaeology, that of the alignment of a monuments internally or alignments created between monuments. However, there have been people who have investigated other areas around the horizon that might also indicate a connection to astronomical interests for prehistoric people. In the early 90s, Ruggles and colleagues for instance, began to look at the astronomical potential of prominent hill summits, and then more widely (Ruggles & Martlew 1992, Ruggles et al 1991).

In the last 15 years or more there has once again been a stronger focus on the entire topographic horizon surrounding each monument and the connections these might have with the wider view of the astronomical phenomena encircling each site (Silva and Pimenta 2012; Vilas-Estévez 2015, 2016; Higginbottom & Mom 2020, 2021, in press).

In the simplest terms, studies in western Scotland have revealed that the particular horizon shapes or topographies that surround each monument generally fall into two groups: those with their horizons higher and closer in the north than the south (named classic sites) and those with the reverse (reverse sites). Further, most, if not all, of the rising and setting events are connected to clear topographic features in NE, NW, SE, SW directions. Essentially, whilst it is clear that these horizon shapes in themselves are naturally occurring, the choice to use them is not (Higginbottom et al 2003; Higginbottom and Clay 2018; Higginbottom 2020), and further, the choices of being able to observe specific astronomical phenomena in a consistent way in relation to these specific horizon shapes and cardinal directions across sites and across regions (Higginbottom 2020), reinforces the idea of shared, chosen traditions (Higginbottom et al 2015; Higginbottom & Clay 2016b; Higginbottom 2020). The archetypal way to illustrate these points has been through the sites of Lochbuie or Uluvalt for monuments with their horizons higher and closer in the north (Higginbottom 2020: 56, fig.2a) and Gruline and Cillchriosd for the reverse (Higginbottom 2020: 80, fig 11 - 82: fig. 13). These four sites are on Mull, but the same can be illustrated for sites in the regions of Argyll and Kintyre (Higginbottom 2020: fig. 2b-h). From Figures 3A and 3B, we can clearly see that the most extreme rising and setting points of the Sun that occur at the summer solstice, and those of Moon that occur at any time in its lunar cycle of 18.6 years, are connected to the highest topographical features surrounding the monuments, and these are located in the NE and NW. To the south at these sites, we see that the most extreme rising points of the Sun that occur at the winter solstice, and those of the Moon that can occur at any time, are connected to the highest topographical features in the southerly directions. Note too, that we often have significant water observable in the south and that the features in the north are relatively higher and closer than those in the south. Other notable features at these sites include the Moon travelling close or along the southern horizon at its most extreme southerly travels as well as the setting of the equinoctial Sun into clear topographical features (Higginbottom 2020). These rolling Moons are striking. For those sites, like Gruline, Cillchriosd or Balliscate, with their most dominant topographical features in the south, we see that the southern horizons can act as blocking features where the Moon is not seen at all along its most extreme southerly path and for Gruline the Sun at

the winter solstice is barely observable (Higginbottom 2020: 56, fig 2e - 80, fig11). At Gruline, therefore, the higher ranges in the south, then, creates a very dark experience on the day with the least amount of hours of sunlight, at the local level (Higginbottom and Clay 2016b). We also see at Gruline that when a southern Moon appears at the time of the minor standstill, if it is at the summer solstice, it will be a full moon. As the southern horizon is so close and relatively high, this rolling full Moon would be spectacular and loom large, and local area would be very bright (for a definition of the minor standstill phenomenon see the open access paper Higginbottom 2020: 37; Higginbottom 2020: 80, fig11). Finally, this southern horizon's height (and direction), when from the location of the standing stones at Gruline, creates the perfect setting to watch body after body roll along the horizon through the night at the winter solstice (Fig. 4; qv Higginbottom & Mom in press b, fig. 7 for more detail).

We can clearly see that there are orientations and light displays connected to horizon shape for sites in western Scotland. What hasn't yet been fully explained or evidenced in this chapter is how such astronomical displays were connected both to the 'times of the year' as well as the observable 'times of the day'.

