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# Religious belief and cooperation: a view from Viking-Age Scandinavia

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## ABSTRACT

This study focuses on two hypotheses at the heart of a debate concerning cooperation, socio-political complexity, and religious belief. One of these contends that moralizing high gods (MHGs) were central to the development of complex societies. The key mechanism here is supernatural monitoring, which is the perception that gods observe humans and punish those who commit transgressions. The other hypothesis – the broad supernatural punishment (BSP) hypothesis – contends that it was fear of supernatural monitoring and punishment by non-MHG deities that fostered the development of socio-political complexity, and that MHGs followed rather than preceded the appearance of complex societies. To test between these hypotheses, we examined evidence for pre-Christian beliefs in Viking-Age Scandinavia (c. 750–1050 CE). We sought answers to two questions: (1) did the Vikings perceive themselves subject to supernatural monitoring and punishment? And (2) were the Norse gods MHGs? The evidence indicates that the Vikings believed themselves to be monitored by supernatural entities in some contexts, and that they could be punished for certain transgressions. However, the Norse gods do not meet all the criteria for recognition as MHGs. Taken together, these findings support the idea that socio-political complexity was fostered by non-MHG deities and not by MHGs.

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## 1. Introduction

In recent years, a debate has developed in the cognitive science of religion concerning cooperation, socio-political complexity, and belief in the existence of moralizing high gods (MHGs) (e.g., Atran & Henrich, 2010; Johnson, 2016; Norenzayan, 2013; Norenzayan et al., 2016; Norenzayan & Shariff, 2008; Roes & Raymond, 2003; Shariff, 2011; Shariff & Norenzayan, 2007; Watts et al., 2015). Sometimes called “big gods,” MHGs are supremely powerful creator deities that are perceived to be omniscient, concerned about moral rules, and inclined to punish humans for transgressions of those rules (Norenzayan, 2013; Roes & Raymond, 2003). The Abrahamic god of Judaism, Christianity, and Islam is the most obvious example of an MHG. There is general agreement among those involved in the debate that an increase in cooperation was a prerequisite for the rise of complex societies during the Holocene (the last 11,700 years). There is also general agreement that MHGs can have a positive impact on cooperation. However, there is a difference of opinion about the role played by MHGs versus other types of religious phenomena in the development of complex societies (Atran & Henrich, 2010; Johnson, 2016; Norenzayan, 2013; Norenzayan et al., 2016; Norenzayan

& Shariff, 2008; Roes & Raymond, 2003; Shariff, 2011; Shariff & Norenzayan, 2007; Watts et al., 2015).

A link between MHGs and cooperation was first proposed by Roes and Raymond (2003). These authors suggested that MHGs unite societies, allowing them to expand and maintain cohesion while competing with others. Other scholars have built on this suggestion. Shariff, Norenzayan, and Henrich (2009), for example, proposed that MHGs first appeared among early agricultural groups in the Near East close to the start of the Holocene. They argued that MHGs enhanced cooperation and therefore facilitated the development of complex societies. The mechanism at the heart of the MHG hypothesis is supernatural monitoring and punishment, which is the perception that gods observe humans and punish those who commit transgressions (Shariff et al., 2009). Supernatural monitoring and punishment, it is averred, causes believers to perceive themselves as subject to the same moral guidelines and to expect similar punishments if they stray from them.

Key parts of the MHG hypothesis have been challenged. Johnson (2011) argued that MHGs are not the only religious phenomena to have influenced the development of complex societies, and that the key issue is the timing of the impact of the different phenomena. The prosocial influence of MHGs, he suggested, was central to the maintenance rather than the development of large groups. Later, Johnson (2015, 2016) focused on the prosocial influence of supernatural monitoring and punishment, arguing that it was this phenomenon, rather than MHGs, that is crucial for large-scale cooperation. Supernatural punishment is carried out not only by MHGs, but also by a number of other types of religious phenomena, including local ancestral spirits and karma. A similar argument has been made by Watts et al. (2015). They suggested that increases in socio-political complexity result from increased cooperation due to a fear of supernatural punishment, which can be administered by many supernatural phenomena, not just MHGs. Hereinafter, we will refer to the hypothesis developed by Johnson (2011, 2015, 2016) and Watts et al. (2015) by the name the latter authors use – the broad supernatural punishment (BSP) hypothesis.

Several cross-cultural and experimental studies have supported the MHG hypothesis. For example, Johnson (2005) analyzed data from the standard cross-cultural sample and identified an association between measures of cooperation and the likelihood of punishment from high gods. Similarly, Purzycki et al. (2016) carried out economic games in several non-Western societies and found that deities' perceived degree of punitiveness and knowledge of human thoughts and actions was associated with greater generosity towards geographically distant co-religionists.

Results of other work support the BSP hypothesis. Purzycki (2010), for instance, found that Tyvan spirit masters (totemic spirits who act as supernatural lords of natural resources and regions) foster cooperation because they encourage individuals to engage in trust-promoting communal rituals. In a similar vein, McNamara (2012) discovered that local deities discouraged cheating in economic games that she carried out with the indigenous inhabitants of Yasawa Island, Fiji. Watts et al. (2015) also obtained results that support the BSP hypothesis. They used phylogenetic methods to investigate the relationship between religious belief and socio-political complexity in a large sample of ethnographically documented Austronesian societies. Their results led them to conclude that BSP facilitated the evolution of socio-political complexity, and that MHGs followed rather than preceded socio-political complexity.

Recently, Norenzayan et al. (2016) have argued that the differences between the MHG and BSP hypotheses have been overstated. They contend that the MHG hypothesis does not claim that other religious phenomena cannot foster cooperation, but rather places MHGs at the extreme end of a spectrum of prosocial deities. While this point is well taken, it does not mean there are no substantive differences between the MHG hypothesis and the BSP hypothesis. Most obviously, proponents of the two hypotheses still differ on the role of MHGs in the initial development of complex societies. Norenzayan et al. (2016, p. 8) argue that the anthropological, archaeological, and historical evidence they review suggests that “Big Gods and routinized rituals and related practices coevolved with large, complex human societies, along with increasing reliance on food production.” Watts, Sheehan, Atkinson, Bulbulia, and Gray (2016) reject this argument. They contend that it is flawed because

Norenzayan et al. (2016) rely heavily on studies involving the Abrahamic religions, which appeared some 9000 years *after* the development of the earliest large human societies. Watts et al. (2016) go on to discuss the results of the aforementioned Watts et al. (2015) study. They argue that it highlights the potential importance of non-MHG deities in the emergence of complex societies, and provides support for the suggestions made by Johnson (2011).

Here, we report a study in which we attempted to test between the MHG hypothesis and the BSP hypothesis by examining archaeological and textual evidence pertaining to the pre-Christian religious beliefs and practices of the Vikings. While there is some debate about the exact meaning of the term “Viking,” it is common practice to use it to refer to people living in Scandinavia and a number of overseas colonies (e.g., in the British Isles, Iceland, and Greenland) between c. 750 and 1050 CE (Brink, 2008). In the present article, we will also refer to these people as “Viking-Age Scandinavians” and “the Norse.”

The Vikings are a useful case study because there was a marked increase in socio-political complexity in Scandinavia in the period leading up to and during the Viking Age. Prior to the fifth century CE, Scandinavian societies were relatively small-scale tribal polities dominated by competing kin groups (Hedeager, 2011). Although these groups would not have been of equal status, a lack of social stratification seems to have prevented any form of stable political leadership from emerging (Skre, 2001). This changed in the fifth and sixth centuries. At this time, Scandinavia, like much of the rest of Europe, experienced what is often called the “Migration Period Crisis,” which was a prolonged episode of political instability, warfare, and large-scale population movement. Towards the end of this period, there was a radical reordering of social and political structures in Scandinavia. Social stratification increased, and hierarchical, regional polities and petty kingdoms developed in many parts of the region (Myhre, 2000, 2003, 2015; Näsman, 2000; Skre, 2001, 2007). This process continued throughout the Viking Age. That the emergence of larger, more complex political entities involved an increase in intra-group cooperation is indicated by the formulation of regional law-codes and the legitimization of governmental assemblies (the *þing* in Old Norse [ON]) as well as in the ability of regional polities to maintain involvement in warfare (Miller, 1997; Sanmark, 2009, 2017; Sanmark & Semple, 2008). By the end of the Viking Age, the increasing power of elites had led to the consolidation of centralized kingdoms, paving the way for the initial development of the states that we know today as Denmark, Norway, and Sweden (Brink, 2008; Skre, 2014). The latter development was facilitated by the Christianization process, which began in earnest with the first missions to Scandinavia in the early ninth century. However, as elsewhere, the conversion process in Scandinavia was gradual and syncretic, with Christian ideas initially being adopted alongside, rather than directly replacing, existing beliefs and practices (Mejsholm, 2009). Few long-term effects of religious change are evident prior to the tenth century, and it is likely that pre-Christian beliefs and practices persisted for some time – several centuries in some cases (Price, 2014a).

Another reason why the Vikings represent a good case study is that they engaged in a number of activities that unquestionably would have required intense intra-group cooperation – long-distance oceanic voyaging, raiding, and warfare. Both archaeological and historical sources attest to Viking groups operating expansive networks of trade and exchange. These networks stretched from the North Atlantic to at least as far as the Middle East, and were held together by the cooperative actions of merchants and traders, including trading guilds (ON *félag*) that were bound by oaths of fraternity and fellowship. These groups maintained their relationships by establishing normative routines, and through the use of specific material culture, such as the widespread adoption of a fairly standardized weight system for bullion transactions (Gustin, 2004; Sindbæk, 2008). The groups involved in raiding and warfare ranged in size from the crew of a single ship to large migratory “armies” comprising thousands of individuals (McLeod, 2014; Price, 2014c; Raffield, 2016; Raffield, Greenlow, Price, & Collard, 2016). While smaller militaristic groups were likely bound to the lord of a retinue by reciprocal relationships of patronage, larger Viking “armies” often consisted of numerous autonomous groups that entered into temporary alliances to fulfill mutual goals (Price, 2014c; Raffield, 2016). Cooperation among these latter groups was essential to achieving their objectives, and the available

evidence indicates that in some cases the groups' activities were governed by joint decisions agreed by their leaders (Price, 2014c).

