
The Routledge Handbook of Sensory Archaeology

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Preface

This *Handbook* aims to take stock of and contribute to the ever-expanding field of ‘sensory archaeology’ (also known as ‘archaeology of/and the senses’ and ‘sensorial archaeology’). It provides an extensive set of specially commissioned chapters, each intended to summarize and critically reflect on progress made in this dynamic field during the early years of the twenty-first century. Its intended audience includes scholars, students and others with an interest in archaeology: primarily archaeologists but also scholars working in related disciplines equally engaged with ‘sensual culture studies’.

Our introductory chapter identifies and discusses the key current concepts and debates of sensory archaeology and examines how our authors have engaged with them. The following chapters are then divided into three parts. Part I provides overviews and commentaries on sensory archaeology, its methods and its place in wider, interdisciplinary sensual culture studies and beyond. Part II presents a set of thematic studies, exploring diverse sensorial practices, contexts and materials. Part III then offers a range of archaeological case-studies by period and region from a selection of different parts of the world. Finally, our afterword re-examines the range of research methods now fruitfully being brought into the service of sensory archaeology.

A couple of disclaimers are necessary. In Parts I and II we have deliberately not included overview chapters on individual senses (e.g. sound), in order to avoid reifying the Western sensory canon but to encourage thinking about multi-sensoriality. In Parts II and III we do not claim to provide a comprehensive thematic, chronological or global coverage; this would be impossible for many reasons, but we do believe that we have drawn together a sufficiently representative sample of scholars, themes and case-studies to do justice to the vibrant field of sensory archaeology.

We would like to close by acknowledging the generous support of a range of colleagues during the process of producing this *Handbook*: our colleagues at Routledge and Deanta, especially Matt Gibbons, Molly Marler, Katie Wakelin and Áine Madden; their peer reviewers of the original book proposal, who included Matthew Johnson and Augusta McMahon; our authors, and especially Ruth Tringham and David Howes who offered us regular encouragement and advice; our peer reviewers, who anonymously commented on each of the chapters; and our respective institutions, Durham University and University College Dublin, for providing us with the resources to work on this stimulating project. In addition, we would like to thank the National University of Ireland Publications Scheme for awarding us a Grant Towards Scholarly Publications.

*Robin Skeates (Durham, UK) and Jo Day (Dublin,
Republic of Ireland)*

Darkness and light in the archaeological past

Sensory perspectives

Marion Dowd

Abstract

Darkness, shade, light and shadow are fundamental to every aspect of human life, yet are frequently overlooked in archaeological research. This contribution seeks to explore how past human sensory experiences may have been affected by the phenomena of light and darkness and how these may have been manipulated to fulfil particular practical, ritual or symbolic purposes. The role of the archaeologist in attempting to capture how buildings, structures, archaeological sites and artefacts are experienced based on varying levels of luminosity or when submerged in darkness is also examined.

Introduction

Darkness and light profoundly affect how we are in the world—how we move, act, interact, respond and feel in relation to landscapes, monuments, places, buildings, animals and other people. Multi-sensorial experiences of these phenomena are often automatic: the darkness of night-time finds us more attuned to touch and hearing, while the bright light of day floods the eyes with visual stimuli expanding our horizons. Although natural elements of daily life, darkness and light can also be deliberately created, banished, manipulated, enhanced, prolonged, sought out or avoided. Often considered binary opposites in terms of experience and perception, darkness and light are actually much more nuanced with varying qualities and quantities of illumination as light gradually decreases and darkness increases. The eye, for instance, can take in information on approximately 500 levels of light and darkness (Pallasmaa, 2012, p. 114). This chapter aims to explore darkness and light as sensorial experiences, not only including the five Aristotelian senses (sight, sound, smell, touch, taste) but also those now commonly accepted amongst neurologists including *thermoception* (the experience of heat and cold); *nociception* (the unconscious perception of physical pain); *equilibrioception* (awareness of the body's position and acceleration); *proprioception* (perception of the physical body); *interoception* (awareness of the body's inner physiology); and *non-sense* (sensual experiences that cannot be measured or substantiated, e.g. having a 'sixth sense') (Fahlander and Kjellström, 2010, p. 3; see also Skeates, 2010, pp. 8–23; Hamilakis, 2013, pp. 73–75, 113–114).

Sensory experiences evoke feelings and memories (Fahlander and Kjellström, 2010, p. 6). The levels and intensities of light or darkness in particular spaces and places may have stirred emotional responses in an individual or group, responses that changed through time. For example, souterrains—subterranean drystone passages constructed from c. CE 600–1200 in Ireland—were permanently shrouded in darkness. They functioned primarily as food storage spaces, keeping dairy products and meat cool within ringfort settlements (Clinton, 2001). The darkness of the early medieval souterrain may have evoked a sense of plenty and contentment because of the resources available to the family that occupied the ringfort. A millennium later, some abandoned souterrains were reappropriated by the Irish Republican Army as hideouts from the British military during the Irish War of Independence (1919–1921) (Dowd, et al., 2017). At this time the emotions felt by the men and teenage boys seeking refuge were almost certainly dominated by anxiety and fear. The darkness of the same monument can, therefore, offer different functions that evoke different emotions in different people, an aspect of the past that is as relevant yet as intangible as sensory experiences (Tarlow, 2000; 2012).

