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IN ROOFS, WALLS AND TOWERS. ABOUT THE APOTROPAIC PROPERTIES ATTRIBUTES IN THE MIDDLE AGES AND MODERN TIMES, THE SO CALLED THUNDERSTONES (MAGIC-SPATIAL ASPECTS)

Abstract: This article deals with prehistoric stone objects called ‘thunderstones,’ which in the Middle Ages through modern times were often placed at the border points of houses and farm buildings (e.g., roofs, chimneys, walls, thresholds), as well as in town walls and other defence walls. It should be assumed that they were used as a magical means to protect areas considered to be controlled by humans (*orbis interior*) from threats posed by the outside world (*orbis exterior*). The clearly marked repetition of the same types of places in which these prehistoric stone objects were deposited (in areas places inhabited and used by humans) in many European regions indicates that this was a chronologically and territorially widespread phenomenon.

Keywords: prehistoric stones products, thunderstones, apotropaic meaning, *orbis interior-orbis exterior*, symbolic frontiers, Middle Ages, Modern Times

Received: 31.10.2022 **Revised:** 29.11.2022 **Accepted:** 21.12.2022

Citation: Kurasiński K. 2022. *In Roofs, Walls and Towers. About the Apotropaic Properties Attributes in the Middle Ages and Modern Times, the so called Thunderstones (Magic-Spatial Aspects)*. “Fasciculi Archaeologiae Historicae” 35, 109-129, DOI 10.23858/FAH35.2022.008

‘A characteristic feature of traditional communities is that they recognize the natural opposite between the area, which they inhabit, and the unknown and undefined space that surrounds it.’
(Eliade 1999, 23)

Introduction

The tendency to valorise space and assign meanings to its individual fragments or zones derives from the general human need to organise our environment. For, along with time, space belongs to the rudimentary categories of communication between man and his surrounding reality, conditioning the possibility of experiencing, assimilating, and understanding the world.¹

This stems from deeply rooted and culturally shaped human territorialism. Man is a ‘spatial animal,’ having a specific and typical ‘sense’ which not only contributes to the practices of everyday life but also forms the basis of further models-images of the world constructed by him.² A properly marked, structured, and organised space becomes a kind of algorithm that

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¹ According to A. J. Gurewicz, ‘space is a very important coordinate of the ‘world model’ used by people in social practice. Experiencing and realizing spatial relationships is an inseparable

component of human cognition, and therefore also of consciousness. While defining the extent and shape of the external space, man simultaneously relates it to himself and finds his place in the world. The spatial idea is closely related to man’s relationship to the social environment and to nature, where his spatial ideas are embodied’ (Gurewicz 1972, 23).

² Lejman 1999, 82.

gives a sense of order and cohesion to the entire *universum*.³

In various cultural and historical systems, the spatial construction of the world has taken on various forms and methods of implementation, depending on the current perceptions and beliefs that made up the dominant worldview. At the same time, this took place on many levels: material, sign-symbolic, and behavioural.⁴ In the traditional, magical-religious way of seeing the world, space was not a coherent and unified structure – it was experienced primarily as indivisible and qualitatively distinct domains.⁵ Along with the autonomisation of the worldview, two oppositional (though interpenetrating and interactive) categories of perceiving space were formed: the *sacrum*, alien to man and marked by sanctity; and *profanum*, deprived of the supernatural power.

The *sacrum* is marked by sacred places, the domain of spiritual powers, in which religious activities concentrate. The *sacrum* is at the same time the centre of the world and the standard of all order.⁶ There is also an external mythicised area (*orbis exterior*), in which a differently organised *sacrum* is marked – this may be another community with its own religious organisation or an unorganised *sacrum*, comprised primarily of wild, uncultivated, and uninhabited places. In contrast, the *profanum* is an area organised according to a sacred pattern, tame and generally safe for humans,⁷ but only after appropriate protective measures have been taken to ward off or propitiate supernatural powers. These protective measures were carried out cyclically or at particularly critical moments, because forces that were