In our study, we addressed two questions: (1) did the Vikings perceive themselves to be subject to supernatural monitoring and punishment? And (2) do the Norse gods qualify as MHGs? Given that Scandinavian societies both experienced a substantial increase in socio-political complexity and engaged in intensively cooperative activities prior to the Christianization process, we reasoned that the answers to these questions would allow us to shed light on the contribution of BSP and MHGs to the development of socio-political complexity during the Holocene.

The study presented here is unusual in that it involved close collaboration between two archaeologists who specialize in the study of the Viking Age (BR and NP) and an evolutionary anthropologist (MC). It is also unusual in that it attempts to use archaeological, historical, and literary evidence to explore hypotheses and arguments currently being developed within the evolving discipline of the cognitive science of religion. We were particularly interested in establishing how the available data on pre-Christian Scandinavian beliefs can nuance or reconcile differences in current scholarly thought concerning the relationship between cooperation, socio-political complexity, and religious belief.

When reading the rest of this article, it is important to keep in mind the shortcomings of the data, which derive from archaeological excavations and textual sources. The challenges of interpreting archaeological evidence are well known, but the texts have limitations too. Unfortunately, the Vikings produced no written sources that can be used to examine their spiritual beliefs, with the exception of runic inscriptions, which tend to be very limited in detail. Instead, scholars have made use of the observations of foreign missionaries and travelers, such as the eleventh-century German chronicler Adam of Bremen, which provide some insights into the pre-Christian beliefs and ritual practices of the Vikings. Also of interest are two medieval texts, the *Poetic Edda* and the *Prose Edda*. The former is a synthetic collection of mythological and heroic poems. Their origins are unknown, but they probably preserve, at least in part, Viking-Age traditions that were transmitted orally prior to being committed to writing in the twelfth and thirteenth centuries. The *Prose Edda*, a handbook for poets compiled in the thirteenth century by the Icelandic historian and politician Snorri Sturluson, includes information from Eddic and other (now lost) poems, as well as what appear to be Snorri's own assertions. Both of these sources survive in several versions. Given their late date of composition and compilation, it is clear that they contain interpolations and inconsistencies that reflect their organic development and reworking over time. Furthermore, it must be acknowledged that Christianity had long been influential in Scandinavia by the time the Eddic sources were first written down or composed, and it is therefore possible that later writers may have distorted evidence for pre-Christian beliefs in the texts. In the present article, we also refer to a number of sagas. Many of these concern events that are described as taking place in Iceland and Norway during the Viking Age, and as a result they may provide insights into ritual beliefs and practices as they existed prior to the Christianization process. Like the Eddic sources, however, the sagas as they survive today were first written down in the twelfth to fourteenth centuries, which may have resulted in the distortion of pre-Christian social and ritual practices (Clunies Ross, 1994, 1998, 2010; McTurk, 2005). Because of these issues, researchers often interpret the textual sources in different but equally valid ways.

In order to make these challenging sources of data relevant and applicable to the cognitive science of religion, it is necessary to treat the evidence in a way that facilitates comparison with scientific research and data. In the following discussion, we cite selected passages from the saga corpus in the knowledge that they derive from the medieval Icelandic mind, but with the suggestion that their ostensible location in the Viking Age may also have reflected genuine practice in the past. To counter potential interpretational issues, we looked for consensus among texts, and between texts and archaeological data. In principle, consistency among multiple lines of evidence should allow us to obtain reasonably reliable insights into the Vikings' beliefs and practices.

The remainder of the article is structured as follows. In the next section we provide a brief summary of pre-Christian spiritual beliefs and practices in Viking-Age Scandinavia. We then explore

whether the Vikings perceived themselves to be subject to supernatural monitoring and punishment. Subsequently, we investigate whether the Norse gods can be considered to be MHGs. We end by discussing the implications of our findings for the MHG hypothesis and the BSP hypothesis and outlining some potential future research directions.

## 2. Ritual beliefs and practices in pre-Christian Scandinavia

Scholars have long sought to understand the religious ideologies and practices of the Vikings prior to their conversion to Christianity (e.g., Andrén, Jennbert, & Raudvere, 2006; DuBois, 1999; Price, 2002, 2014a; Raudvere & Schjødt, 2012; Simek, 2006; Steinsland, 1986), but many details remain obscure. This is partly because Scandinavian societies had no specific term to describe their ritual beliefs (Gräslund, 2008). Both archaeological data and written records indicate that the Norse worldview interwove the physical and spiritual worlds, as well as the sacred and the mundane (Gerds, 2006; Price, 2002). This has led some scholars to suggest that the Vikings adhered to a “non-doctrinal community religion” (Hultgård, 2008, p. 212), but others have argued that it is better to use the more neutral term “belief system” (e.g., Price, 2002). Even this characterization may imply more coherence than ever really existed, though. While Norse beliefs were generally consistent across time and space, their material expression was highly variable (Hultgård, 2008; Price, 2002, 2008).

Viking-Age Scandinavian societies were polytheistic, and possessed an extensive pantheon of divinities centered on two families of gods, the Vanir and Æsir, who according to mythological sources had once fought each other before combining forces (Price, 2002). The gods lived in Ásgarðr, one of the many worlds of the Norse cosmos. Our knowledge of Ásgarðr is limited, but it seems to have been a realm of fields, forests, and rivers. It also contained the halls of the gods and buildings that seem to have acted as temples, which suggests that the Norse gods may have been one of the few divine groups ever conceived that worshipped something themselves (Patton, 2009). In a number of respects, therefore, the home of the gods seems to have mirrored the real world.

While there are few indications that any single god held a supreme position in the Norse pantheon, Óðinn is often perceived as the gods’ leader. In some Eddic poems, such as *Grímnismál* (v. 46) and *Hávamál* (v. 164), his status is reflected in names such as “High” and “High One” (Orchard, 2011b, p. 57, 2011c, p. 39). Óðinn was a temperamental being who commanded respect, admiration, and fear. In addition to being a god of war and poetry, he was a seeker of wisdom, a trickster, and a shamanic master of shapeshifting and sorcery, the contradictory and sexually ambivalent patron of both elites and outcasts (Sørensen, 1983; Price, 2002; Solli, 1999, 2002). His many names, such as “Battle-mask,” “Wanderer,” “Inciter,” “Truth-getter,” “Corpse-father,” and “Dread,” represent the different aspects of his character (Orchard, 2011b, pp. 57–58; Price, 2002).

Despite Óðinn’s evident importance, it is clear that other gods were also considered to be powerful. The eleventh-century chronicler Adam of Bremen, for example, noted that three gods – Þórr, Wodan (Óðinn), and Fricco (Freyr) – were the main focus of rituals during cultic festivals at Gamla Uppsala (Tschan, 1959, p. 207), while Mundal (1990) points out that toponymic evidence in Norway highlights the prominence and influence of gods such as Þórr, Freyr, Freyja, and Njörðr.

In addition to these major deities, pre-Christian Scandinavian cosmologies incorporated a multitude of creatures and spirits that were perceived to inhabit the physical landscape alongside humans (Price, 2002, 2014a). These included elves (*álfar*), dwarves (*dvergar*), trolls, ogres (*þurs*), and giants (*jötnar*), as well as various spirits. One powerful group of spirits was the *dísir* – female beings linked with fate and prosperity (Dobat, 2006; Raudvere, 2008). This group of spirits may have included the norns (ON *nornir*), who are described in the Eddic poem *Völuspá* (Orchard, 2011f, p. 8) as three women who embodied the Past, Present, and Future. Living in a hall situated among the roots of Yggdrasil, the great ash tree that represented the foundation of the cosmos, they are variously described as casting lots to decide human fate, or as weaving the threads of an individual’s life into a cloth that was cut at their death. Snorri Sturluson’s *Gylfaginning* implies that there were many types of norns, and that some supernatural creatures also possessed their own norns. These



spirits therefore seem to have guided the fate of all living and supernatural beings, and the influence of fate in guiding both human and divine actions is apparent in many textual sources (Price, 2002). Other spirits included those associated with family groups and individuals (*fylgjur*) or the landscape itself (*landvættir*). The latter were often closely tied to individual farms and were likely venerated in the home. Others were linked with natural features such as groves, mountains, islands, rivers, lakes, and bogs. These locations, some of which were associated with structures interpreted as cult houses (as at Borg in Östergötland, Sweden; Nielsen, 1997), functioned as ritual sites (Andersson, 2006; Hildebrandt, 1989). Other ritual sites were situated adjacent to substantial feasting halls, as at Gamla Uppsala in Sweden, Borg in Lofoten, Norway, Lejre and Tissø in Denmark, and Hofstaðir in Iceland (Figure 1). These sites were used periodically as ritual centers and were closely associated with the elite (Stenholm, 2006).

There is archaeological and textual evidence for many different types of pre-Christian ritual practice. Humans were not required to venerate or worship the gods, but it was necessary to reach some form of accommodation with them if an individual wished to live to old age, and this was usually achieved through ritual practice (Price, 2014a). Two of the commonest types of ritual practice were *blót* (a term loosely translated as “sacrifice”) and depositional rituals. Both saga and archaeological evidence indicate that the killing of animals was often associated with feasting and funerary rites, and in some cases there is also evidence for human sacrifice during burial rituals (Bersu & Wilson, 1966; Naumann, Krzewińska, Götherström, & Eriksson, 2014) and major cult festivals (Adam of Bremen, Bk. 4. Ch. 27; Tschan, 1959, p. 208). Mortuary practices often involved the disposal of inanimate objects, which took place alongside sacrificial rites. These objects could include jewelry, weapons, tools, furniture, vehicles, and farm equipment, sometimes in large quantities



**Figure 1.** The royal burial site and cult center at Gamla Uppsala, Sweden, which emerged during the centuries preceding the Viking Age. Photo by and © Daniel Löwenborg, used by kind permission.