Not all light is equal

Light is a dynamic and active force that interacts with matter in varying ways; everyday materials and objects change in appearance under differing light, producing fresh encounters and appreciations (Darvill, 2002, pp. 74–76). The region, time of day and season all affect the colour, level and intensity of luminosity. In Mesopotamia, the intensity of sunlight affects the visibility of colour and its saturation, making buildings appear almost white; shadow provides relief and allows colour to be seen. Sunlight is to be avoided, and shadow is welcome— notions entirely contradictory to the Western (and Christian) concepts of light as positive and shadows as negative (McMahon, 2013, p. 173). Like darkness, light can also be *blinding*. In the Neo-Assyrian city of Khorsabad, Iraq, constructed and inhabited between 717 and 706 BCE, light and shade were deliberately manipulated to convey ideological messages (ibid., pp. 172–174). A 15m-long tunnel leading from one of the main city gates controlled the ‘arrival experience’ of visitors into the city. Emerging from the dark, constricted entrance passage into the spacious, highly reflective and bright courtyard created a dramatic effect. This ‘explosive contrast’ with the ‘violent return’ of the blinding sun may have played on concepts of concealment and display, lending to a theatrical and memorable experience (ibid., p. 174). Dark places such as the tunnel at Khorsabad effectively block out the weather. According to Ingold (2005), weather is essentially an experience of light: ‘seeing *is* the experience of light, *what* you see is *in* the light’ (ibid., p. 101). The dynamism of weather, he contends, means the quality of light, shade, colour and the overall multi-sensory experience is constantly changing. As weather changes, we experience things differently.

Recognising and documenting the manipulation of light, shade, shadow and darkness as ‘architectural elements’ allows us to more closely appreciate how communities in the past experienced their built environment and how these elements were sometimes utilised to intimidate, impress, control and enrich. Regarding the wall paintings in one room of a Pompeian house, dated to CE 71–79:

the early morning sun may have projected sharp beams of light onto this architectural extravaganza and encouraged early risers to take a closer look. Equally, lamplight in the evening would have created eerie shadows against the painted walls, mobilizing the architectural façade and especially the dark brown mythological figures.

(Allison, 2002, pp. 197–198)

Hamilakis (2013, pp. 180 ff) has similarly explored how wall paintings were experienced in the semi-darkness and low light of Knossos Palace in Bronze Age Crete, while Skeates (2010, p. 190) examined the role of light in Neolithic Maltese temples where rays of sunlight, dancing flames and flickering lamps animated the inner gloomy enclosed spaces.

In the past, artificial light banished small patches of darkness for periods of time, notably in the evening and at night. Lamps, torches, fires and lanterns played with shadow and shade as they flickered and spat, casting different levels of luminosity into a space. Certain things and people were brought into focus, while banishing others to the gloom. Specific sensory experiences were associated with these light forms. In the Roman world the pungent smell of lamp oil was perfumed by those who could afford it (Classen, et al., 1994, p. 20), linking dusk and night-time to fragrant experiences for the prosperous. Beeswax candles are similarly renowned for their pleasant scent (Ekirch, 2005, p. 104). In contrast, poor families across medieval Europe resorted to burning malodorous dried cattle and horse dung in household fires, while tallow candles made from sheep and cattle fats would also have produced rancid odours (ibid., pp. 103, 106).

In the modern Western world light is associated with notions of positivity and goodness, but it is also possible to have too much light. Increased levels of light in modern society and light pollution in urban environments evoke a multitude of physiological and behavioural changes. Excessive exposure to artificial light causes a decrease in melatonin levels which has implications for human metabolism, immune function and endocrine balance (Navara and Nelson, 2007, p. 216). One of the most common complaints of inmates in solitary confinement within prison systems is the presence of too much, rather than too little, light. Natural light and windows are frequently absent from cells, but artificial light may be round-the-clock. This disrupts the natural circadian rhythm, makes it more difficult for an inmate to cope with the oppressive feelings of incarceration and isolation, and can lead to chronic boredom which in turn may result in sensation seeking (Foucault, 1995 [1975], pp. 200–202; Wener, 2012, pp. 177–179). The overall sensory deprivation of isolation can result in cognitive dysfunction, emotional dysregulation, confusion and distortion. One recommendation to combat this has been to install windows in solitary confinement cells, allowing prisoners to observe the natural cycle of day and night, light and darkness (Tartaro and Lester, 2009, pp. 124, 128). The opposite phenomenon—of keeping prisoners in isolation in complete darkness—also constitutes a form of severe punishment (Sorensen, 2008, p. 255). Though not *enforced* confinement to darkness, caver Tim O’Connell documented the sensory and emotional consequences of spending 11 days and nights in Krubera, Abkhazia—one of the world’s deepest caves. O’Connell quickly fell out of a circadian rhythm and experienced oppressive and crushing feelings in the darkness. Images and memories flashed into his memory, while songs and phrases played repetitively in his mind (O’Connell, 2016, p. 135).

Colour, hue and tone can only be appreciated through the sense of vision. They are not fixed entities but change rapidly with the quantity and quality of illumination, environmental conditions and celestial cycles (Boric, 2002, pp. 24–25; Keates, 2002, 116; Myrberg, 2010). Artefacts examined under low light and in dark spaces, such as chambered tombs and caves, take on a different appearance relative to how they appeared in daylight. In terms of metalwork, the hue of luminescent and unusually reflective objects can be seen even without illumination (Keates, 2002, p. 111; Sorensen, 2008, p. 260). The gold, copper and bronze weaponry and jewellery found with such frequency in rivers and bogs across northwest Europe (Bradley, 1998) may have been involved in public night-time rituals where the flash and dazzle of a metal object as it spun through the air into dark waters would have created an evocative and memorable event. The brilliance of metalwork and its ever-changing appearance, whether in natural or artificial light, gave prestige items further animism—something that is difficult if not impossible to capture in

two-dimensional static photographs and line drawings (Hamilakis, 2013, p. 77). This is illustrated by the manner in which the Taíno people of the Greater Antilles in the Caribbean Sea regarded introduced metal alloys such as brass and bronze, versus their own native gold, silver and copper, during sixteenth century contact with Spanish colonisers. The Taíno valued the cheaper introduced brass over all other metals because of its resplendence, shininess, colour, smell and its 'skyness'—a belief that it originated from the bright part of the sky (Oliver, 2000, p. 198).