alien to the human world constantly sought to violate and invade secular space.⁸

The juxtaposition of qualitatively different places and domains required the establishment of frontiers – zones with highly specific properties.⁹ This issue will be discussed further, but it should already be emphasised that the frontier, while marking the adjacent zones, does not belong to either of them, but simultaneously binds them together and separates them. Thus, as a contact area, it is at the same time a protection of what is inside (*orbis interior*) and an opening (at specific points) to the unknown, incomprehensible, and disordered external world, identified with the sphere of the sacred.¹⁰ The mediating nature of the frontier favours the activity of ghosts, demons, witches, and other transcendental beings in such places and the appearance of unusual phenomena.¹¹ That is why many magical activities were performed there, e.g., throwing away objects considered unclean and burying the dead classified as dangerous (such as suicide victims or aborted fetuses)¹² for which field boundaries were especially suitable.¹³ In order to avoid the intrusion of undesirable powers, protective measures were taken with the use of various types of apotropaic remedies.¹⁴

In spatial valorisation, it is also worth emphasising the significant role of categories that define the direction. The vectors of sacred space (vertical and horizontal) are axiological and determined by a mythologically justified order. Thus, usually the upward direction (sun, sky, stars) is perceived positively and downward (the underworld, demonic world) negatively, and goodness, correctness, and power are associated with the right side, and evil, weakness, and impurity with the left.¹⁵

³ The ‘taming’ of space is considered essential, primarily through the development of social relations and a symbolic code around each other (Jałowicki 1985, 131).

⁴ Cackowski 1998, 35.

⁵ It should be emphasised that semantisation is not so much the space itself, but a strictly delineated and geometricised segment of it. It takes a specific place or designates it, thus becoming an organised world of meanings (Greszczuk 2005, 228-229). ‘Space’ is a category more abstract than ‘place’. And it is only places (and objects – see also Toporow 2003, 30) that define space, giving it meaning (Tuan 1987, 16, 30). In this approach, a place is that part of the environment in which things and objects are arranged according to a fixed order (statically, stably), while space is a used place, in motion, having its direction and time limit (Manikowska and Pomierny-Wąsińska 2015, 191).

⁶ ‘Every sacred space is associated with some hierophany, an invasion of holiness, due to which a certain area is torn from its cosmic surroundings and subjected to a qualitative change’ (Eliade 1999, 20).

⁷ The *profanum* is, in the first place, the everyday and closest space subject to spatial specification, encompassing the household and the family gathered around it. Further out it includes the croft (fenced and closed with a gate), consisting of a yard, farm buildings, and adjacent lands (field, meadow, orchard) (Pelcowa 2005, 128).

⁸ On the above topic, see, among others, Czarnowski 1956; Niczyporuk 1998, 45-52; Zajac 2003; Zajac 2004.

⁹ On the various aspects of the meaning of the ‘frontier’ and its premodern perception, see, among others, Tyszka 1995; Slivka 2004; Janeczek 2011. A semantically related concept is ‘borderland’ (for cultural meaning see, among others, Bukowska-Floreńska 1994; Bednarek 2006).

¹⁰ Kowalski 1996, 8; Kowalski 1998, 149; Wójtowicz 2011, 81.

¹¹ Czarnowski 1956, 228; Kowalski 1994, 147, 148; Kowalski 1996, 13; Kowalski 1998, 153.

¹² Kowalski 1994, 147, 149; Kowalski 1996, 13, 15; Kowalski 1998, 155-156.

¹³ Adamowski 1991.

¹⁴ Kowalski 1994, 148; Kowalski 1996, 14; Kowalski 1998, 154.

¹⁵ E.g., Greszczuk 2005, 233; Jacko 2005, 177, 179; Jacko 2008, 266; Kowalski 1998, 213, 217-218. In the Middle Ages, the dual nature of images was expressed in pairs of opposites arranged along a vertical axis: for example, heaven opposed to earth. The concept of ‘up’ was associated with nobility, purity and good, while ‘down’ was associated with impurity and evil. The incompatibility of matter and spirit, body and soul also carried within it the opposition of these vectors. Thus, spatial concepts were inextricably linked with religious and moral concepts (Guriewicz 1976, 74, 76, 80).



Fig. 1. A 15th-century engraving depicting the town of Ensisheim being struck by lightning. Source: Carelli 1997, Fig. 4.