(Price, 2008). Other rituals involved the deposition of objects in contexts ranging from the foundations of structures, to land boundaries, and rivers, lakes, and wetlands (e.g., Larsson & Lenntorp, 2004; Lund, 2005, 2010; Raffield, 2014).

### 3. Did the Vikings perceive themselves to be subject to supernatural monitoring and punishment?

Having introduced some of the key elements of pre-Christian belief systems in Scandinavia, we will now review evidence pertaining to the question of whether the Vikings perceived themselves to be subject to supernatural monitoring and punishment.

That the Norse gods were believed to pay attention to, and be concerned about, human behavior is supported by evidence pertaining to the practice of oath-taking. Oaths were important spiritual and legal contracts in Viking-Age Scandinavia (Gallo, 2004; Mauss, 1950; Stein-Wilckshuis, 1998). As in modern courts of law in the West, testimonies given under oath were evidential, and swearing an oath signaled trustworthiness. Oath-taking was also important in the political sphere. Throughout the Viking Age, political power lay in the hands of the elite and their retinues, and there is reason to think that oath-taking helped foster the relationships necessary for the successful operation of these groups (Hedenstierna-Jonson, 2009; Raffield et al., 2016). In some cases, the swearing of oaths may have been embodied in the name of such groups, as was the case with the Scandinavian mercenaries who served as the Byzantine emperor's bodyguard. These men were known as "Varangians," which appears to mean "those who have sworn an oath." Oath-taking played an important role in diplomacy too. This is indicated by a number of peace treaties that were agreed between the Byzantine Empire and the Rūs in the tenth century, as recorded in the Russian Primary Chronicle (Lupoi, 2000; Stein-Wilckshuis, 2002). It is also indicated by chronicle accounts of Viking armies negotiating treaties with Carolingian and Anglo-Saxon kings (Nelson, 1991; Swanton, 2000).

Both archaeological and textual sources indicate that the gods may have played an important role in oath-taking. It has been argued that, during the Migration Period, the god Ullr was associated with the use of so-called "oath-rings" (Eriksen, 2015). This suggestion is supported by the Eddic poem *Atlakviða* (v. 30; Orchard, 2011a, p. 213), which recounts an oath being sworn "by Ull's ring," as well as by archaeological evidence in the form of dozens of miniature ring amulets that were recovered during excavations at Lilla Ullevi ("little cult site of Ullr") in Sweden (Bäck, Hållans Stenholm, & Ljung, 2008; Price, 2010). The association between oath-taking and the gods continued into the Viking Age, as indicated by the *Anglo-Saxon Chronicle* which records that in 876 a Viking army in England swore peace with King Ælfred of Wessex on a "sacred ring" (Swanton, 2000, p. 74). In some of the aforementioned peace treaties between the Byzantine Empire and the Rūs, the latter are noted as swearing oaths on their weapons and by the gods (Lupoi, 2000; Stein-Wilckshuis, 2002). The sagas provide further evidence of this association. A passage in *Eyrbyggja saga* (Ch. 4; Schach & Hollander, 1959, p. 5), for instance, has been interpreted as describing a great oath-ring that was kept inside the temple of Þórr at Hofstaðir, Iceland. *Víga-Glúms Saga* (Ch. 25; Turville-Petre, 1960, pp. 44–45) also suggests that oaths were sworn on oath-rings in temples. It is possible that we have archaeological evidence of the association too, as iron rings have been recovered from the post-holes of putative cult houses at the pre-Christian ritual centers of Uppåkra and Järrestad in Sweden (Eriksen, 2015; Ödman, 2003; Söderberg, 2005). Thus, there are numerous indicators that oath-taking was ritually important, and was perceived to be an act that was of interest to the gods.

A group of visually striking helmets from the seventh and eighth centuries represent a second potential line of evidence for a form of supernatural monitoring. Recovered from a number of archaeological sites in Scandinavia, including Valsgärde and Vendel in Sweden, these helmets feature full or partial face-masks with accentuated eyes, eyebrows, and nose pieces (Figure 2). These are clearly high-status objects, and they are thought to have been worn when the elite and their retinues feasted and engaged in political and religious rituals (Price & Mortimer, 2014). Recently it has been





**Figure 2.** A high-status helmet from Grave 7 at Valsgärde, Sweden, dated to c. 620–710.

Note the brighter appearance of the proper right eye on the animal head terminal. Photo by and © Lindsay Kerr, used by kind permission.

suggested that the Scandinavian helmets – along with the famous Sutton Hoo helmet, which has long been recognized as analogous to contemporaneous finds in Scandinavia (Carver, 1998, 2005) – may have been crafted as representations of Óðinn (Price & Mortimer, 2014). Óðinn was the god of the warrior aristocracy, and it has been argued that the maintenance of his cult represented one of the ways in which political power was established and maintained during the latter half of the first millennium (Hedeager, 1997a, 1997b; Price, 2002; Price & Mortimer, 2014). Óðinn was unique among the Norse gods in possessing only one eye, and *Völuspá* (v. 28; Orchard, 2011f, p. 9) describes how, in his quest for knowledge, he pawned one of his eyes so that he could drink from the well *Mímisbrunnr*, which contained all wisdom. On a number of the helmets, an ingenious manipulation of gold foil beneath the garnet decoration that forms the eyes and eyebrows on one side of the face would have meant that one eye appeared bright and sparkling in the presence of a light source, while the other remained dark – an effect that, on some helmets, is replicated in decorative zoomorphic elements (Figure 2). Experiments with replica helmets indicate that the illusion would have been particularly marked in the place in which many rituals are thought to have taken place – the fire-lit hall (Price & Mortimer, 2014).

Needless to say, the helmets are likely to have reminded ritual participants of the existence of Óðinn. However, they may have done more than this. A number of psychological experiments have shown that individuals act more prosocially when primed with images of eyes (e.g., Baillon, Selim, & van Dolder, 2013; Bateson, Nettle, & Roberts, 2006; Ernest-Jones, Nettle, & Bateson, 2011; Haley & Fessler, 2005; Rigdon, Ishii, Watabe, & Kitayama, 2009), and it has been argued that in religious contexts such imagery functions as a tangible reminder of the capacity of deities to observe humans (Norenzayan, 2013). Examples that have been cited in connection with this

hypothesis include the Ancient Egyptian Eye of Horus motif and the “Buddha eyes” found on monuments and the exterior walls of buildings across Tibet and Nepal (Norenzayan, 2013). A range of finds from the early medieval period have been noted to possess similar attributes (Arwill-Nordbladh, 2012; Price & Mortimer, 2014; Williams, 2011). In the case of the high-status helmets discussed here, the emphasis placed on the visual allusion to Óðinn may have specifically been used to instill a sense of supernatural disquiet, reminding the participants in the rituals that they were being monitored by him. It is possible that the effects of the helmets did not stop there. It has been proposed that when the elite wore these helmets, they may have been perceived as transforming into or being voluntarily possessed by Óðinn: “Perhaps we see in these objects a kind of pagan transubstantiation, the military ruler literally becoming, or hosting, the war-god himself?” (Price & Mortimer, 2014, p. 533). If this were the case, the helmets could have led ritual participants to feel they were in close physical proximity to Óðinn. Presumably, this would have had a strong emotional impact.

Evidence pertaining to the treatment of travelers in Viking-Age Scandinavia provides a further indication of some form of supernatural monitoring. It is clear from a number of sources, such as *Bandamanna saga* and *Njals saga* (Bayerschmidt & Hollander, 1998; Ellison, 2000), that great store was set in the giving and receiving of hospitality. It has been argued that this “culture of hospitality” would have provided some measure of safety and aid for those engaging in long-distance travel, and that this was important because most people lived in dispersed, rural communities (Herschend, 1998). It has also been suggested that providing, and graciously receiving, hospitality was a means by which reciprocal relationships of obligation and allegiance could be formed between individuals, kin groups, and political factions (Zori et al., 2013). There is even some evidence that implies the culture of hospitality may have extended to enemies (Bayerschmidt & Hollander, 1998, p. 355; Ellison, 2000, p. 465; Schach & Hollander, 1959, p. 110).

Significantly for present purposes, this culture of hospitality seems to have been linked to the god Óðinn. In line with his contradictory nature, Óðinn was not only the god of the warrior aristocracy but also the god of travelers. This is reflected in the Eddic poems *Hávámál* and *Grímnismál*. In *Hávámál*, Óðinn advises that those seeking shelter should not be chased away but welcomed as guests (Orchard, 2011c, pp. 34–35), while in *Grímnismál*, Óðinn appears to a king disguised as a traveler (Orchard, 2011b). Elsewhere in *Grímnismál*, Óðinn states that one of his many names is “Wanderer” (v. 46; Orchard, 2011b, p. 57). Thus, it is possible that individuals would have been prompted to think about the possibility of Óðinn monitoring their behavior whenever they interacted with a traveler, which may have been a frequent occurrence. Given that an obvious corollary of the idea that a god roams the world in disguise is that any stranger arriving in a community may be the god, this effect could have been powerful.

The evidence that pre-Christian Scandinavians believed in supernatural punishment is as compelling as the evidence that they believed in supernatural monitoring. Given the importance of oath-taking in Scandinavian society, it probably should not be surprising to find that breaking an oath was considered a serious transgression. For instance, it could lead to an oath-breaker being branded *niðingr* – a term that carried great stigma and indicated that the person had committed a particularly deplorable act (Jesch, 1998, 2001). When oaths were legally binding, the penalties for defaulting on them were severe. The early Icelandic *Grágás* laws, for example, prescribed outlawry and the loss of property for those who broke an oath of truce (Dennis, Foote, & Perkins, 1980, p. 183). That oath-breaking was considered to be subject to supernatural punishment is made particularly clear by a political treaty between the Byzantine Empire and the Rūs, which dates to the mid-tenth century. Drawn up in order to re-establish peaceful relations following a Rūs attack on Constantinople in 941, the treaty included several clauses that stipulated the punishments that would befall those who defaulted on their oaths. For any non-Christian Rūs who broke their oath, their punishment was to “be killed with his own weapons and not be protected by God or Perun.” The latter was a god of the Slavic pantheon who was adopted by the Rūs as an equivalent to Þórr (Stein-Wilckshuis, 2002, pp. 160, 163).