At times, prehistoric people deliberately sought to engage with and 'meet' light (Hensey, 2008). This may have been a central concern amongst the wide number of Neolithic and Bronze Age sites across Ireland, Britain and further afield that display astronomical alignments. The Irish Neolithic passage tomb of Dowth South, Meath, is aligned on the setting sun at the winter solstice which fills the passage and chamber with light from about 2pm–4pm on the days around the solstice (Stout, 2002, p. 55). Moroney (1999, p. 14) illustrated how light within this darkened tomb was not static but always changing in hue from a warm yellow to a golden pink colour, and from honey-coloured to bright white. Marvelling at the range of colours may have been one of several multi-sensory experiences available to Neolithic participants who witnessed the winter solstice event. Hensey (2015, pp. 57, 68–69) documented the changing sunlight as it crept up the darkened passage and into the central chamber of the adjacent Newgrange passage tomb during the 2011 winter solstice:

The deeper line of sunlight started to increase in width, slowly expanding into the wider band of pale ambient light ... it changed continually; not only with its entry and exit into the monument ... but in its tone and colour.

and as he emerged,

I was blinded; I could see nothing but intense yellow light.

Measuring, adjusting, compensating

Light is measurable. Direct sunlight ranges in strength from 5,000–10,000 foot-candles (fc), moonlight is 0.02fc and beyond 0.003fc the human eye can no longer see (Ekirch, 2005, p. 128). In the Western world, specific levels of light are recommended, if not mandatory, for particular activities. Thus, prolonged reading or laboratory work requires a light strength of 25fc, while sewing should have 100fc of light (Dawson, et al., 2007, pp. 29–30). In the eyes, cones function on light and cone adaptation is complete within seven minutes; that is, when a dark-adapted person enters a brightly lit room, the eyes can see fully in less than ten minutes, even if initially briefly dazzled (explaining the experience of emerging from Neolithic passage tombs or from the tunnel at Khorsabad). Rods are the parts of the eyes that function in the dark, and rod adaptation continues for an hour or more; that is, when someone steps from a brightly lit room into darkness, s/he is at first unable to see, then observes outlines, but it takes over an hour to achieve the absolute visual threshold (Grüsser, 1983, pp. 249–250; Hill, 2016, p. 102). Upon entering the darkened *hare paenga* dwellings (dated to CE 1200–1600) of Rapa Nui (Easter Island) on hands and knees, the abrupt loss of sight would have focussed awareness on direct bodily contact with the ground; the narrow entrance pressing in on the body; the differing textures of the floor surfaces felt by the hands and knees; the change in humidity and warmth perceptible on bare skin; the sensation of skin-to-skin contact with other people; the skin-to-fur/feather contact with animals and birds; the muted sounds from life outside; and the stale stuffy smells of the internal space (Hamilton and Richards, 2016, pp. 95–96). This corporeal full-bodied experience would

have gradually changed as one became accustomed to the interior dimness and began to make out objects, features and people. Emerging from a *hare paenga* into the bright world outside was an equally sensorial feast: the eyes dazzled by the sunlight and colours; the breeze caressing the skin; sounds of the sea filling the ears (ibid., p. 96).

When light is plentiful, vision is the dominant sense (amongst sighted people). But as light diminishes and darkness encroaches, vision becomes redundant which triggers an increased awareness of and reliance on the haptic, olfactory, auditory and gustatory senses. This ‘compensating effect’ has been noted amongst blind and deaf individuals: when one sense is lost or diminished, another becomes more acute. In the Canadian Arctic where there is, at most, six hours of sunlight in December, Dawson et al. (2007) used 3D computer modelling to recreate light levels in Thule Inuit winter dwellings (dated to CE 1100–1500). These homes were lit by stone lamps containing sea-mammal blubber. The project demonstrated that light levels for intricate tasks such as carving and sewing fell well below the level recommended in the modern Western world (see above). To compensate, Thule Inuits have developed a greater haptic sense for carrying out detailed craft activities—essentially a long-term adaptation to the relatively low levels of illuminance experienced in their semi-subterranean dwellings during winter months (Dawson, et al., 2007, p. 31). In prehistoric Europe, house interiors would also have been relatively dark throughout the day. Even the wealthiest had no way of increasing illumination beyond a certain point: firewood and fat for lamps were valuable commodities and thus used sparingly, meaning that artificial light was rarely abundant (Wells, 2012, p. 44).

The interplay of light, darkness and shadow was consciously manipulated for symbolic and practical reasons in many medieval buildings. Social status as well as practical security concerns played out in the architectural design of many medieval castles as reflected in the levels of luminosity. The ground floor, used mainly for storage, would have been in an almost permanent state of semi-darkness lit only by narrow loop windows. The most important floor, usually the second or third storey, was distinguished by having the largest and most elaborate windows. Here, the lord and lady entertained and conducted their commercial and political affairs. Similarly, the holiest architectural zone in a medieval church, the chancel, had the largest windows and was flooded with light, simultaneously elevating the spiritual significance of the clergy while symbolising the light of Christ. Less holy was the nave, which was larger, housed the lay population, and had narrow windows and was dimly lit. Participating in a religious ceremony would have been a multi-sensory experience that was directly impacted by the levels of light and darkness in that particular part of the church. In the ninth to twelfth century Byzantine church, Hamilakis (2013, pp. 18, 75) contends that ritual experience was ‘almost carnal’. Icons and paintings were lit by oil lamps and candles—the flickering light and shadow creating a sense of movement and animation for the religious participants (ibid., p. 76).