This summarised image of the spatial perception and categorisation of the world introduces us to the problems of the present considerations on the prehistoric stone objects known from numerous discoveries from the Middle Ages and modern times and their role in the symbolic and magical protection of the human domain separated from the environment. These objects are mainly various types of axes, adzes, chisels, hammers, and axe-hammers, mainly Neolithic (notably excluding those made of flint, although these were found in similar contexts)¹⁶ and all other ‘archaica.’¹⁷ Continuing previous investigations,¹⁸ we will therefore try to develop one of the interpretative directions already undertaken for the group of artefacts in question, involving their use as a magical safeguards of areas ‘tamed’ and ‘domesticated’ by man.

The general nature of thunderstones

Research shows that in cultural systems dominated by magical-religious thinking, ideas about many stone objects oscillated around an atmospheric phenomenon: a lightning and thunder storm. In many cultures, including Slavic cultures, it was widely believed that stone objects fell from the sky in the form of lightning or together with lightning¹⁹ (Fig. 1). At first embedded in the ground, after a certain period of time they rose to the surface where they could be found and used

for various purposes.²⁰ Hence, they are referred to as ‘thunderstones’ (with many semantic and synonymous equivalents, linguistically and regionally determined²¹), although this term may also have included natural formations of both organic and inorganic origin (e.g., bellenmites, echinity, or fulgurites).²² Stone products and fossils sometimes coexisted, fulfilling the same or similar magical functions.²³

Thunderstones were identified with divine projectiles – lithic weapons that acted at a distance. Hence, they were considered a heavenly weapon-attribute of pagan thunder gods (e.g., Thor, Perun), and after the spread of Christianity, of God and the saints. They could be directed against evil forces and had fertilising and purifying power, but at the same time, in the form of thunderbolts, they were instruments of punishment and justice. The myths and beliefs associated with this theme may therefore have significantly fed and supported the belief in the celestial origin of thunderstones and determined their identification with the found prehistoric products. This was reflected in folk rituals (e.g., Scandinavian and Slavic) as well as in the naming of the objects in question.²⁴

It should be emphasised that the mythic/belief-based conceptualisation of the world associated

¹⁶ E.g., Sedova 1957; Eijk van 2007; Watte and Jullien 2007; Clavén et al. 2012.

¹⁷ They include a wide assortment of objects diversified in terms of form, technique, and raw material used, which were made much earlier than the context of their discovery would indicate (on this topic, see recently Knight et al. 2019; Kajkowski 2020; Kurasiński and Skóra 2020; Rapan Papeša 2020; current literature in these works).

¹⁸ See Kurasiński 2021a.

¹⁹ See Czaplicka 1985.

²⁰ Sometimes the observed phenomenon of meteorite falls is given as the real reason for the above beliefs (Andree 1889, 30; Olbrich 1987, 328; Fröhlich 1992, 239; Muhonen 2006, 5). This is suggested by an axe with an engraved image of a comet from Lhánice (Moravia). Although no details have been given for the discovery of this specimen, the image was undoubtedly applied at a later date (Skutil 1963, 85, Fig. 1:a; Košťufík et al. 1986, 211, Fig. 23:4; Fröhlich 1992, 239). On the origin of thunderstones, see Sklenář 1999, 41; Kurasiński 2021a, 29-32.

²¹ Examples with reference to literature collected in Kurasiński 2021a, 6.

²² Kurasiński 2021a, 6-7.

²³ John 2003, 17; see also Samdal 2000, 51, 76-77; Johanson 2018a, 134.

²⁴ More on that Kurasiński 2021a, 29-30; see also Kowalski 1998, 452; Niebrzegowska-Bartmińska 2016.

with these objects was not limited only to the way of thinking of uneducated social classes. For a long time, no clear distinction was made between natural creations and those of human origin in the belief that prehistoric stone tools were thunderstones or elf-arrows dropped from the sky.²⁵ They gained their unique shape through a kind of natural process – they were created when lightning hit the ground. The scholars, thinkers, and antiquarians who dealt with these finds grouped them under the old Greek name *ceraunia* (also *ceraunium*, *ceraunius*, *ceraneus*), i.e., ‘thunderstones’ (Latin *lapis fulminaris*).²⁶