In a striking parallel, the punishment specified by the treaty – the loss of the protection of the gods followed by death by an individual’s own weapon – can also be found in the Eddic poem *Grímnismál*. Sections of prose attached to the beginning and end of the poem (they may be interpolations, but this is not certain; Orchard, 2011, p. 280) reveal how Óðinn, disguised as a traveler, visits the hall of a king called Geirröðr, who has a reputation for being inhospitable to visitors. Upon Óðinn’s arrival, Geirröðr had him bound and tortured for eight nights. In the final stanzas of the poem (v.50–53; Orchard, 2011b, p. 58), Óðinn reveals his true identity and states that Geirröðr has been “robbed of much when robbed of my aid” and prophesizes Geirröðr’s imminent death by his own sword, adding that the spirits who held power over fate – the *dísir* – were now “hostile.” Having realized his mistake, the king stands to free Óðinn, but before he reaches him he trips and falls on his own sword. Geirröðr’s manner of death, therefore, directly compares to that envisaged for oath-breakers in the Rūs-Byzantine treaties. This implies that the withdrawal of the gods’ protection followed by death by an individual’s own weapons (or some other form of accident) was perceived to be a general form of supernatural punishment. It is not possible to determine whether King Geirröðr was punished because of his ill-treatment of a guest or because he failed to respect a god. But whichever is the case, his story shows that the punishment was not necessarily reserved solely for oath-breakers.

King Geirröðr’s story highlights another possible feature of Norse beliefs about supernatural punishment. To reiterate, Geirröðr died not only because Óðinn had withdrawn his protection but also because the *dísir* had been made hostile by the king’s actions. This suggests that the pre-Christian conceptualization of supernatural punishment was not limited to the gods, and that spirits were able to punish humans for transgressing rules too. Indeed, the story of King Geirröðr may indicate that spirits such as the *dísir* were perceived to have played as great a role in supernatural punishment as the gods themselves.

That fate was viewed as potentially punitive force is further supported by *Landnámabók*, a medieval text that recounts the Norse settlement of Iceland in the ninth and tenth centuries. *Landnámabók* (Ch. 8) describes an incident in which a man named Hjorleif was killed by his slaves. Earlier in the text, Hjorleif is noted as never holding sacrifices, and upon learning about the death of Hjorleif his friend Ingolf explains that while being killed by slaves was no way for a warrior to meet his death, in his experience “this is what always happens to people who won’t hold sacrifices” (Pálsson & Edwards, 2006, p. 20). The suggestion that Hjorleif’s death was inevitable implies that the gods were perceived to withdraw their protection from individuals who had committed certain transgressions, leaving them at the mercy of fate. In this case, Ingolf seems to believe that Hjorleif had disrespected the gods by failing to fulfill his ritual obligations to them, and that this led him to suffer an early and ignoble death.

It is also possible that supernatural punishment was perceived to extend beyond death. Although our knowledge of pre-Christian beliefs about the afterlife is fragmentary, it is generally thought that the Norse cosmos incorporated a place known as Hel, a dreary underworld comprising nine “realms” that was reserved for the ordinary human dead who did not die in battle (Price, 2002). Eddic poetry indicates that death in combat was the only way for an individual to earn a seat in Valhöll or Sessrúmnir – the halls of Óðinn and Freyja where warriors slain in combat would reside as *einherjar*, awaiting the opportunity to aid the gods at Ragnarök (see *Grímnismál* v. 8–10, 14; Orchard, 2011b, p. 52). Ragnarök was a series of preordained events culminating in a battle in which the gods, assisted by the *einherjar*, would fight an army of demonic creatures, giants, and the ordinary human dead. Anyone who did not die in battle, regardless of their actions during life, might have been consigned to Hel. Despite its name, Hel should not be compared to the Hell of Christianity. Instead, it seems to have been perceived simply as a “different” place to spend the afterlife (Ellis, 1968). However, the Eddic poem *Völuspá* (v. 38–39; Orchard, 2011f, p. 10) indicates that there existed an enigmatic hall by the “dead-body strands” or “corpse shore,” where those who committed the worst crimes – murderers, oath-breakers, and men who seduced others’ wives – were tormented. Although it is uncertain whether this description provides a genuine insight into Norse belief (it is possible that it is a Christian interpolation; Ellis, 1968), it would not contradict our knowledge of pre-

Christian cosmology to suppose that oath-breakers and murderers were selected for this punishment. This is because, as we explained earlier, social order depended on verbal contracts and the management of fragile socio-political alliances. During the Viking Age, murder was specifically defined as an instance in which an individual committed a killing and then concealed the crime (Byock, 2003). While killing was unlawful, declaring the crime allowed the legal system to come into effect; killings could be mitigated through the payment of blood money to the victim's family. The concealment of a killing prevented this and could potentially lead to cyclical and bloody feuds between kin groups. It therefore makes sense that this kind of crime should be singled out in this way. While it has been argued that the inclusion on the corpse shore of men who seduce others' wives is a later, Christian interpolation (Ellis, 1968), it is also possible that it may in fact reflect a traditional concern with social stability and order. Elsewhere (Raffield, Price, & Collard, 2017, in press) we have argued that the polygynous nature of Viking-Age societies may have served to precipitate social disruption by driving men to illicitly gain access to women (see also Jochens 1991). It is possible that Scandinavian societies sought to reduce domestic disruption and violence by prescribing supernatural punishments for murder and seduction.

There is, then, evidence that the Norse gods were believed to monitor humans and, in some cases, punish them for transgressions. While the evidence in question pertains to a range of contexts and activities, it appears that oath-taking was an important focus for these beliefs. This is significant because oaths formed the basis of the legal and social structures of Viking-Age society. The obvious corollary of this is that supernatural monitoring and punishment was not just incidental for the Vikings. It was important for the functioning of their societies.

#### 4. Do the Norse gods qualify as moralizing high gods?

We will now consider whether the Norse gods qualify as MHGs. We have argued that the Norse gods were believed to engage in supernatural monitoring and punishment on some occasions, but did they exhibit the other features of MHGs? There is some variability in the way that MHGs are defined, but the consensus appears to be that – in addition to engaging in supernatural monitoring and punishment – they should be (1) the most powerful of deities, (2) responsible for the creation of the universe, (3) omniscient, and (4) concerned about human morality (e.g., Johnson, 2005; Norenzayan, 2015; Watts et al., 2015). Accordingly, these are the characteristics we will look for in the Norse gods.

The available evidence suggests the Norse gods were not perceived to be supremely powerful. Eddic texts indicate that many gods possessed powerful traits. Óðinn, for example, possessed a wide range of shamanic abilities and communicated with both the living and the dead, while Þórr possessed almost immeasurable physical strength. But the sources also indicate that, in other ways, the power of the gods was significantly curtailed. There is clear evidence that they were not perceived to hold absolute power over other supernatural beings – they could be tricked and deceived, and in one case they were even taken hostage and held for ransom (see the Eddic poem *Reginsmál*; Orchard, 2011e). Furthermore, the gods were mortal. As we mentioned earlier, according to the Eddic poem *Völuspá*, the Norse gods were destined to be annihilated at Ragnarök. This battle would result in the destruction not only of the gods but the entire cosmos – a fate that the gods were unable to control or prevent. As such, the Norse gods cannot be considered supremely powerful.

The Norse gods also do not seem to have been creator gods. Despite being fragmentary, Eddic texts suggest that the gods played an important but only partial role in the formation of the cosmos. The sources make it clear that the cosmos began as a great void (*Ginungagap*) filled with magical powers. It is from this void that the first beings emerged (Price, 2002). These included Ymir, the first giant. In *Gylfaginning*, Snorri Sturluson writes that the earth itself was not created until the Æsir gods Óðinn, Vili, and Vé – who were themselves the offspring of an older god and a giantess – killed Ymir and fashioned the fabric of the world from his corpse. It is at this time that the other worlds of the cosmos were formed, though how this took place is unknown. Later, Óðinn and his brothers shaped the first humans, Ask and Embla, from driftwood they encountered while



wandering on the seashore (Price, 2002). Although these three members of the Æsir family are credited with creating the human race, it is evident they themselves were the product of more ancient, powerful forces and beings. It should also be noted that the Norse creation myth exists in several forms, which place varying emphasis on the roles of the gods in the creation and ordering of the cosmos (Hultgård, 2008). Thus, the Norse gods also cannot be easily classified as creator gods.

The Norse gods do not appear to have been omniscient either. Textual sources suggest that the Norse gods' ability to monitor humans was dependent on external aids. In the Eddic poem *Grímnismál* (Orchard, 2011b, p. 50), Óðinn is described as possessing a throne (Hlidskjálf) in one of his high halls (Valaskjálf) that allowed the gods to observe what happened across the cosmos. While this granted the gods some observational powers, it did not grant them omniscience. For example, there is no evidence that the throne allowed the gods to see through the walls of houses or to read humans' thoughts. That the Norse gods were not omniscient is also supported by the fact that certain Eddic poems (e.g., *Grímnismál* v. 20; Orchard, 2011b, p. 53) and Snorri Sturluson's *Gylfaginning* (Ch. 38; Byock, 2005, p. 47) indicate that Óðinn relied on two ravens – Huginn (“mind”) and Muninn (“memory”) – to gather news. While we can only speculate about the type of information Óðinn sought, his reliance on Huginn and Muninn implies that he, and by extension the other Norse gods, did not automatically possess knowledge of events taking place outside their immediate surroundings. Further evidence of the gods' lack of omniscience is conveyed in their inability to foretell future events. There are numerous examples in the written sources of the gods consulting oracles, especially the human dead, in order to learn about the future. Óðinn is noted in several sources as conversing with those killed by hanging (see *Hávamál* v. 157; Orchard, 2011c, p. 38), and in the mythological poem *Völuspá* he consults with a dead sorceress in order to learn about the events that would lead to the Ragnarök. It is surely significant that the Norse gods could not see the future, and that in fact it was dead humans who were believed to possess that knowledge. If the gods were forced to interrogate mortals (albeit dead ones) to find out what they wished to know, they can hardly be viewed as omniscient.