Marking Time

What has become clear researching the night-scapes of the standing stones, are the intricate rhythms of the bodies as they make their way across the sky as well as the way they may interact with the horizons surrounding the monuments. Above it was discussed the way the Sun is blocked by a hill in the south at Gruline. The effect of this at the summer solstice is that the hill is effectively lit up from behind during the day, at and around the winter solstice. Further investigations into several sites revealed that the prominent features on the horizon are backlit from the Sun just prior to rising or just after setting at the solstices. This is even more prominent at the summer solstice for those sites which have high horizons in the NE and NW, or the SW for those sites with distinct hills or mountains in the south or SE or SW (Higginbottom & Mom 2020; 2021). More striking at some sites than others, this back lighting, then, causes the horizons of prominent or distinct topography in the ordinal directions of the northeast, northwest, southeast, southwest to glow. This sets up these horizon areas as a

focal point in one direction ‘at a time’, in stark contrast with the rest of the landscape which is dark or darker. Remember, too, it is into and out of these horizons that glow at dusk and dawn, that the Moon and Sun are seen to rise out of and set into at their extreme rising and setting points - it is as if they have been marked out. What is most intriguing is the way these phenomena are played-out together. Thus, at the night of the summer solstice, after the Sun has set, at classic sites the NW mountain is backlit (Fig. 5A). Then, as the Sun moves further below the horizon, the halo of light above the horizon almost vanishes, then it *reappears at midnight*, as a soft glow arching over true north (Fig. 5B; Higginbottom & Mom 2020). At classic sites like Lochbuie and Uluvalt, this is accentuated by the fact that north has ‘been positioned’ in the middle of a dip between two significant single, or sets of, peaks, as viewed from the monument (Fig. 5B; Higginbottom & Mom 2021). As midnight passes and as we move towards dawn the entire mountain or hill in the northeast is backlit, and the rest of the landscape is still relatively much darker as the mountain or hill takes pride of place as the visual focus. This is the feature out of which the summer solstice Sun will rise. Other striking midnight phenomena include the brightest group of stars in Ursa Major (UMa) and Ursa Minor (UMi). These stars are arranged in a curving shepherd’s crook. There are distinctive views of these stars that occur at the winter and summer solstice when you are standing at a monument. For example, at midnight at the summer solstice these stars are positioned as a group horizontally low in the sky in the north, with Merak, the second star in the chain from the ‘right’, immediately above true north (Fig. 5B; Higginbottom & Mom 2020). At the winter solstice, UMa is directly overhead of the viewer, at the zenith, but the group of stars making up UMi – also a shepherd’s crook-like but smaller, now sit low in the sky in same position that UMa occupies at the summer solstice. However, the marking of time of the night and the year of that night, goes farther than observations at midnight, which is the halfway point between the beginning and the end of darkness.

The following examples are about the individuality of place within a shared system of collective information. As with the shared views above, these views are linked to particular epochs and times of the year. Due to the limits of space, just use a few examples with references to the fuller scientific research and descriptions are offered (see Higginbottom & Mom 2020, 2021, in press). Note that the

author does not expect that prehistoric people marked time in the way of the 24-hour clock like 21:50, these times are just used as our modern day markers and notation for the events we observe, however, what is significant is what astronomical body is where and a what part of the night and the order in which they appear and how the bodies move in relation to each other. For this is how an observer watches the sky. Thus, soon after the winter solstice Sun has set at Ardnacross or Lochbuie, for example (approximately 16.30), with the bright sun-rays remaining, Mars, Jupiter and Venus are heading westward, and the bright stars of Orion's belt rise in the east-southeast. At 16.40 at Lochbuie, and all at the same time, Mars sits above the cardinal point of *south*, Procyon sits above *east* and Altair sits directly *west on the horizon itself* (Fig. 6A). At Ardnacross, UMa has been slowly turning and at 21.00, it *sits vertically above the stone* with the star Phecda of UMa sitting most centrally (Fig. 6B; the projection for this view, Mercator, has been created in order that a higher sky-view can be seen). Thus through the very existence of the standing stones, combined with their location, the complexity of visions of the night skies are indicated to observers. They reveal how the seasons are linked to the appearances and disappearances of specific bodies and celestial phenomena and the 'times' that these occur and where their locations in the night sky can be read through topographical and astronomical indicators (There are several fuller discussions on time-keeping events that occur at these sites (Higginbottom & Mom 2020, 2021, in press).