During the Middle Ages, belief in the magical power of these artefacts met with approval even among the clergy. Marbod, Bishop of Rennes (†1123), in his work *Liber Lapidum seu de Gemmis*, written between 1061 and 1081, discussed the medical and magical properties of the stones, including the finds discussed in this paper. According to Marbod, thunderstones falling from the sky protected man and his household from lightning strikes. They also protected those on river or sea voyages, contributed to victories in battles, and ensured a good night’s sleep.²⁷ The Dominican theologian St. Albert the Great (Magnus) (†1280) spoke in a similar way in his treatise *De mineralibus et rebus metallicis libri quinque*.²⁸ About a century later, Conrad of Megenberg (†1374), a German scientist and writer who held various ecclesiastical positions, noted in the *Book of Nature (Buch der Natur)* that a thunderstone (*dornstein*) from heaven would protect the place where it was currently located.²⁹

At the end of the 17th and 18th centuries the provenance of prehistoric stone products began to be more widely questioned and arguments were put forward in favour of their correct interpretation. As a result of growing debate and scientific advances, the belief was that there was a period in European history when its inhabitants produced and used stone tools in a variety of ways became firmly established.³⁰

However, the scientific explanation of the origin of thunderstones had no impact on the popular belief in folk culture, where belief in the magical powers of these objects persisted for much longer, as evidenced by folklore accounts from the 19th and early 20th centuries. People still did not realise that these

were man-made artefacts.³¹ Instead, the essential point of reference was their supernatural origin.

Thus, to their finders, thunderstones appeared as extraordinary creations to which in the Middle Ages and modern times were attributed supernatural properties, used in various spheres of life, although nowadays it is not always possible to recognise their function and meaning. They may have attracted attention because of the type of raw material, their shape, size, or colour, but we have little insight into this.³² Nevertheless, it can be expected that the specific use of the thunderstone depended on the people’s immediate needs, current beliefs and ideological beliefs, or local traditions.³³ As rightly pointed out by C. Houlbrook, each thunderstone is ‘a product not just of its anonymous prehistoric maker, but also of those finders, users, and relinquishes who pass through its biography’.³⁴

From previous research supported by ethnographic data, we know that the objects in question were considered useful in the treatment of humans and animals and in the prevention of diseases.³⁵ Some specimens were also incorporated into medieval and modern ceremonial weapons.³⁶

Particularly important in the interpretation of the *archaica* in question is where they were deposited. In many parts of Europe they were very often deposited in residential and farm buildings, sometimes religious buildings, located within medieval and modern fortifications, as well as in villages and towns. There are also known cases of placing thunderstones in fortifications and cemetery walls.³⁷ This was primarily due to the need to magically protect the space occupied by man, especially against lightning, fire, hail, and other natural disasters (more on this later).

Spatial and chronological context – examples of finds

In the light of existing ethnographic records, every home in northern Europe during the Middle Ages and Modern Period was supposed to have an axe or other

²⁵ Trigger 2006, 85, 92.

²⁶ Abramowicz 1979, 128.

²⁷ *Marbodi Liber Lapidum*, 28, p. 56.

²⁸ *De mineralibus et rebus metallicis*, II, 3, p. 127; English translation in *Book of Minerals*, II, 3, p. 79.

²⁹ *Buch der Natur*, VI, 21, p. 441; see Franz 1909, 41.

³⁰ For a summary discussion of the meanders of views on thunderstones in the history of science, see Kurasiński 2021a, 30-31.

³¹ It is believed that until the industrial revolution the true origin of prehistoric artefacts remained unclear to most villagers (Verhart et al. 2021, 9; on this topic, see also Kurasiński 2021b, 13-14).

³² See Kurasiński 2021a, 37.

³³ The same item could even have different purposes in succession. For example, a diorite axe found in the village of Štram-pouch (Czechia) was initially placed in the roof ridge as protection against lightning, then it was used to treat hernias in children, and finally to increase the milk yield of cows (Sklenář 1999, 57).

³⁴ Houlbrook 2019, 200.

³⁵ Kurasiński 2021b.

³⁶ Kurasiński 2022.