Before addressing whether the gods were concerned with human morality, it is first necessary to briefly discuss the definition of “morality.” Conventionally, morality is defined as a consistent set of beliefs, norms, and behaviors that are considered “right” or “wrong.” However, within the cognitive science of religion, morality has come to be equated with prosociality. Johnson (2005, p. 418), for example, defines morality as a “measure of the extent of belief in supernatural punishment for selfishness within each society.” Similarly, Haidt (2012, p. 270) defines morality as “the interlocking sets of values, virtues, norms, practices, identities, institutions, technologies, and evolved psychological mechanisms that work together to suppress or regulate self-interest and make cooperative societies possible.” Accordingly, in order to be deemed MHGs, the Norse gods must have been believed to be concerned about prosociality and to be likely to punish individuals who acted selfishly.

At first glance, the evidence we discussed in the previous section of the article suggests that the Norse gods meet the morality criterion. In particular, there can be little doubt that oath-taking was linked to within-group cooperation and therefore that the invocation of the gods in oath-taking implies a supernatural concern with prosociality. However, we believe this to be a false impression. The sources indicate that the Norse gods were actually capricious and inconsistent with regard to morality (Price, 2014a). They were morally concerned some of the time, but on other occasions they were amoral or even immoral. There is no evidence, for example, that the Norse gods prescribed a set of codified moral norms. The nearest equivalent to this can be found in *Hávamál*, a gnomic poem (or perhaps a compilation of several poems) containing at least some verses that are thought to date to the Viking Age. In *Hávamál*, Óðinn imparts advice on a number of subjects, including the proper conduct of guests and hosts in matters of hospitality, ethics, the pursuit of a happy life, the supposed faithlessness of women, and knowledge of runes. There is no notion that Óðinn's advice had to be heeded; rather the poem highlights certain “advisable” or “inadvisable” behaviors as part of a series of guidelines that an individual who wished to prosper in life should follow. The gnomic connotations of the poem are emphasized in a number of verses that begin with the formula “I advise



you, Loddáfáfnir [a human whom Óðinn is addressing], to take this advice: it'll help, if you take it, do you good, if you get it" (Orchard, 2011c, pp. 30–35). In many cases, Óðinn's advice is pragmatic in the context of the often-volatile networks of kinship allegiance that lay at the heart of Scandinavian societies. Advice on the proper conduct of guests and hosts, for example, would have facilitated the formation of alliances between families. In other cases, however, Óðinn's recommendations concern the most efficient ways to kill, seduce, and steal. In verse 58, he advises that "he must rise early, who will take another's life or goods; a wolf lying down seldom gets the ham nor a sleeping man victory" (Orchard, 2011c, p. 23). In verses 24–25, he similarly reminds the listener not to be too trusting of people they perceive to be loyal friends (Orchard, 2011c, p. 18).

This inconsistency is reflected in the gods' actions. They often engaged in behaviors that they themselves perceived to be unacceptable or shameful. According to the Eddic poem *Lokasenna* (Orchard, 2011d, pp. 82–96), these behaviors included adultery, incest, sexual transformation, and shape shifting (Price, 2002). The gods violated even more serious social taboos. *Hávamál*, for example, indicates that Óðinn was an oath-breaker – an act that, as noted above, carried great social stigma in Scandinavian societies. In verses 108–110, Óðinn acknowledges that he once broke an oath to the giant Suttungr, and worries that he will no longer be considered trustworthy (Orchard, 2011c, p. 30). This instance is exceptional in depicting the gods acknowledging the long-term consequences of their actions, as in nearly all other cases it is clear that they simply do not care about violating taboos or social norms. It seems, therefore, that although the gods were aware of a general code of conduct, they possessed human-like limitations that meant they were liable to break the rules on a regular basis. This adds to the impression that Norse gods were not particularly concerned about morality.

Further evidence of the gods' amorality can be seen in their actions towards humans. As we mentioned earlier, there is no evidence to indicate that humans were required to adhere to a supernaturally sanctioned code of moral conduct. Remaining in the gods' favor instead depended on an individual's ability to reach an accommodation with them, something that was usually achieved through ritual ceremonies and sacrifice (Price, 2014a). A clear link between *blót* and the wish to ascertain whether an individual had been granted supernatural favor is provided in *Óláfs saga Tryggvasonar* (Ch. 27; Finlay & Faulkes, 2011, p. 161), in which Jarl Hákon performs a sacrifice to Óðinn as a divinatory ritual prior to a battle. On receiving favorable signs, Hákon concludes that he will have good luck and this helps convince him to fight. The archaeological record has yielded evidence of similar practices. The discovery of impaled cattle skulls during excavations at the Viking-Age elite site of Hofstaðir, Iceland, for example, shows that bloody and dramatic animal sacrifices took place there (Lucas & McGovern, 2007). Similarly, excavations at Götavi in Närke, Sweden, uncovered an enclosed, packed-stone and clay platform dating from the eleventh century. Chemical analyses of material from the platform suggest that great quantities of blood had been spilled – as would have happened during sacrifices (Price, 2014b).

If we are to believe the Icelandic sagas, then it is possible that the gods were perceived as rewarding or punishing humans as they saw fit, regardless of whether an individual upheld their ritual obligations. This can be seen in *Egils saga skallagrímssonar* (Ch. 79, v. 22–23; Scudder, 2000, p. 157), which recounts the life of the Icelandic warrior-poet Egill Skallagrímsson. Egill believed he had a close relationship with Óðinn, to whom he attributed his gifts. But on the death of his second son, he fell into a state of depression and composed a poem in which he blamed Óðinn for his loss, revealing that while he was loyal to the god he did not worship him willingly. Egill sees his sons' deaths as indicating that Óðinn has broken his friendship with him, only to realize that through his grief the god is giving him the means to attain his greatest poetic expression (Price, 2002). Egill thus stoically acknowledges his fate. Óðinn's choice to bestow gifts on his followers at the cost of personal heartache and torment emphasizes his fickle and treacherous nature. It is possible that Óðinn was perceived to act in this way for no reason other than because he *could*, and because therein lay his power.

Lastly, following on from the above point, it is worth noting that there is no evidence in any textual sources to suggest that the gods were universally perceived to attend to people's oaths or actions, nor that they were believed to uphold social norms through any consistent form of punishment.

Normally, this might be perceived as problematic for the maintenance of belief systems – numerous case studies have demonstrated the consequences “ritual failure” can have on religious beliefs and the political structures that they support (e.g., Hüsken, 2007; Koutrafouris & Sanders, 2013). In Viking-Age Scandinavia, however, the inconsistency of the gods may in itself have acted as an explanation for their failure to punish individuals who violated social norms, or to uphold their side of an arrangement with a human being. Perhaps this capriciousness provided a coping mechanism that sustained belief in the gods when they otherwise failed to fulfill their roles.

In sum, then, the Norse gods cannot be considered MHGs. While they may have been believed to engage in supernatural monitoring and punishment on some occasions, they were not supremely powerful, they did not create the universe, and they were not omniscient. In addition, they were too inconsistent in relation to morality to be classified as morally concerned. As such, they do not exhibit several of the key characteristics of MHGs.

## 5. Discussion and conclusions

To recap, the goal of the study reported here was to test between the two hypotheses at the heart of a debate in the cognitive science of religion concerning cooperation, socio-political complexity, and belief in moralizing high gods (MHGs). Proponents of one of the hypotheses argue that supernatural monitoring and punishment by MHGs was central to the development of complex societies in the Holocene (Norenzayan et al., 2016). The other hypothesis – the broad supernatural punishment (BSP) hypothesis – contends that it was fear of supernatural monitoring and punishment by non-MHG deities that fostered the development of socio-political complexity, and that MHGs followed rather than preceded the appearance of complex societies (Watts et al., 2015, 2016). To test between the MHG and BSP hypotheses, we turned to archaeological and textual evidence pertaining to pre-Christian belief systems in Viking-Age Scandinavia and sought to answer two questions: (1) did the Vikings perceive themselves to be subject to supernatural monitoring and punishment? And (2) do the Norse gods qualify as moralizing high gods (MHGs)?

Despite the limitations of the available data, we were able to obtain unequivocal answers to both questions. We identified evidence that indicates that pre-Christian Scandinavian populations may have believed that they were being monitored by supernatural entities in certain contexts, and that they would be subject to supernatural punishment for particular transgressions. This punishment seems to have largely involved the gods withdrawing their favor from an individual, leaving them at the mercy of fate. With regard to the second question, we found that the Norse gods do not meet most of the criteria for recognition as MHGs. While they were perceived to engage in supernatural monitoring and punishment on occasion, they were not supremely powerful, they did not create the universe, their knowledge was limited, and they do not seem to have been consistently concerned with human morality. Thus, the Norse gods do not qualify as MHGs. Taken together, the results of the study are consistent with the BSP hypothesis but not with the MHG hypothesis.

Ours is the second empirical study to yield results that are inconsistent with the historical sequence posited by the MHG hypothesis. The first was conducted by Watts et al. (2015) who, as we explained earlier, used phylogenetic techniques to examine whether MHGs can be linked to the development of socio-political complexity in a large sample of ethnographically documented Austronesian societies. Contrary to the predictions of the MHG hypothesis, Watts et al. (2015) found that MHGs followed, rather than preceded, increases in socio-political complexity, leading them to conclude that MHGs were not a pre-requisite for the development of socio-political complexity among these societies. There are no historical connections between the Austronesian societies that form Watts et al.'s (2015) sample and the Scandinavian societies that form ours. Nor is there any overlap in the methods used in the two studies. Thus, we can be confident that they represent independent tests of the MHG hypothesis.