Bodies and Interpretations

Heavenly Bodies

Specifically, the visual experiences observed at the standing stones show the coming together of the disparate liminal properties and transformations of time expressed as events: *becoming* twilight, morning or evening as well as night with the tracking of 'time' through the darkness. We have, too, the days of the solstices, which themselves designate the alternation of warmer and colder seasons, and we can see the beginnings and endings of the 18.6-year lunar standstill cycle. These are experiences of transformations at the most fundamental levels, where events are equated with, and designated by, specific heavenly bodies, their movement and topographical positions. It is near, along and

upon the horizons that the transformations of astronomical bodies are often witnessed. Therefore, the horizon is a very significant, even liminal, place: it is the edge of the world, perhaps containing liminal 'powers'.

From this, it is possible to envisage that certain astronomical bodies, like the Sun and Moon, were also liminal entities, whose forces or activities were highlighted, and perhaps represented, by their topographical limits. The Sun as a transforming body can be seen to transform itself in relation to location (north and south as well as east and west, high or low in the sky, as well as above and below the horizon). In doing so, the Sun transforms time and the world around it: bringing light or leaving darkness, supplying warmth or offering cold, inaugurating the 'rites of Spring' with abundant blossoms and the fertility of the land. The absence and presence of the Sun are clearly linked to the major and minor cycles of life and its total absence to future death.

The Moon is transforming also. It appears to change shape daily and unlike the Sun, the actual body can be seen during the day or night. The Moon moves through its cycles of large golden orbs rising in the night brightening the dark world, to a variety of pale crescent shapes during the day or night which face in different directions until it finally vanishes, leaving people in darkness at night, whilst the stars and planets dominate the heavens. As the Moon moves through these visible changes, it appears to do so in relation to the Sun's position and that of the earth; it also transforms its location. Thus, the Moon, as with the Sun, can represent light and darkness, presence and absence, and through self-transformation, it also transforms time and the world around it. Finally, through such complex locational 'dances', the Moon can be cast into shadow at night (eclipses) yet it is seen to possess the supernatural capacity to destroy the all-powerful, seasonal creating Sun, by briefly obliterating it during the day. Through the knowledge of the celestial cycles, it is possible to predict these. Thus, as the Moon is also the most frequent target of the Middle Bronze Age standing stones, it seems clear that the Moon's powers are recognised by the people who created these monuments.

Earthly Bodies

Higginbottom et al 2015 uphold that death is visibly a twofold transformation, where the first stage transforms an animate, conscious being into an inert, unconscious body (2015: 639). In a sense, one's body now actually exists within two states of Being at the same time. For this is actually an end of life as well as a state of liminality, for the ultimate physical change is yet to come. In the second stage, the body undergoes a series of different visible changes: a reduction through decomposition leading to skeletalisation. Thus, each stage of this twofold transformation contains an ending. As a consequence, Earthly bodies, which were once powerful and relatively unchanging like the Sun, undergo a process of predictable change on death, like the Moon moving from Full to New (Higginbottom et al 2015: 639). Through the erection of standing stones oriented to the Moon and the depositions of cremated human bones in their packing material, or as separate burials at their feet or in nearby cairns or other monuments, these associated transformations are brought together. Higginbottom et al argue that '**such combinations are consistent, meaningful and powerful** (2015: 639)'. In relation to standing stone monuments at least, funerary cremation is seen to have at least two entwined purposes. It is used to accelerate the second half of the transformative cycle, namely reduction. It is also considered an initiation rite of sorts, where fire must be used to transform the Body in order for it to take on the full transformative powers of the Moon, that is, to take on its regenerative powers (Higginbottom et al 2015: 639), and we have evidence also of hearths, fire places or possible pyres nearby several standing stone monuments or associated charcoal (Benson 1990; Bradley 2005; Burl 2000; Duffy 2010; Marshall & Murphy 1991: 54, 65; Ritchie 1976; Watkins 1926: 179-245; Williams 1988). Through cremation, the Body is the new Moon and is part of the greater cosmic order of cycles and change. Therefore, the process of re-creation can now begin more quickly.