Delving into darkness

Darkness has been largely driven out of modern life, but for pre-industrial societies darkness was far more pervasive (Bogard, 2013; Dowd and Hensey, 2016 and papers therein). Night-time, in particular, was associated with specific activities, trades, practices, crimes, behaviours, places and people (see Ekirch, 2005; Koslofsky, 2011; Bogard, 2013). Historically, emotional responses to darkness range from terror, suspicion, fear, temptation and insecurity, to feelings of freedom, liberation, tranquillity and sensuality (Ekirch, 2005; Koslofsky, 2011). While cultural perceptions, responses and engagements with night-time and darkness have been explored in recent scholarship, the related human *sensory experiences* receive far less attention.

If vision is the dominant sense when light is present (e.g. Ingold, 2005), in darkness, 'it is your touch that can see' (Hamilakis, 2013, p. 134). Pallasmaa (2012, p. 50) contrasts the eye, as the organ of distance and separation, with touch, which brings nearness and intimacy. In the past, a person's sense and knowledge of place was far more intimate than nowadays. After sunset, for instance, moving about the house would have been a full-bodied tactile experience and people must have 'long committed to memory the internal topography of their dwellings, including the exact number of steps in every flight of stairs' (Ekirch, 2005, p. 110). Feet, arms and hands were actively engaged. Keeping the home tidy, with everything in its correct place, was essential to prevent accidents by night.

Night-time allows us to hear, smell and feel things that are drowned out in the light and busyness of daytime. Sounds that occur throughout the day and night—such as the cries of a baby, groans of someone in pain, whispers of excited adolescents—might only be heard in the stillness and darkness of night-time. For those inhabiting closely spaced dwellings (e.g. Mesolithic campsites, Iron Age hillforts, Viking towns), in structures that were not soundproof and held greater numbers of people than is typical nowadays, sounds we now consider private were more public: vomiting, urinating, having sex, arguing, domestic violence, etc. Other sounds were closely associated with particular levels of luminosity. The gentle footfall of crepuscular animals such as deer, bear and rabbit would have been largely confined to dawn and dusk. Sounds from diurnal animals such as domesticated cattle and sheep would have gone unnoticed by daytime but would have elicited a strong response if heard during dark hours as this might signal a predatory attack or human intruder. Nocturnal sounds largely confined to darkness—the hooting of an owl or the unearthly screams of mating foxes—likely attracted stories or aroused fears.

Like sound, odours would have been more consciously experienced as darkness grew, and some may have been specifically associated with night-time although also present by day. The smell of animal dung around post-medieval farmsteads, human effluent in medieval towns and burning wood of Palaeolithic camp fires would have been particularly pronounced in the dark. Smell was a tool in navigating darkness when the nose became more sensitive. Tracking animals and hunting by night demanded a keen sense of hearing as well as familiarity with the smell and feel of animal hair, fur, faeces and footprints.

And God saw the *light*, that it was good; and God divided the *light* from the *darkness* (Genesis 1:4)

The early medieval coenobitic monasteries of Western Europe played on sensorial experiences of light and darkness to reflect cosmological and theological precepts (Helms, 2004). With its ascetic life of nocturnal waking, walking, praying and contemplating, safely navigating the monastic complex in darkness would have become automatic (Koslofsky, 2011, pp. 75–76). The primary devotional experience and most important liturgical service, the nocturnes, was conducted in a virtually unlit pitch-black church in the depths of night. Beginning at about 2am, it involved the recitation of up to 99 psalms (Helms, 2004, p. 182). Night-time obscurity provided 'deep silence' and a lack of visual stimuli which focussed the fatigued, hungry and cold monks on supernatural mysteries, prayer and silent meditation. Helms (*ibid.*, pp. 186–187) suggests that the sensory deprivation, exhaustion and sustained rhythmic psalmic chanting contributed to reduced physical drives and passions (facilitating celibacy), which in turn may have led to heightened spiritual awareness and an enhanced sense of calm. Symbolically, the blackness of night represented primeval and primordial darkness, while the matins performed at dawn with the arrival of morning light recalled the light of first creation as well as Christ's resurrection (Helms, 2004).

The annual Catholic pilgrimage to the summit of Croagh Patrick Mountain, Ireland, mirrors the nocturnal rituals of the European medieval monastic. This pilgrimage has existed for over a millennium and is mentioned in several medieval manuscripts. Up until the mid-twentieth century, pilgrims ascended the steep and stony mountain barefoot or on bare knees, and indeed many pilgrims continue that tradition nowadays. The pilgrimage began at dusk, the journey was undertaken in the dark without artificial light, and the summit was reached in time to view the rising sun (MacNeill, 1982, pp. 71–84; Harbison, 1991, pp. 67 ff). Effectively blind, pilgrims had to become closely attuned to the environment, developing a keener haptic sense of the terrain underfoot and a focussed awareness on the perils of this difficult mountain climb when tired and cold. The darkness demanded an almost meditative approach allowing no room for distraction or frivolity. That the pilgrimage took place at a liminal time of the day to a liminal location heightened the emotional content and memorable dimension of the event.