Together, the results of Watts et al.'s (2015) study and our own represent a strong challenge to the element of the MHG hypothesis that distinguishes it from the BSP hypothesis – namely, the notion

that MHGs were important in the initial development of complex societies in the Holocene. Needless to say, if this were the case, Watts et al.'s (2015) study would have found that MHGs preceded, rather than followed, increases in socio-political complexity. It is a similar situation with the Vikings. As we have shown, the traditional Norse gods were not MHGs, and yet the complexity of Scandinavian societies increased markedly for several hundred years prior to the conversion to Christianity.

While our study's results are in agreement with those obtained by Watts et al. (2015), they appear to run counter to Purzycki et al.'s (2016). To reiterate, Purzycki et al. (2016) conducted economic games in several societies and found that deities' perceived degree of punitiveness and knowledge of human thoughts and actions was positively associated with generosity towards geographically distant co-religionists. Purzycki et al. (2016) interpreted this as support for the MHG hypothesis. However, we think the disagreement between the studies is more apparent than real. The BSP hypothesis does not contend that all religious deities are equally effective at fostering cooperation. All that it requires is for non-MHG religious beliefs and practices to be adequate to get the development of socio-political complexity off the ground. Thus, under the BSP hypothesis, it is perfectly possible for non-MHG religious phenomena to be less effective at fostering cooperation than MHGs but still adequate to support the development of complex societies. Consequently, Purzycki et al.'s (2016) results are not inconsistent with the BSP hypothesis and therefore our results are not inconsistent with theirs. The same holds for the other studies that have supported the MHG hypothesis (e.g., Johnson, 2005).

While the available textual and archaeological evidence for Scandinavia is more consistent with the BSP hypothesis than with the MHG hypothesis, there may be a way of bridging the hypotheses. To reiterate, the earliest Christian missions to Scandinavia took place during the early ninth century. Rather than resulting in the mass conversion of the populace, the Christianization process is widely regarded to have "trickled down" through society, being first officially adopted by kings and the aristocracy in the late tenth century before later filtering out into the wider population. As was the case elsewhere in Europe, Christianity offered benefits to the elite by upholding a ruler's divine right to rule, providing them with supernaturally sanctioned authority and some stability in matters of dynastic succession. At the same time, religious personnel served as royal advisors while presiding over inaugurations, marriages, births, deaths, and funerals, allowing the Church to supersede the authority of secular rulers and through this to become indispensable to the administration of kingdoms. Thus, there is an association between the conversion to Christianity and state formation in Scandinavia.

We need to be somewhat cautious here. The Christianization process in Scandinavia may have involved politically complex societies "borrowing" the Abrahamic MHG, as Watts et al. (2015) have argued happened with several Austronesian societies. In addition, there is little evidence for rapid and widespread changes in ritual belief and practices as a result of the Christianization process; in some regions there is evidence for continuity of pre-Christian beliefs and practices until well into the Middle Ages (Price, 2014a). This raises the possibility that, for much of the period of state formation, many people viewed the Christian god as just another in the pantheon of deities rather than as an MHG.

However, it is at least possible that the Abrahamic MHG played an important role in the process of state formation in Scandinavia during the latter part of the Viking Age. It could be that we are looking at the following scenario: non-MHG-based Norse belief systems were sufficient to foster the cooperation necessary for the initial development of socio-political complexity in Scandinavia between the fifth century and the end of the eighth century, but these could not sustain the process of state-building. This provided a motivation for the adoption of the MHG-based Christian belief system and its associated administrative institutions from the late tenth century, with the spread of Christianity facilitating the creation of state-level societies. While there are obvious caveats to this hypothesis (we cannot know, for example, how state formation in Scandinavia would have progressed in the absence of the Christianization process), evaluating the foregoing scenario would seem to be a useful next step.

Four other potential research directions suggest themselves. One issue that it would be useful to investigate is whether the Austronesian and Viking belief systems were unusual among non-MHG belief systems in their ability to foster cooperation and increases in social complexity in a similar way to MHG-based belief systems. It seems unlikely that we and Watts et al. (2015) would have fortuitously selected the only two instances of non-MHG-based belief systems capable of fostering cooperation to the extent necessary for the creation of complex societies, but it is a possibility. The most effective way of shedding light on this issue, we suspect, is through the examination of other historical case studies. Although the data likely will be fragmentary and challenging to interpret, historical case studies can be selected to avoid the confounding effects of the spread of the World Religions, which is difficult to do with ethnographic data.

Additional historical case studies would also be helpful with regard to another issue raised by our study – namely, the existence of alternatives to the types of supernatural monitoring and punishment that we are familiar with from the World Religions. Earlier we showed that the Vikings perceived themselves to be subject to supernatural monitoring even though they did not consider their gods to be omniscient. Instead of being omniscient, the Norse gods had the ability and desire to wander the physical world (as in *Grímnismál*), and this means they *could* have been personally monitoring an individual at any given time. As we suggested in our discussion of the helmets that seem to have been fashioned in the likeness of Óðinn, it seems likely that the prospect of actually meeting the gods in the flesh would have been a particularly powerful motivator of cooperation. The type of punishment meted out by the Norse gods also departs from that we are familiar with from the World Religions. To reiterate, the Norse gods seem to have normally punished transgressors indirectly, by withdrawing their protection. This left the individual at the mercy of fate, a concept that was personified by spirits such as the *dísir*. Again, it could be that the Vikings are outliers in this regard but it is also possible that these types of supernatural monitoring and punishment are more common than we have previously thought, and that we are just unfamiliar with them because of the dominance of the World Religions. Indeed, it is quite possible that other types of supernatural monitoring and punishment existed in the past. Given its centrality to the BSP hypothesis, it seems like investigating this issue should be a priority.

Another avenue of research concerns the role of MHGs in inter-group conflict. Shariff et al. (2009) suggested that the increase in cooperation that results from MHGs enables adherent societies to outcompete those that believe in other types of deities. This, they suggested, explains why a small number of MHG religions dominate the globe today. This hypothesis has been promulgated in a number of subsequent publications (e.g., Norenzayan, 2013; Norenzayan et al., 2016) but has yet to be tested. Interestingly, the history of northern Europe during the Viking Age appears to be inconsistent with the hypothesis. It is clear from the written record that relatively small Viking groups were able to effectively compete with, destabilize, and collapse state-level, Christian societies in the British Isles and the Frankish Empire (Nelson, 1991; Swanton, 2000). This suggests that MHGs may not in fact be more effective at fostering cooperation than deities that are not MHGs. With this in mind, it would be useful to carry out a rigorous comparative analysis of historical case studies in which societies with different types of deities engaged in conflict. Needless to say, such an analysis would have to control for a number of potential complicating factors, including demographic and technological differences between societies.

The last issue we think it would be useful to investigate is conflict between members of the same religion. In the recent debate about the impact of religious belief on cooperation, it seems to have been assumed that religion acts to bind groups together. Yet there are numerous examples from history where groups fought with one another despite a shared belief system. The Vikings are a case in point. It is clear that Viking groups engaged in warfare with one another both outside and within Scandinavia (Price, 2014c; Raffield, 2016). For another example we need go no further than the Norwegian Civil Wars of the twelfth to thirteenth centuries, a period of significant social upheaval and conflict that lasted for over 100 years. During this time, numerous claimants to the throne, all of whom were Christian, sought to gain power from their rivals. These and many other cases clearly

demonstrate that shared religious beliefs between groups do not necessarily promote cooperation or political cohesion. The corollary of this is that further research is necessary to explore the circumstances in which the cooperative benefits provided by religious solidarity might be overridden by other factors.

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## References

### Primary Sources

- Bayerschmidt, C. F., & Hollander, L. M. (Trans.). (1998). *Njals Saga*. Ware: Wordsworth Editions Ltd.
- Byock, J. (Trans.). (2005). *Gylfaginning*. In *The Prose Edda* (pp. 9–79). London: Penguin.
- Dennis, A., Foote, P., & Perkins, R. (Trans.). (1980). *Grágás I, Laws of Early Iceland*. Winnipeg: University of Manitoba Press.
- Ellison, R. C. (Trans.). (2000). *Saga of the Confederates*. In J. Smiley & R. L. Kellogg (Eds.), *The Sagas of Icelanders* (pp. 463–495). London: Penguin Books.
- Finlay, A., & Faulkes, A. (Trans.). (2011). *Óláfs saga Tryggvasonar*. In *Heimskringla, Volume I: The Beginnings to Óláfr Tryggvason* (pp. 137–233). London: Viking Society for Northern Research.
- Nelson, J. L. (1991). *Annals of St-Bertin*. Manchester: Manchester University Press.
- Orchard, A. (Trans.). (2011a). *Atlakviða*. In *The Elder Edda* (pp. 208–215). London: Penguin Books.
- Orchard, A. (Trans.). (2011b). *Gímnismál*. In *The Elder Edda* (pp. 49–59). London: Penguin Books.
- Orchard, A. (Trans.). (2011c). *Hávamál*. In *The Elder Edda* (pp. 15–39). London: Penguin Books.
- Orchard, A. (Trans.). (2011d). *Lokasenna*. In *The Elder Edda* (pp. 82–96). London: Penguin Books.
- Orchard, A. (Trans.). (2011e). *Reginismál*. In *The Elder Edda* (pp. 154–160). London: Penguin Books.
- Orchard, A. (Trans.). (2011f). *Völuspá*. In *The Elder Edda* (pp. 5–14). London: Penguin Books.
- Pálsson, H., & Edwards, P. (Trans.). (2006). *Book of Settlements. Landnámabók*. Winnipeg: University of Manitoba Press.
- Schach, P., & Hollander, L. M. (Trans.). (1959). *Eyrbyggja Saga*. Lincoln: University of Nebraska Press.
- Scudder, B. (Trans.). (2000). Egil’s Saga. In J. Smiley & R. L. Kellogg (Eds.), *The Sagas of Icelanders* (pp. 3–184). London: Penguin Books Ltd.
- Swanton, M. (Trans.). (2000). *Anglo-Saxon Chronicles*. London: Phoenix Press.
- Tschan, F. J. (Trans.). (1959). *Adam of Bremen: History of the Archbishops of Hamburg-Bremen*. New York: Columbia University Press.
- Turville-Petre, G. (Trans.). (1960). *Víga-Glúms Saga*. Oxford: The Clarendon Press.