³⁷ The contexts of occurrence recorded so far with examples are discussed in Kurasiński 2021a.

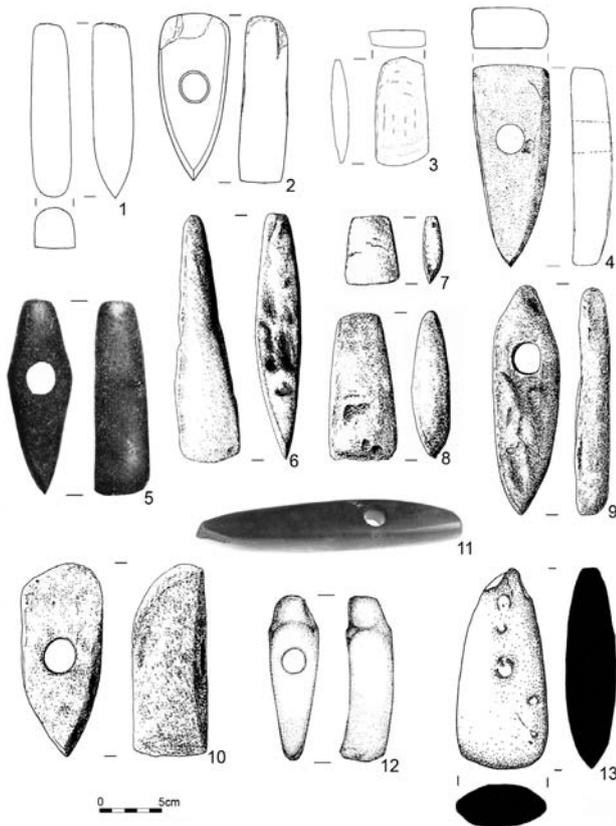


Fig. 2. Thunderstones placed in the roof space. 1 – Milešov. Source: Fröhlich 1992, Fig. 4:2; 2 – Prachatice. Source: Fröhlich 1992, Fig. 4:3; 3 – Železná Ruda. Source: Menšík 2018, Fig. 2; 4 – Lúčnice nad Žitavou. Source: Novotný 1991, Fig. 30; 5 – Malchow. Source: Schoknecht 1978, Fig. 14:a; 6 – Edt. Source: Reitinger 1976, Fig. 3:1; 7 – Gramastetten. Source: Reitinger 1976, Fig. 1:3; 8 – Münzbach. Source: Reitinger 1976, Fig. 2:3; 9 – Naarn. Source: Reitinger 1976, Fig. 1:2; 10 – Waldneukirchen. Source: Reitinger 1976, Fig. 2:1; 11 – Staphorst. Source: Beuker 1997; 12 – Soerendonk. Source: Verhart et al. 2021, Fig. 2; 13 – Deer Park Farms. Source: O’Sullivan 2017, Fig. 2:1737.

prehistoric tool kept to ward off cataclysms.³⁸ Similar opinions were expressed in relation to other areas, such as the territory of Slovakia,³⁹ Moravia,⁴⁰ Germany,⁴¹ France,⁴² and Spain.⁴³ This seems to be common for most regions of the European continent, especially rural areas, as confirmed by the collection of the discussed artefacts found in medieval and modern buildings. Most of them are chance finds (discovered mainly during demolition or renovation works), but specimens are also known to have been recovered during archaeological investigations. We do not always have data on

where the artefacts were deposited, although based on the information collected it is possible to indicate several recurring locations that seem relevant to the issue at hand – particularly noteworthy is the area delimited by the roof surface, within which thunderstones were placed near or inside wooden structural elements.