Higginbottom et al 2015 argue that the *re-creation*, or making the Body whole again, as well as locking it into the cosmic cycles forever, occurs when a standing stone monument is erected in association with this transformed Body and the Moon itself. Specifically, the standing stones have now

gained their local power and supernatural associations from the newly transformed dead, which themselves were transformed through ritualised fire ‘magic’, perhaps on the night of the New Moon itself. These stones also gained, somewhat more directly, something of the celestial power of the Moon through their alignment to this body, with the erection of the stone alignment possibly occurring on the night of a Full Moon. The stones and the transformed dead have fused identities, such that the standing stones have become the living and the beginning of things, with the power or representation of the dead, representing the endings. Together, then, the megaliths and the dead were empowered by the cyclical forces of the celestial bodies and together were witnesses of the cycle of life and of the universe. In this way, the standing stones are now *living witnesses* to the cosmic order before them, which was the desired supernatural outcome (Higginbottom 2003; Higginbottom et al 2003; Higginbottom et al 2013).

As pointed out in Higginbottom (*in preparation*), much of these same ideas from Higginbottom et al 2003 and Higginbottom et al 2013 can also be seen in Gillings and Pollard’s 2004 work on Avebury and Richards et al.’s work on *Great Stone Circles* (2013). Specifically, Richards states that:

The juxtaposition of human remains, in the form of cremations and standing monoliths in stone circles is tantalizing. As noted above, the setting up of a monolith into a vertical position draws an analogy with the human body. When monoliths are directly associated with human remains, can we assume some form of fusion where the human remains meld with the monolith and it becomes animated? The idea that standing stones within circles were conceived as ‘living things’ imbued with an essence is seductive. While potentially taking numerous forms, such animation need not constitute a permanent state and could assume a degree of transience. When animated, however, the stones may have become extremely dangerous and strategies of binding or wrapping, as discussed earlier, would be essential. Indeed, imagine an animate world (see A. M. Jones et al 2011), composed of living things and dangerous forces, where the need to contain and control was of paramount concern. Under such conditions, the consistent deployment of architectural devices of wrapping, as manifest in virtually all areas of late Neolithic monumentality, become comprehensible (2013: 28-29).

The most important differences between the interpretations found in Richards’ work and the current authors is the issue of binding and wrapping maleficent powers. The current author sees the binding forces occurring between the dead and the stones, to

perpetually witness the superlative Cosmos and participate in its Magic or Power: its power of constance and constancy, its power cycles of life and death. These are interpreted as mirroring forces of each other, giving and taking - where the attuning to the balance might be the goal of a successful and maybe powerful existence for prehistoric people. Finally see that Higginbottom et al's 2003 conclusions about stones as *participants* in cosmological events finds echoes in both Gillings and Pollard's and Richards' works. In the latter the megaliths are 'living entities' (Gillings and Pollard's 2004: 69) and in Richards' work, he writes about 'Stone circles as animate entities' (2013).

Last Words

Through the construction of stone, the cremated dead and considerations of specific astronomical phenomena, the builders of monuments produced dramatic bounded visual events in time, that are played out using a spectacular show based on light and darkness, and, manipulating these through positioning, demonstrate the significance of the Moon, Sun and other bodies. The standing stones were infused with eternal life and had the power to connect all that is earthly to the heavens above. This was secured through the use of Earth, Fire and Lunar Magic. These Beings would be the Eternal Witnesses of, or could even perhaps ensure, the continuity of what people knew - the Cosmic Order.

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Captions

Figure 1: (a) The Late Neolithic Ness of Brodgar complex during excavation, © Douglas Cairns; (b) Ness of Brodgar reconstruction, highlighting the location of the ‘centrally’ placed standing stone, © Dylan Cole.

Figure 2: Examples from the Isle of Islay. There are a number of small, medium and large standing stones across Islay. (a) Port Ellen - tall, single standing stone on southern region of the Isle of Islay. (b) a small standing stone on the south of Islay; (c) a small, slender slab in the northeast of Islay; (d) Achnacarranan stone row, also in the south.