Night-time darkness also permitted a level of secrecy for certain journeys. In Catholic Ireland, from at least the seventeenth century and up to the 1960s, stillborn and unbaptised babies were buried in unconsecrated burial grounds known as *cillíní* or *ceallúnaigh*. These could be situated at a topographical boundary, sea cliff, crossroads, megalithic tomb, abandoned ringfort (early medieval settlement), field corner or derelict ecclesiastical site. For secrecy, the burials took place in the depth of night or just before sunrise (Ó Súilleabháin, 1939; Donnelly and Murphy, 2008). The funerary procession typically involved only the father (or another man from the family) carrying the corpse to a desolate and liminal place in the landscape. He had to depend on his haptic and aural senses to safely navigate through the dark along a relatively unfamiliar route. These solemn solitary journeys must have been laden with shame and anguish, not just at the loss of a child but also in the knowledge that, unbaptised, s/he would be forever confined to limbo and denied eternal rest in heaven. Darkness allowed for a private outpouring of grief. Indeed, Pallasmaa (2012, p. 50) argues that during overpowering emotional experiences we close off vision. If so, the heightened awareness of sounds and smells while moving along quiet country roads and through wet grassy fields in a deeply emotional state would have served to commit these desolate funerary journeys vividly to memory.

Darkscapes: sensory deprivation or heightened sensory experience?

'Darkscapes' can be considered places that are in a permanent or semi-permanent state of darkness, places that 'contain' darkness and are largely unaffected by the daily cycle of the sun—places where darkness is the most intrinsic feature. Spaces and structures that could be considered darkscapes include cellars, basements, sewers, tunnels, dungeons, coal mines, flint mines, copper mines, anchorholds, bunkers, burial vaults and deeper recesses of prehistoric chambered tombs. Candles, lamps and torches would have animated such spaces, but they were never fully illuminated and existed permanently in semi-darkness and shadow. Consequently, olfactory, haptic and auditory experiences were made stronger by the exclusion of visual distractions. The architecture of megalithic tombs, for instance, afforded intense sensory stimulation (Hamilakis, 2002, p. 128). The enclosed darkness 'saturated the senses' of ritual participants and led to a more intense experience of the odours of decomposing bodies, tastes of feasting foods, sounds of voices/chanting/singing distorted by the restricted space, and close bodily contact with other ritual participants (Thomas, 2006, pp. 55–56).

The ultimate darkscape is the cave. The past two decades have seen a proliferation of publications on cave archaeology from around the world, all making reference to a lesser or greater extent to how the inherent darkness of the subterranean world influenced ritual and funerary activities from the Palaeolithic through to late medieval times (e.g. Whitehouse,

1992; 2016; Barnatt and Edmonds, 2002; Lewis-Williams, 2002; Clottes, 2003; 2004; Ustinova, 2009; Mlekuž, 2011; 2012; Bergsvik and Skeates, 2012 and papers therein; Moyes, 2012 and papers therein; Dowd, 2015; 2016a; Skeates, 2010; 2015; 2016; Pettitt, 2016). A focal aspect of this rich body of work is the 'sensory deprivation' of the deep cave environment and the resultant sensory experiences, which were central in the choices that were made to use particular caves for burial, votive deposition, initiation ceremonies, rites of passage, ritual seclusion and shamanic practices throughout the world at different times in the past. Dowd (2015, pp. 7–8) has contested the vision-biased designation of caves as places of sensory deprivation and instead suggests caves are places that afford heightened and intensified sensory experiences, principally because one sense—vision—is closed down. With vision removed, sound, touch, smell and taste are all amplified; sensuous and sensual awareness increases. The need for interpersonal distance increases in darkness and in confined spaces, and thus enforced closeness in caves can lead to stronger responses in an individual and between people (Mlekuž, 2012, p. 202). Emotionally, Sorensen (2008, p. 255) suggests that the adrenaline rush resulting from extreme light deprivation would have created emotional states of awe rather than fear, arguing that our modern association between darkness and fear is learned. Pallasmaa (2012, pp. 50, 114) believes deep shadow and darkness are necessary to think clearly and that they stimulate imagination, daydreaming and fantasy. Taking this one step further, several scholars have discussed how the reduced sensory stimuli brought about by the darkness of caves can induce altered states of consciousness and auditory and visual hallucinations (Clottes and Lewis-Williams, 1998; Clottes, 2004; Mlekuž, 2012).

Caves are arguably the ultimate place in the landscape to explore the depth and richness of the human sensorial experience in darkness, and this is supported by the archaeological record. The dark zones, twilight zones and daylight zones of caves are often used in differing ways, and light within the deepest and darkest areas of caves can be used to dramatic effect (e.g. Faulkner, 1988; Cooper, et al., 2016). Within the Upper Palaeolithic caves of France and Spain, when sight became redundant, palpation was prioritised as a sensory guide, and Upper Palaeolithic artists and viewers were forced into close-up scrutiny of cave surfaces to observe painted images (Pettitt, 2016). Lamp and torch light would have created a constantly moving dynamic, with only small parts of a cave visible at any one time. In Neolithic Sardinia, visually engaging Neolithic art was deliberately placed in one of the deepest and darkest parts of Longu Fresu Cave (Skeates, 2016). Colours—red iron oxide in crevices, grey pigments in the art, a bright green axehead—could only be observed with the use of artificial light, all of which may have involved the deliberate use of darkness and light to play on concepts of concealment and revelation.