We have many documented cases of such depictions from Czechia and Slovakia. For example, stone axes were placed near the ridge in houses in the Czech villages of Štrampouch and Suchdol.⁴⁴ A Neolithic shoe-last celt (*Schuhleistenkeil*) was found in Milešov in the attic of house no. 75⁴⁵ (Fig. 2:1). The same was true for other Neolithic artefacts: a hammer from Prachatice⁴⁶ (Fig. 2:2) and an axe-hammer from Železná Ruda⁴⁷ (Fig. 2:3). An Eneolithic axe-hammer was found behind the beam of the roof truss of house no. 156 in Lúčnice nad Žitavou in Slovakia⁴⁸ (Fig. 2:4). We can also refer to specimens from Germany – during the demolition of a house in Malchow, a well-preserved axe (*Grünsteinaxt*) was discovered in the roof rafters, belonging to the products of the Single Grave culture (Fig. 2:5).⁴⁹ In Apen (Lower Saxony), a stone axe (diomite?), also associated with the Single Grave culture, was found in the rafters of a local house.⁵⁰ On the eastern side of the roof truss of a house in Klein-Hummelberg (Austria), a free-hanging prehistoric axe-hammer made of serpentine was found.⁵¹ Many other thunderstones located within the roofs of modern buildings are known from Austria (e.g., Edt, Gramastetten, Münzbach, Naarn, Schwertberg, Waldkirchen am Wessen, Waldneukirchen – Figs. 2:6-10).⁵² Until recently, a shoe-last celt from the early Neolithic period hung on a nail under the thatched roof of a house in Staphorst (Netherlands) (Fig. 2:11). This object had been in the possession of the same family since 1880.⁵³ In Soerendonk (Netherlands), an axe from the late Bronze Age was attached to the ridge of a house, where it must have been attached in the 19th century. It was discovered during the renovation of the roof⁵⁴ (Fig. 2:12). A large collection of various types of thunderstones found in attics was obtained from Croatia (e.g., Bednjica, Gornja

³⁸ Verhart 2015, 84.

³⁹ Klecanda 1901, 214.

⁴⁰ Koudelka 1882, 159.

⁴¹ Andree 1889, 32.

⁴² Cartailhac 1878, 19.

⁴³ Pedrosa 2009, 261.

⁴⁴ Sklenář 1999, 57; Hložek and Menšík 2009, 65.

⁴⁵ Fröhlich 1992, 239, 242, Fig. 4:2.

⁴⁶ Fröhlich 1992, 243, Fig. 4:3.

⁴⁷ Menšík 2018.

⁴⁸ Novotný 1991.

⁴⁹ Schoknecht 1978, 391, Fig. 14:a; Heidelk-Schacht 1983, 107, Fig. 17:b.

⁵⁰ Zoller 1981, 286.

⁵¹ Mitmannsgruber 1962.

⁵² Reitinger 1976, 511-513.

⁵³ Beuker 1997, 20; Eijk van 2008, 171.

⁵⁴ Verhart et al. 2021.

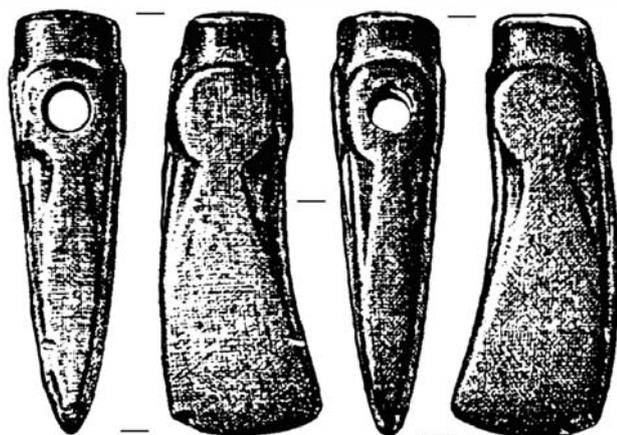


Fig. 3. Thunderstone from Eimsen found in a chimney.
Source: Barner 1957, Fig. 3.

Višnjica, Zlogonje, Zalužje).⁵⁵ A chronologically earlier find comes from Ireland. A Neolithic axe was discovered in an early medieval defensive settlement (*rath*) at Deer Park Farms (Fig. 2:13). It lay in a layer containing charcoal and fragments of twigs, interpreted as a roof collapse, which may indicate that the object had been stuck into a thatched roof.⁵⁶

Thunderstones were also deposited in chimneys (for example, in Germany, Lower Saxony: in Emmern, a well-preserved battle axe (the Linear Pottery culture) was found deposited in the cavity of a brick chimney, just below the roof ridge of a house built in 1823.⁵⁷ An axe with a bent butt (*nackengebogenen Axt*) was found in the chimney during renovation work on house no. 19 in Eimsen (today part of the city of Alfeld). The specimen was carefully polished and covered with a thick layer of soot⁵⁸ (Fig. 3).