Figure 3: These are the 3D renderings of a landscapes around standing stone sites in western Scotland, along with certain paths of the Sun and the Moon at 1500 BC (see below). (a) An example of a classic site. This landscape model is that of Craigs in southern Kintyre, Argyll. The vertical red line represents the direction of an alignment between this monument and Mingary, visible from Craigs. (b) This landscape model is that of Balliscate, a stone row on the Isle of Mull. The vertical red line represents the direction of an alignment created by the axis of this monument. The curved lines on the figure represent the paths of the Sun and the Moon that are taken at the times of their most extreme rising and setting points *north and south* in their cycles. The Sun and Moon’s paths are marked as follows on 3(a) and is a guide for both figures: MajSS: The Moon at the Major Lunar Standstill, SS: Summer Solstice Sun, MinSS: Moon at the Minor Lunar Standstill, Eq: Sun at the Equinox, WS: Sun at the Winter Solstice. The vertical red line represents the direction of an alignment along the axis of this stone row. Note the repetition of the landscape from south to south-west. This makes it easier for following the paths of Sun and Moon in the south. Software and 3D landscapes created by Andrew Smith. (<http://www.agksmith.net/horizon/>). Based upon the Ordnance Survey OS Terrain™ 50 DTM with permission of the Controller of Her Majesty’s Stationery Office © Crown Copyright.

Figure 4: This series of images provides examples of the movement of astronomical bodies rolling along the horizon in the south at Gruline, a stone pair on the Isle of Mull. (a) shows Jupiter and Venus moving towards the end of their journey soon after the Sun’s body itself made an extremely brief appearance on the right-hand-side of the dominant hill in the south (its second of the day, the first being on the left-hand-side of this same hill). (b) shows that the arcing path of Jupiter and Venus clearly follow the shape of this southern horizon as the night proceeds. (c) demonstrates that the path of other bodies also follows this horizon line. Here Sirius and Rigel actually travel much closer to the horizon. All of these bodies rise in the southeast and closely follow the horizon shape for their entire journey until they set. Such images are created using the software Stellarium (Chéreau 2016; Gates, M, Zotti, G, Wolf, A & Gerdes, B 2016). Here one can upload either a photographic panorama taken at the site or a digital terrain model converted to an image. Stellarium allows you then to choose the locational data and the date when you wish to observe the astronomical phenomena.

Figure 5: Skies at 1500 BC (a) The back glow of mountains in the north at Lochbuie the summer solstice; (b) This is a view of the sky at midnight at the summer solstice. Note the location of True North between the peaks and the glow arching over true north. We can also clearly see the asterism of Ursa Major (UMa) arranged like a curved shepherd’s crook; positioned horizontally low in the sky in the north, with Merak, the second star in the chain from the ‘right’, immediately above true north. These images are created using the software Stellarium (Chéreau 2016; Gates, M, Zotti, G, Wolf, A & Gerdes, B 2016).

Figure 6: Skies at 1500 BC (a) Night at the winter solstice at Ardnacross. It is 16.40: Mars sits above the cardinal point of *south*, Procyon sits above *east* and Altair sits directly *west on the horizon itself*. A little arc of stars lines up with the arc at the top of the remaining standing stone of Ardnacross; (b) UMa sits *vertically above the stone* at Ardnacross, with the star Phecda of UMa sitting most centrally at 21:00. These images are created using the software Stellarium (Chéreau 2016; Gates, M, Zotti, G, Wolf, A & Gerdes, B 2016).



Figure 1a: Ness of Brodgar reconstruction, highlighting the location of the 'centrally' placed standing stone, © Dylan Cole.



Figure 1b: Ness of Brodgar reconstruction, highlighting the location of the 'centrally' placed standing stone, © Dylan Cole.



Figure 2: Examples from the Isle of Islay. (a) Port Ellen - tall, single standing stone on southern region of the Isle of Islay.



Figure 2: Examples from the Isle of Islay. (b) a small standing stone on the south of Islay.



Figure 2: Examples from the Isle of Islay. (c) a small, slender slab in the northeast of Islay; (d) Achnancarranan stone row, also in the south.



Figure 2: Examples from the Isle of Islay. (d) Achnancarranan stone row, also in the south.