The role of the archaeologist in capturing sensorial responses to darkness and light

From earliest antiquarian research through to the present day, documenting and representing archaeology and architecture has been typically from a graphic or cartographic perspective. Photographs, line drawings, elevations, ground plans and building surveys focus on empirical measurements and accuracy, recording walls, windows, doors, breaches and partitions, but do not capture the experience-orientated aspects of *being* in a particular space (Bille and Sorensen, 2016a, p. 6). In standard archaeological drawings, movement is stilled and the structure or monument becomes a passive place: permanent and solid, inactive, devoid of people and without the 'messiness of everyday life' (ibid., pp. 6–7), as if the atmospheric component could be disregarded (Ingold, 2016, p. 103). Monuments and buildings, however, were not

experienced by contemporaneous communities as the ‘all-at-once’ totalities represented in archaeological plans (McFadyen, 2016, p. 53); they were constantly evolving and changing. Archaeological illustrations often focus on externalised imagery and form (ibid., p. 58), but Ingold (2016, p. 163) argues that ‘a building is as much a thing of air, light, sound and mood as it is a construction wrought from solidary elements’. We could say that darkness and light are as much part of a building, structure or monument as the ‘concrete’ walls, foundations, doorways and windows so carefully documented in archaeological publications (Bille and Sørensen, 2016b, p. 159).

So how do we better capture the role of light and dark in sensorial experiences of past places and structures? We flush illustrations and photographs of sites and artefacts with light to give maximum visibility, but in reality these would have been experienced in a myriad of different ways in the past depending on the quantity and level of light. One effective yet simple way is to illustrate, when possible, areas that were permanently in darkness or shade, as Bjerck (1995; 2012) has done for a group of Norwegian caves that were used during the Bronze Age (see Figure 12.1). It is immediately possible to see how light gradually gives way to darkness as one moves through each cave passage and how darkness influenced where Bronze Age artists decided to place art. As outlined in the study of Thule Inuit dwellings, 3D computer modelling is another useful tool in highlighting the changing nature of light, shadow and darkness in buildings and monuments.

Perhaps the most successful way of understanding the roles of darkness and light in past sensorial experiences is through the phenomenological approach of descriptive narratives that

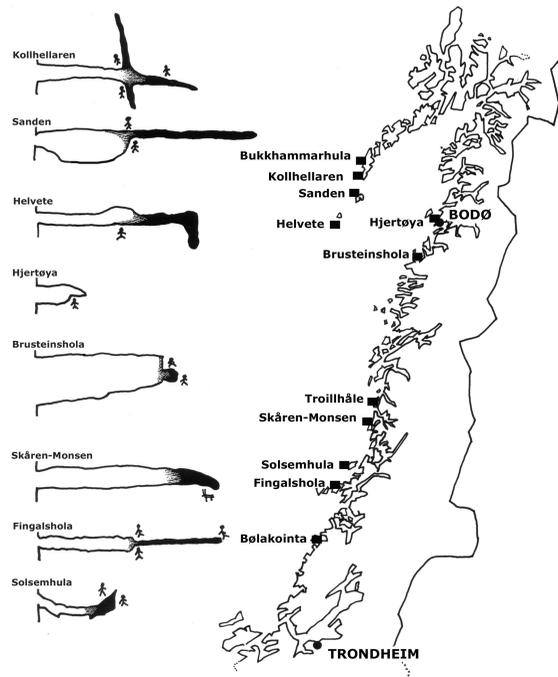


Figure 12.1 Documenting the daylight zones, twilight zones and dark zones of Norwegian caves in relation to Bronze Age rock art. Image: Bjerck, 2012, fig. 5.2.

draw on a researcher's own embodied experiences of archaeological monuments and landscapes. Creative narratives or evocative writing allow us to break away from traditional archaeological writing forms. We can draw on our own sensory experiences, all the time accepting their reflexivity and how explicitly subjective, modern and (probably) Euro-centric these are while also remaining open to the possibility of other sensory affordances (Hamilakis, 2002, p. 103; Skeates, 2010, pp. 5–7; Frieman and Gillings, 2007, pp. 9–10; Hamilakis, 2013, p. 96; Bille and Sørensen, 2016a, p. 11). Though sensory experiences are biological, creating physical reactions in the body, they are also culturally conditioned: different cultures value the senses in different ways at different points in time, and the associated emotional reactions also vary socially and culturally (Nyberg, 2010, p. 15; Skeates, 2010, p. 3; Hamilakis, 2013, p. 10). Many examples of personal phenomenological experiences have emerged over the past decade and serve to animate sites that will never be visited by the archaeologist reading the relevant text. In his examination of Bronze Age art in Norwegian caves, where the changing relationship between light and darkness is paramount, Bjerck (2012, pp. 58–60) brings the caves alive:

you breathe in a slight odour of earth, mould and dust – damp and cool ... you also notice the cold and the fine hairs rising on your forearms. Both breath and speech become visible in fleeting mists ... When you listen, it is the lack of sound that strikes you ... shadows seem to advance from all parts ... the most profound embodied experience is perhaps when you re-enter life and the light outside ... the living everyday things we always see but hardly notice ... with 'reset' and highly receptive senses bombarded by movements, scents, colours, contours, sounds.

Bjerck highlights how 'the wide repertoire of sensory dimensions is seldom included' in scholarly work, 'not because they have not been experienced, but because they were not deemed valid within a research tradition built on objective and quantifiable data' (2012, p. 55).

Photography, multi-media technologies, experimental archaeology and computer modelling can all be used to complement 'thick description' and/or create 'sensory ecologies' (Dawson, et al., 2007, p. 18; Hamilakis, 2013, p. 96). Artistic reconstruction images can encourage us to consider sites under different levels of illumination, sites that we usually visualise in the bright light of day, not least because that is when they are excavated and recorded. This can be demonstrated by looking at two Irish reconstruction drawings based on recently excavated sites (see Figure 12.2; Plate 4).