### Secondary Sources

- Andersson, G. (2006). Among trees, bones, and stones. The sacred grove at Lunda. In A. Andrén, K. Jennbert, & C. Raudvere (Eds.), *Old Norse religion in long-term perspectives* (pp. 195–199). Lund: Nordic Academic Press.
- Andrén, A., Jennbert, K., & Raudvere, C. (2006). Old Norse religion: Some problems and prospects. In A. Andrén, K. Jennbert & C. Raudvere (Eds.), *Old Norse religion in long-term perspectives* (pp. 11–14). Lund: Nordic Academic Press.



- Arwill-Nordbladh, E. (2012). Ability and disability. On bodily variations and bodily possibilities in Viking Age myth and image. In I.-M. Back Danielsson, & S. Thedéen (Eds.), *To tender gender: The pasts and futures of gender research in archaeology* (pp. 33–60). Stockholm: Stockholm University Press.
- Atran, S., & Henrich, J. (2010). The evolution of religion: How cognitive by-products, adaptive learning heuristics, ritual displays, and group competition generate deep commitments to prosocial religions. *Biological Theory*, 5, 18–30.
- Bäck, M., Hållans Stenholm, A.-M., & Ljung, J.-Å. (2008). *Lilla Ullevi - historien om det fridlysta rummet*. Stockholm: Riksantikvarieämbetet.
- Baillon, A., Selim, A., & van Dolder, D. (2013). On the social nature of eyes: The effect of social cues in interaction and individual choice tasks. *Evolution and Human Behavior*, 34, 146–154.
- Bateson, M., Nettle, D., & Roberts, G. (2006). Cues of being watched enhance cooperation in a real-world setting. *Biology Letters*, 2, 412–414.
- Bersu, G., & Wilson, D. (1966). *Three Viking Graves in the Isle of Man*. London: The Society for Medieval Archaeology.
- Brink, S. (2008). Law and society: Politics and legal customs in Viking Scandinavia. In S. Brink & N. Price (Eds.), *The Viking world* (pp. 23–31). London & New York: Routledge.
- Byock, J. (2003). Feuding in Viking-Age Iceland's great village. In W. C. Brown & P. Górecki (Eds.), *Conflict in medieval Europe. Changing perspective on society and culture* (pp. 229–241). Aldershot: Ashgate.
- Carver, M. O. H. (1998). *Sutton Hoo: Burial ground of kings?* London: British Museum Press.
- Carver, M. O. H. (2005). *Sutton Hoo: A seventh-century princely burial ground and its context*. London: British Museum Press.
- Clunies Ross, M. (1994). *Prolonged echoes: Old Norse myths in medieval northern society. I. The myths*. Odense: Odense University Press.
- Clunies Ross, M. (1998). *Prolonged echoes: Old Norse myths in medieval northern society. II. The reception of Norse myths in medieval Iceland*. Odense: Odense University Press.
- Clunies-Ross, M. (2010). *The Cambridge introduction to the Old Norse-Icelandic saga*. Cambridge: Cambridge University Press.
- Dobat, A. S. (2006). Bridging mythology and belief. In A. Andrén, K. Jennbert, & C. Raudvere (Eds.), *Old Norse religion in long-term perspectives* (pp. 184–188). Lund: Nordic Academic Press.
- DuBois, T. (1999). *Nordic religions in the Viking Age*. Philadelphia: University of Pennsylvania Press.
- Ellis, H. R. (1968). *The road to Hel: A study of the conception of the dead in Old Norse literature*. New York: Greenwood Press.
- Ernest-Jones, M., Nettle, D., & Bateson, M. (2011). Effects of eye images on everyday cooperative behavior: A field experiment. *Evolution and Human Behavior*, 32, 172–178.
- Eriksen, M. H. (2015). *Portals to the past: An archaeology of doorways, dwellings, and ritual practice in Late Iron Age Scandinavia (Doctoral Dissertation)*. University of Oslo.
- Gallo, L. L. (2004). Persistent motifs of cursing from Old Norse literature in Busluboen. *Linguista e Filologia*, 18, 119–146.
- Gerds, M. (2006). Scandinavian burial rites on the southern Baltic coast: Boat-graves in cemeteries of early medieval trading places. In A. Andrén, K. Jennbert, & C. Raudvere (Eds.), *Old Norse religion in long-term perspectives* (pp. 153–158). Lund: Nordic Academic Press.
- Gräslund, A.-S. (2008). The material culture of Old Norse religion. In S. Brink & N. Price (Eds.), *The Viking world* (pp. 249–256). London & New York: Routledge.
- Gustin, I. (2004). *Mellan gåva och marknad. Handel, tillit och materiell kultur under vikingatid*. Stockholm: Almqvist & Wiksell.
- Haidt, J. (2012). *The righteous mind: Why good people are divided by politics and religion*. New York: Pantheon Books.
- Haley, K. J., & Fessler, D. M. T. (2005). Nobody's watching? Subtle cues affect generosity in an anonymous economic game. *Evolution and Human Behavior*, 26, 245–256.
- Hedeager, L. (1997a). *Skygger afen anden virkelighed. Oldnordiske myter* [Shadows of a different reality: Old Norse myths]. København: Samlerens Universitet.
- Hedeager, L. (1997b). Odins offer. Skygger afen shamanistisk tradition i nordisk folkevandringstid [Odin's sacrifice. Shadows of a shamanic tradition in the Nordic Migration Period]. *Tor*, 29, 265–278.
- Hedeager, L. (2011). *Iron Age myth and materiality: An archaeology of Scandinavia AD 400–1100*. London & New York: Routledge.
- Hedenstierna-Jonson, C. (2009). Social and political formations in the Scandinavian areas, 8<sup>th</sup>-10<sup>th</sup> century. The martial perspective. *Territorio, Sociedad y Poder*, 2, 89–104.
- Herschend, F. (1998). *The idea of the good in Late Iron Age society*. Uppsala: Uppsala University.
- Hildebrandt, M. (1989). Frösö kyrka på hednisk grund [Frösö church on pagan ground]. *Fornvardaren*, 24, 153–166.
- Hultgård, A. (2008). The religion of the Vikings. In S. Brink & N. Price (Eds.), *The Viking World* (pp. 212–218). London & New York: Routledge.
- Hüsken, U. (Ed.). (2007). *When rituals go wrong: Mistakes, failure, and the dynamics of ritual*. Leiden: Brill.

- Jesch, J. (1998). Murder and treachery in the Viking Age. In T. Haskett (Ed.), *Crime and punishment in the middle ages* (pp. 63–85). Victoria: University of Victoria.
- Jesch, J. (2001). *Ships and Men in the Late Viking Age: The vocabulary of runic inscriptions and Skaldic Verse*. Woodbridge: The Boydell Press.
- Jochens, J. (1991). The illicit love visit: An archaeology of Old Norse sexuality. *Journal of the History of Sexuality*, 1, 357–392.
- Johnson, D. (2005). Gods punishment and public goods: A test of the supernatural punishment hypothesis in 186 world cultures. *Human Nature*, 16, 410–446.
- Johnson, D. (2011). Why God is the best punisher. *Religion, Brain & Behavior*, 1(1), 77–84.
- Johnson, D. (2015). Big Gods, small wonder: Supernatural punishment strikes back. In Norenzayan, A. (2015) Big questions about Big Gods: Response and discussion. *Religion, Brain & Behavior*, 5, 327–342.
- Johnson, D. (2016). *God is watching You: How the fear of God makes Us human*. Oxford: Oxford University Press.
- Koutrafouris, V. G. & Sanders, J. (Eds.). (2013). *Ritual failure: Archaeological perspectives*. Leiden: Sidestone Press.
- Larsson, L., & Lenntorp, K.-M. (2004). The enigmatic house. In L. Larsson (Ed.), *Continuity for centuries. A ceremonial building and its context at Uppåkra, southern Sweden* (pp. 3–48). Stockholm: Almqvist & Wiksell.
- Lucas, G., & McGovern, T. (2007). Bloody slaughter: Ritual decapitation and display at the Viking settlement of Hofstaðir, Iceland. *European Journal of Archaeology*, 10, 7–30.
- Lund, J. (2005). Thresholds and passages: The meanings of bridges and crossings in the Viking Age and early Middle Ages. *Viking and Medieval Scandinavia*, 1, 109–135.
- Lund, J. (2010). At the water's edge. In M. Carver, A. Sanmark, & S. Semple (Eds.), *Signals of belief in early England: Anglo-Saxon paganism revisited* (pp. 49–66). Oxford: Oxbow.
- Lupoi, M. (2000). *The origins of the European legal order*. Cambridge: Cambridge University Press.
- Mauss, M. (1950). *Sociologie et anthropologie* [Sociology and anthropology]. Paris: Presses Universitaires de France.
- McLeod, S. (2014). *The beginning of Scandinavian settlement in England: The Viking "Great Army" and early settlers, c. 865–900*. Turnhout: Brepols.
- McNamara, R. (2012). *When does it matter that God is watching? Differential effects of large and small gods on cheating* (Master's Thesis). Retrieved from <https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0073035>
- McTurk, R. (Ed.). (2005). *A companion to Old Norse-Icelandic literature and culture*. Oxford: Blackwell.
- Mejsholm, L. (2009). *Gränsland. Konstruktion av tidig barndom och begravningsritual vid tiden för kristnandet i Skandinavien*. Uppsala: Institutionen för arkeologi och antik historia.
- Miller, W. I. (1997). *Bloodtaking and peacemaking*. Chicago: University of Chicago Press.
- Mundal, E. (1990). The position of the individual gods and goddesses in various types of sources – with special reference to the female divinities. In T. Ahlbäck (Ed.), *Old Norse and Finnish religion and cultic place-names* (pp. 294–315). Åbo: Donner Institute for Research in Religious and Cultural History.
- Myhre, B. (2000). The early Viking Age in Norway. *Acta Archaeologica*, 71, 35–47.
- Myhre, B. (2003). The Iron Age. In K. Helle (Ed.), *The Cambridge history of Scandinavia* (Vol. 1, pp. 60–93). Cambridge: Cambridge University Press.
- Myhre, B. (2015). *For Viken ble Norge: Borregravfeltet som religiøs og politisk arena* [Before Viken became Norway: The Borre cemetery as a religious and political arena]. Oslo: Oslo University.
- Näsman, U. (2000). Raids, migrations, and kingdoms – the Danish case. *Acta Archaeologica*, 71, 1–7.
- Naumann, E., Krzewińska, M., Götherström, A., & Eriksson, G. (2014). Slaves as burial gifts in Viking Age Norway? Evidence from stable isotope and ancient DNA analyses. *Journal of Archaeological Science*, 41, 533–540.
- Nielsen, A.-L. (1997). Pagan cultic and votive acts at Borg. In H. Andersson, P. Carelli, & L. Ersgård (Eds.), *Visions of the past. Trends and traditions in Swedish medieval archaeology* (pp. 373–392). Stockholm: Almqvist & Wiksell International.
- Norenzayan, A. (2013). *Big gods: How religion transformed cooperation and conflict*. Princeton: Princeton University Press.
- Norenzayan, A., & Shariff, A. F. (2008). The origin and evolution of religious prosociality. *Science*, 322, 58–62.
- Norenzayan, A., Shariff, A. F., Gervais, W. M., Willard, A. K., McNamara, R. A., Slingerland, E., & Henrich, J. (2016). The cultural evolution of prosocial religions. *Behavioral and Brain Sciences*, 39, e1.
- Ödman, A. (2003). Tankar kring två ringhandtag från Uppåkra [Some thoughts on two ring handles from Uppåkra]. In B. Hårdh (Ed.), *Fler Fynd i Centrum. Materialstudier i och kring Uppåkra* [More focus on finds: Material studies in and around Uppåkra] (pp. 89–96). Stockholm: Almqvist & Wiksell.
- Patton, K. C. (2009). *Religion of the gods: Ritual, paradox, and reflexivity*. Oxford: Oxford University Press.
- Price, N. (2002). *The Viking way: Religion and warfare in Late Iron Age Scandinavia*. Uppsala: University of Uppsala.
- Price, N. (2008). Dying and the dead. In S. Brink & N. Price (Eds.), *The Viking world* (pp. 257–273). London & New York: Routledge.
- Price, N. (2010). Passing into poetry: Viking-Age mortuary drama and the origins of Norse mythology. *Medieval Archaeology*, 54, 123–156.
- Price, N. (2014a). Belief & ritual. In G. Williams, P. Pentz, & M. Wemhoff (Eds.), *Vikings: Life and legend* (pp. 164–195). London: British Museum Press.