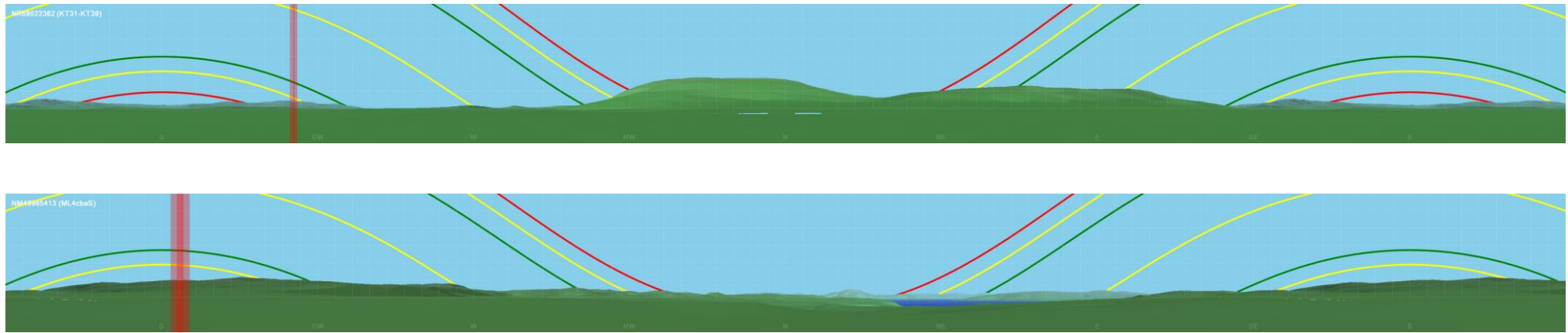


Figure 3: These are the 3D renderings of a landscapes around standing stone sites in western Scotland, along with certain paths of the Sun and the Moon at 1500 BC (see below). (a) An example of a classic site. This landscape model is that of Craigs in southern Kintyre, Argyll. The vertical red line represents the direction of an alignment between this monument and Mingary, visible from Craigs. (b) This landscape model is that of Balliscate, a stone row on the Isle of Mull. The vertical red line represents the direction of an alignment created by the axis of this monument. The curved lines on the figure represent the paths of the Sun and the Moon that are taken at the times of their most extreme rising and setting points *north and south* in their cycles. The Sun and Moon's paths are marked as follows on 3(a) and is a guide for both figures: MajSS: The Moon at the Major Lunar Standstill, SS: Summer Solstice Sun, MinSS: Moon at the Minor Lunar Standstill, Eq: Sun at the Equinox, WS: Sun at the Winter Solstice. The vertical red line represents the direction of an alignment along the axis of this stone row. Note the repetition of the landscape from south to south-west. This makes it easier for following the paths of Sun and Moon in the south. Software and 3D landscapes created by Andrew Smith. (<http://www.agksmith.net/horizon/>).. Based upon the Ordnance Survey OS Terrain™ 50 DTM with permission of the Controller of Her Majesty's Stationery Office © Crown Copyright.

Figure 4: This series of images provides examples of the movement of astronomical bodies rolling along the horizon in the south at Gruline, a stone pair on the Isle of Mull. See Caption above..