Another spatially important place for depositing thunderstones was the threshold, where, for example, a fragment of an Eneolithic axe found in house no. 7 in Marčovice in South Bohemia⁵⁹ (Fig. 4:1). During the reconstruction of house no. 68 in the Panoší Újezd village (Central Bohemia), an Early Neolithic hammer was discovered, probably lying under the threshold in the basement part of the building⁶⁰ (Fig. 4:2). The custom of placing thunderstones under the threshold has also been confirmed in Northern Europe. It is worth mentioning the rich collection of prehistoric artefacts from medieval Lund (primarily from the Middle

Neolithic), one of which was discovered in a row of sill plate stones of a house dated to the 15th-16th century⁶¹ (Fig. 5). A stone axe (Funnel Beaker culture) was discovered under the threshold in Lynderup Sogn (Denmark), where on the grounds of the Lynderupgaard mansion archaeological excavations revealed the remains of a late medieval stone building owned by the bishop.⁶² Found in the same position was a perforated axe (the Corded Ware culture) from Hønborggård farm in the parish of Folding Sogn (Denmark) (Fig. 4:3), deposited in the 18th or 19th century.⁶³ A polished stone axe was also discovered under the stone threshold of the main entrance to the house in Killamoat Upper (Ireland)⁶⁴ (Fig. 4:4). Most likely, the same practice of depositing 'thunderstones' under the threshold was identified while investigating remains of three wooden buildings from the 17th and 18th centuries in Tartu (Estonia)⁶⁵ (Fig. 4:5). A large, carefully shaped axe was also found at the threshold of an old house in Martot (Normandy, France).⁶⁶ Similarly in Mitterkirchen (Austria), an amphibolite axe was found.⁶⁷

The location of the discussed items in foundations and under floors is well confirmed. A stone axe was found under the floor in a hole in a foundation beam in Rusava (Czechia).⁶⁸ An interesting find comes from Kroměříž (Moravia), where, as a result of archaeological research carried out in the area of Riegrovo náměstí 160, the remains of a medieval house (end of the 13th-beginning of the 14th century) were uncovered. Under the floor there was a clay vessel turned upside down, under which there was a prehistoric wedge-shaped tool and some animal bones (Fig. 6). This artefact, with signs of intensive use, was made of fine-grained sandstone.⁶⁹ Another find is the preserved cutting edge of an axe made of polished local serpentine discovered in Zitternberg bei Gars am Kamp (Fig. 7:1). The item was placed under the wooden floor of a house from around 1900.⁷⁰ In the village of Nienhagen (Lower Saxony, Germany), around 1933, a stone axe was discovered in the foundation between the household and the cowshed. The buildings were constructed in 1700.⁷¹ Inside a house in Hyllie (Sweden), directly under the floor level, there was a four-sided polished axe

⁵⁵ Šantalab 2008.

⁵⁶ O'Sullivan 2017, 115, Fig. 2:1737.

⁵⁷ Norkus 1959, 219.

⁵⁸ Barner 1957, 5-6, Fig. 3; Barner 1968, 242, Fig. 15.

⁵⁹ Fröhlich 1992, 240, 242, Fig. 4:4.

⁶⁰ Vích and Kašpar 2014.

⁶¹ Carelli 1996, 155, 168, Fig. 3; Carelli 1997, 396, Fig. 3.

⁶² Søvsø et al. 2016, 66.

⁶³ Søvsø et al. 2016, 66, Fig. 6.

⁶⁴ Rynne 1964-1965, Fig. 1:B.

⁶⁵ Johanson 2018a, 148, Tab. 3, pos. 117.

⁶⁶ Vesly 1909, 50.

⁶⁷ Reitingner 1976, 516.

⁶⁸ Červinka 1897, 49; Sklenář 1999, 54.

⁶⁹ Chybová 2009, 145-146.

⁷⁰ Maurer 2012.

⁷¹ Barner 1957, 180; Reitingner 1976, 529.