- Price, N. (2014b). Nine paces from Hel: Time and motion in Old Norse ritual performance. *World Archaeology*, 46, 178–191.
- Price, N. (2014c). Ship men and slaughter wolves. Pirate polities in the Viking Age. In L. Müller & S. Amirell (Eds.), *Persistent piracy: Historical perspectives on maritime violence and state formation* (pp. 51–68). Basingstoke: Palgrave Macmillan.
- Price, N., & Mortimer, P. (2014). An eye for Odin? Divine role-playing in the age of Sutton Hoo. *European Journal of Archaeology*, 17, 517–538.
- Purzycki, B. G. (2010). Spirit masters, ritual cairns, and the adaptive religious system in Tyva. *Sibirica*, 9, 21–47.
- Purzycki, B. G., Apicella, C., Atkinson, Q., Cohen, E., McNamara, R. A., Willard, A. K., ... Henrich, J. (2016). Moralistic gods, supernatural punishment and the expansion of human sociality. *Nature*, 530, 327–330.
- Raffield, B. (2014). “A river of knives and swords”: Ritually deposited weapons in English watercourses and wetlands during the Viking Age. *European Journal of Archaeology*, 17, 634–655.
- Raffield, B. (2016). Bands of brothers: A re-appraisal of the Viking Great Army and its implications for the Scandinavian colonization of England. *Early Medieval Europe*, 24, 308–337.
- Raffield, B., Greenlow, C., Price, N., & Collard, M. (2016). Ingroup identification, identity fusion, and the formation of Viking warbands. *World Archaeology*, 48, 35–50.
- Raffield, B., Price, N., & Collard, M. (2017). Male-biased operational sex ratios and the Viking phenomenon: An evolutionary anthropological perspective on Late Iron Age Scandinavian raiding. *Evolution and Human Behavior*, 38 (3), 315–324. doi:dx.doi.org/10.1016/j.evolhumbehav.2016.10.013.
- Raffield, B., Price, N., & Collard, M. (In Press). Polygyny, concubinage and the social life of women in Viking-Age Scandinavia’ – paper awaiting publication in *Viking and Medieval Scandinavia*.
- Raudvere, C. (2008). Popular religion in the Viking Age. In S. Brink & N. Price (Eds.), *The Viking world* (pp. 235–243). London & New York: Routledge.
- Raudvere, C. & Schjødt, J-P. (Eds.). (2012). *More than mythology. Narratives, ritual practices and regional distribution in pre-Christian Scandinavian religions*. Lund: Nordic Academic Press.
- Rigdon, M. L., Ishii, K., Watabe, M., & Kitayama, S. (2009). Minimal social cues in the dictator game. *Journal of Economic Psychology*, 30, 358–367.
- Roes, F. L., & Raymond, M. (2003). Belief in moralizing gods. *Evolution and Human Behavior*, 24, 126–135.
- Sanmark, A. (2009). Administrative organisation and state formation: A case study of assembly sites in Södermanland, Sweden. *Medieval Archaeology*, 53, 205–241.
- Sanmark, A. (2017). *Viking Law and order. Places and rituals of assembly in the medieval north*. Edinburgh: Edinburgh University Press.
- Sanmark, A., & Semple, S. (2008). Places of assembly. New discoveries in Sweden and England. *Fornvännen*, 103, 245–259.
- Shariff, A. (2011). Big gods were made for big groups. *Religion, Brain & Behavior*, 1, 89–93.
- Shariff, A. F., & Norenzayan, A. (2007). God is watching you: Priming God concepts increases prosocial behavior in an anonymous economic game. *Psychological Science*, 18, 803–809.
- Shariff, A. F., Norenzayan, A., & Henrich, J. (2009). The birth of high gods. How the cultural evolution of supernatural policing influenced the emergence of complex, cooperative human societies. In M. Schaller, A. Norenzayan, S. Heine, T. Yamagishi, & T. Kameda (Eds.), *Evolution, culture, and the human mind* (pp. 119–136). New York: Psychology Press.
- Simek, R. (2006). *Dictionary of northern mythology*. Cambridge: Brewer.
- Sindbæk, S. (2008). Local and long-distance exchange. In S. Brink & N. Price (Eds.), *The Viking world* (pp. 150–158). London: Routledge.
- Skre, D. (2001). The social context of settlement in Norway in the first millennium AD. *Norwegian Archaeological Review*, 34, 1–12.
- Skre, D. (2007). Preparing the new campaign. In D. Skre (Ed.), *Kaupang in Skiringssal* (pp. 43–52). Aarhus: Aarhus University Press.
- Skre, D. (2014). Norøyjevr – Norway: From sailing route to kingdom. *European Review*, 22, 34–44.
- Söderberg, B. (2005). *Aristokratiskt Rum och Gränsöverskridande. Järrestad och Sydöstra Skåne Mellan Region och Rike 600–1100* [Aristocratic space and border-crossing. Järrestad and southeastern Skåne between region and kingdom, 600–1100]. Stockholm: Riksantikvarieämbetet.
- Solli, B. (1999). Odin the queer? On ergi and shamanism in Norse mythology. In A. Gustafsson & H. Karlsson (Eds.), *Glyfer och arkeologiska rum - en vänbok till Jarl Nordbladh* (pp. 341–349). Göteborg: University of Göteborg.
- Solli, B. (2002). *Seid: myter, sjamanisme og kjønn i vikingenes tid*. Oslo: Pax.
- Sørensen, P. M. (1983). *The unmanly man: Concepts of sexual defamation in early northern society*. Odense: Odense University Press.
- Steinsland, G. (Ed.). (1986). *Words and objects. Towards a dialogue between archaeology and history of religion*. Oslo: Norwegian University Press.
- Stein-Wilkeshuis, M. (1998). Scandinavian law in a tenth-century Rus'-Greek commercial treaty? In J. Hill & M. Swan (Eds.), *The community, the family and the saint. Patterns of power in early medieval Europe* (pp. 311–322). Turnhout: Brepols.

- Stein-Wilkeshuis, M. (2002). Scandinavians swearing oaths in tenth-century Russia: Pagans and Christians. *Journal of Medieval History*, 28, 155–168.
- Stenholm, A.-M. H. (2006). Past memories. In A. Andrén, K. Jennbert, & C. Raudvere (Eds.), *Old Norse religion in long-term perspectives* (pp. 341–346). Lund: Nordic Academic Press.
- Watts, J., Greenhill, S. J., Atkinson, Q. D., Currie, T. E., Bulbulia, J., & Gray, R. D. (2015). Broad supernatural punishment but not moralizing high gods precede the evolution of political complexity in Austronesia. *Proceedings of the Royal Society B: Biological Sciences*, 282, 20142556.
- Watts, J., Sheehan, O., Atkinson, Q. D., Bulbulia, J., & Gray, R. D. (2016). Ritual human sacrifice promoted and sustained the evolution of stratified societies. *Nature*, 532, 228–231.
- Williams, H. (2011). The sense of being seen: Ocular effects at Sutton Hoo. *Journal of Social Archaeology*, 11, 99–121.
- Zori, D., Byock, J., Erlendsson, E., Martin, S., Wake, T., & Edwards, K. J. (2013). Feasting in Viking Age Iceland: Sustaining a chiefly political economy in a marginal environment. *Antiquity*, 87, 150–165.