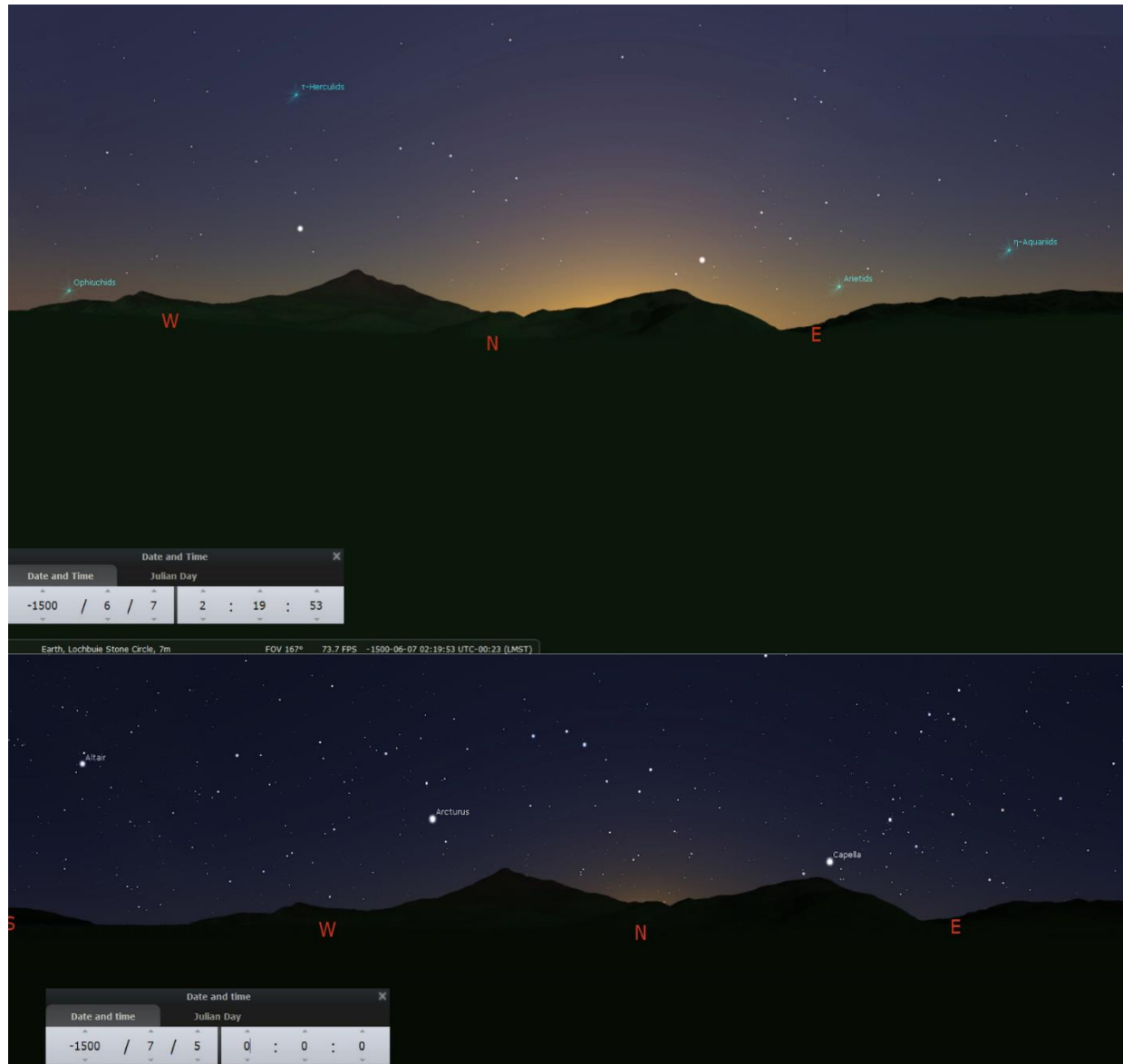


Figure 5: Skies at 1500 BC (a)The back glow of mountains in the north at Lochbuie the summer solstice; (b) This is a view of the sky at midnight at the summer solstice. Note the location of True North between the peaks and the glow arching over true north. We can also clearly see the asterism of Ursa Major (UMa) arranged like a curved shepherd's crook; positioned horizontally low in the sky in the north, with Merak, the second star in the chain from the 'right', immediately above true north. These images are created using the software Stellarium (Chéreau 2016; Gates, M, Zotti, G, Wolf, A & Gerdes, B 2016).



Figure 6(a): Skies at 1500 BC Night at the winter solstice at Ardnacross. It is 16.40: Mars sits above the cardinal point of *south*, Procyon sits above *east* and Altair sits directly *west on the horizon itself*. A little arc of stars line up with the arc at the top of the remaining standing stone of Ardnacross



Figure 6 (b): Skies at 1500 BC. UMa sits vertically above the stone at Ardnacross, with the star Phecda of UMa sitting most centrally at 21:00. These images are created using the software Stellarium (Chéreau 2016; Gates, M, Zotti, G, Wolf, A & Gerdes, B 2016)