A Bronze Age cremation pyre from Mahanagh, Galway, dated to between 1735–1535 BCE, is brought to life in a night-time setting illustrating the multi-sensual nature of the ritual: the odour of burning flesh which may have been masked by the placement of fragrant flowers on the pyre; smoking wood; the intense heat of the burning mass; the transformation of people to dark shadows; and the weeping of mourners (Bolger, et al., 2015, pp. 38–39). The dim light within an early medieval ironworking workshop at Lowpark, Mayo, radiocarbon-dated to between CE 560–660, enabled the smith to better judge the temperature of the iron from its colour. The reconstruction image (see Figure 12.2; Plate 4) evokes the sound of the repeated loud strikes of the hammer against the anvil; the bright flash and spark of the iron; the oppressive heat from the hearth; the smell of burning wood; and the smoke that would have caused the eyes to water (Gillespie and Kerrigan, 2010, pp. 283–285).

There can be a significant gap between the theorists considering sensory archaeology and the archaeologists working in the field who potentially have the greatest appreciation of the sensorial aspects of individual sites, even in cases where only negative features survive. While



Figure 12.2 Reconstruction images. Left: Bronze Age cremation pyre at Mahanagh, Galway, Ireland, by Jonathan Millar, Rubicon Heritage Services Ltd (from Hughes, 2015, p. 37; courtesy of Transport Infrastructure Ireland). Right: early medieval metalworking structure at Lowpark, Mayo, Ireland, by Fergus Niland (from Gillespie and Kerrigan, 2010, p. 317; courtesy of Mayo County Council and Transport Infrastructure Ireland).

stratigraphic relationships, empirical data and contexts are rigorously recorded, subjective understandings are not. Perhaps it is time to consider a standard recording template to enable archaeologists to record sensorial aspects of sites—such as darkness and light—as experienced during excavation or survey? Are we brave enough to consider devising a standardised recording sheet for each archaeologist on an excavation or survey team to document their own emotional ‘sense’ or responses to working on a site or monument (c.f. Tilley, this volume)? In some, if not all, cases this is likely to provide a richer insight into the particular site. Skeates (2016, p. 40), for instance, drew on the documented experiences and perceptions of his archaeological team while they worked on the excavation of several Neolithic and Bronze Age caves in Sardinia to inform how these spaces may have been experienced by prehistoric peoples.

Archaeological plans and architectural surveys also fail to convey the emotional experiences evoked by the presence or absence of light and dark in a space or place, yet attempting to explore potential past emotional responses is surely as essential as any other approach to understanding a monument or complex (see Tarlow, 2000; 2012). Mining deep underground must have engendered fear and anxiety, for instance, while entering the gloom of a burial vault to insert a corpse amongst the putrefying remains of other family members must have been a sobering experience permeated with grief. Whitehouse (2016, pp. 32–35) draws on her personal sensorial experience of three Italian caves to consider how Neolithic people might have felt in these spaces: the disorientation, strange sounds, damp smells, constricted passages and fear. She suggests that the material culture from these sites reflects the forced sojourns of Neolithic initiands undergoing rites of passage in darkness and that their collective emotional experience would have been frightening, painful and humiliating. I have interpreted Late Bronze Age material from deep within the dark zone of several Irish caves as related to solitary ritual retreat, where the darkness afforded a tranquil personal and private space for a ritual practitioner (Dowd, 2016a, pp. 67–70). These two very different interpretations of broadly similar types of material may not be mutually exclusive, and certainly prehistoric cave rituals took a multiplicity of forms. Equally, however, these diverse interpretations may reflect the modern subjective and personal emotional and sensory responses of two archaeologists to the darkness of caves (e.g. group versus solitary usage; frightening versus serene).

Experiencing light and darkness in Irish caves: some personal insights

Writing this chapter made me consciously think about the sensory role of darkness and light in my own work on Irish caves and has provided me with new insights. I wholeheartedly agree with Skeates (2009, p. 420) when he states that any attempt to achieve a ‘full-bodied’ sensory understanding of a place, building or artefact needs to be grounded in an intimate familiarity with the archaeological realities. Without this we may end up with generic impressions of how light and darkness affect the senses in certain monument types, for instance, that all passage tombs offer the same sensory experience. My experience of darkness, light and shade in the various Irish caves I have excavated and surveyed over the past 20 years varies according to the length of time spent at each site. My ‘sense’ or understanding of caves in which I have spent hundreds of hours is much more developed, nuanced and memorable than caves I worked in for only a few days. Up until now I have not consciously recorded the dark zones, twilight zones and daylight zones of caves, though my knowledge of these boundaries was acquired unconsciously through changes in sensory perception. I have spent hundreds of hours inside Glencurran Cave, Clare, a site that was a focus for votive deposition during the Late Bronze Age. Remains of neonatal calves, piglets and lambs; Late Bronze Age pottery; amber, bone and stone beads; and lithics were recovered from the dark zone, together with disarticulated human bones representing several individuals and the disturbed burial of a two to four year old child (Dowd, 2007; 2009; 2015, Chapter 6). I grew to know the cave so intimately that, without any form of light, I could safely and easily navigate through the outer well-lit area, through the dimly lit twilight zone where the quality and quantity of illumination varies depending on the time of day and season, and into the deepest section that was always shrouded in complete darkness. I know every undulation in the floor, areas where the ceiling is low, wet patches, loose boulders and stable rocks. My arms, hands and feet have become finely attuned to the cave walls and floors. Despite an intimate familiarity with the micro-topography of Glencurran Cave, when I received the professional photographs of the site I was completely lost (see Figure 12.3). I could not recognise the parts of the cave that had been photographed, even though the photographer had captured the exact areas I had asked to be photographed. When fully illuminated, I could not identify the various boulders and sections of the cave walls that were so familiar to me in the dark. Colours were different, as was the shape and size of the passage. It had become a different site in the light.

The 2004–2009 archaeological excavations in Glencurran Cave were lit by generator-powered lights fixed on stands, which provided high intensity localised illumination. It was often disconcerting for those working in the dark zone when archaeologists sieving outside the cave found a small artefact or bone that had been missed inside, despite excavating meticulously under strong artificial light. This reinforced how difficult it is to see ‘properly’ in the dark, regardless of the strength of the artificial light. Occasionally, when members of the excavation team emerged into the daylight after several hours excavating quite happily inside, they became irritated and somewhat disorientated (contrary to what one might expect). Being unaware of changes in the weather and light outside seems to have been disconcerting and confusing for those who had been in the still darkness for several hours. The cave contained olfactory experiences. The outer chamber held smells from the outside world that drifted in through the entrance and lingered in the air: hazel trees, flowering bluebells, the dung of feral goats. Deeper into the cave these odours disappeared and the musty and dank smell of earth prevailed. Human smells (sweat, flatulence, perfume) then became more noticeable because of the enclosed space and because, with limited vision, the sense of smell was heightened. While working in the deepest and darkest zone of Glencurran Cave it became possible to recognise who was coming into the cave by the sound



Figure 12.3 Dark zone of Glencurran Cave, Clare, Ireland, by Ken Williams. This area was a focus for votive deposition and possibly ritual retreat during the Late Bronze Age. Image: Dowd, 2015, p. 5.

of their footfall, the ease with which they navigated the passage and occasionally their smell—though they were completely concealed in the dark. Smoking inside the cave was prohibited, but one offender was caught because the stale smell of cigarette smoke lingered for several days in the area he had been excavating (causing him to reflect on the putrid stench that must have dominated in caves where human remains lay decomposing). Sound was distorted. It was not possible to hear what archaeologists working 20 m away were saying because of a bend in the cave passage, but the muffled sounds of their conversations were unnaturally elevated. Alone in complete darkness, occasional drips of water from the cave roof manifested as loud and ‘booming’ to the ears, though were rarely noticed during the excavation—unless one plopped on your neck or face leading to a mild shock or surprise as the water felt especially cold on the skin.

While the ‘sensory envelope’ in each cave is unique, so too is the ‘emotional envelope’. Some caves I associate with a sense of claustrophobia and anxiety, particularly constricted and narrow passages; the profound darkness and silence in certain deep caves evoke in me a sense of tranquillity; certain other caves make me feel very uneasy though for no measurable reason (i.e. they are not dangerous or constricted). I became aware of how emotional engagement with a site impacted on my perception of light and darkness after excavations in Moneen Cave, Clare, in 2011. During rescue excavations in this small mountain cave we discovered a niche in the cave wall that contained the skeletal remains of a teenage boy. Subsequent osteoarchaeological analysis and radiocarbon dating indicate he probably died in the cave from malnutrition, exposure and illness sometime during the seventeenth century (see Figure 12.4) (Dowd, 2013; 2016b). Several years after the excavation I repeatedly described the chamber as dimly lit and dark to an archaeological reconstruction artist, J.G. O’Donoghue, who was about to visit the cave. He later reported his surprise to find it was much brighter than I had led him to believe: the ‘bounced light’ in this small space lights up shadowy areas, and he described the light as emitting



Figure 12.4 Reconstruction of the teenage boy who died in Moneen Cave, Clare, Ireland, in the seventeenth century by J.G. O'Donoghue. Image: Dowd, 2016b, p. 77.

a 'beautiful glow, it is quite a soft light and carries a lot of colour' (J.G. O'Donoghue, pers. comm.). He was correct: this small chamber is relatively bright, to the extent that caving helmet lights provided sufficient illumination to conduct the archaeological excavation. However, my continued *impression* of the cave is that it is dark and dim, almost certainly coloured by my interpretation (and indeed, strong sense) of how cold, alone, hungry and weak the boy was who died there several centuries ago. Like memory, perception of light and darkness can be *incorrect* in terms of measurable entities because it is highly subjective, but can *feel* accurate.

Conclusion

Cognisance of the role of darkness and light and how these phenomena impacted upon past sensory experiences is gradually receiving attention in scholarship. Subject areas such as cave archaeology, archaeoastronomy and megalithic monuments have long been discussed in terms of the changing role of darkness and light and how these elements were manipulated in the past and the resultant sensorial experiences, particularly within ritual and funerary contexts. Light and darkness, however, are ever-present and affect sensorial experiences in all aspects of life: domestic, industrial, agricultural, etc. It is not enough to occasionally consider these elements in how people lived their lives on the sites we survey and excavate. We must start to more rigorously document the presence and absence of light and darkness at archaeological monuments and complexes and how these change with the time of day and the seasons. Combining this data with technology and creative narratives can bring colour and life to our sometimes black and white understandings of the past.

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Plate 4 Reconstruction images. Left: Bronze Age cremation pyre at Mahanagh, Galway, Ireland, by Jonathan Millar, Rubicon Heritage Services Ltd (from Hughes, 2015, p. 37; courtesy of Transport Infrastructure Ireland). Right: early medieval metalworking structure at Lowpark, Mayo, Ireland, by Fergus Niland (from Gillespie and Kerrigan, 2010, p. 317; courtesy of Mayo County Council and Transport Infrastructure Ireland).