Fig. 4. Thunderstones placed under the threshold: 1 – Marčovice. Source: Fröhlich 1992, Fig. 4:4; 2 – Panoší Újezd. Source: Vích and Kašpar 2014, Fig. 2; 3 – Hønborggård. Source: Søvsø et al. 2016, Fig. 6; 4 – Killamoat Upper. Source: Rynne 1964-1965, Fig. 1:B; 5 – Tartu. Source: Johanson 2018a.

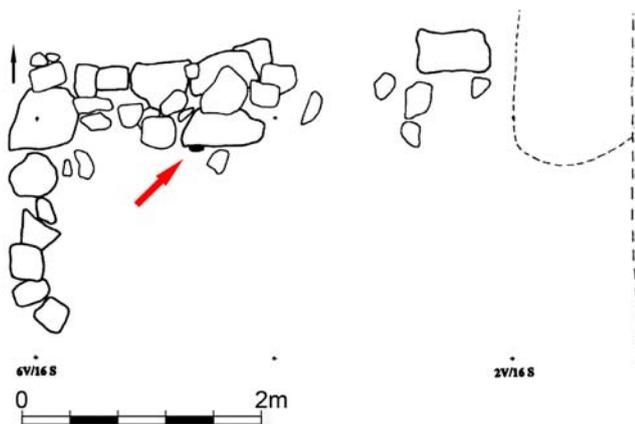


Fig. 5. Location of the thunderstone discovered in a row of still stones of a house dated to the 15th-16th centuries. Source: Carelli 1996, Fig. 3.

with a coin from 1525. The house, however, is much older (dated to the 14th century).⁷² It is worth mentioning a recently discovered small fragment of a polished Neolithic axe found during the removal of layers under the kitchen floor of a house in Silverdale (United Kingdom) (Fig. 7:2). Dendrochronological analysis showed that the house was erected at the beginning of the 18th century, most probably around 1713, although some beams are older and come from the Middle Ages. The axe is made of fine-grained volcanic tuff.⁷³ Furthermore, a Neolithic adze was found under the corner of a wooden house with a stone stove from the 15th-16th century during investigations of the fortified settlement in Lopotti

⁷² Carelli 1996, 163; Carelli 1997, 412.

⁷³ Elsworth and Boughton 2016, 8, Fig. 1.

(Finland).⁷⁴ An axe with a pointed butt (*spitznackiges Beil*) was discovered under one of the buttresses of the church in Alsfeld from the 14th century (Hesse, Germany).⁷⁵

In this group of finds, thunderstones buried in an entrance hall (Polish: *sień*), as found in Saxony (Germany) in Pockau⁷⁶ (Fig. 8) and Wiesa⁷⁷ (Fig. 7:3), and in the abandoned village of Bor on Lake Kenozero in northern Russia⁷⁸ (Fig. 7:4), deserve a special mention.

Associated with the foundations are sill plates, in which thunderstones were also placed, as in the village of Ahmoo (today Karkkili, Finlandia)⁷⁹ and Groß Steinum (today part of the city of Königslutter am Elm, Lower Saxony, Germany).⁸⁰

Thunderstones also appeared in large numbers in other parts of walls. The oldest deposits of this kind come from the Middle Ages. In the stronghold in Chernivtsi (13th century), a granite axe from the Bronze

⁷⁴ Hukantaival 2016, 82, 360.

⁷⁵ Ramminger 2007, 11.

⁷⁶ The house was built between 1650 and 1700. Next to a repaired or reworked stone axe, there was a vessel dated to the second half of the 17th century, which confirms that the entire deposit was deposited during the construction of the house (Geupel 1987, 2-3, Fig. 1).

⁷⁷ The house was built around 1700 (Geupel 1987, 3-4, Fig. 2).

⁷⁸ The carefully polished stone axe represents the Fatianovo culture. It ended up in one of the local peasants' cottages (Shevelev 2005, 2).

⁷⁹ It is a Neolithic chisel from a demolished building belonging to the Anttila estate. This item was stored there for at least 200 years after its discovery, which means that it was found at the end of the 17th century (Hukantaival 2016, 182-183, 342).

⁸⁰ The discovery was made during the renovation of the house at least 300 years ago (Demuth 2002).



Fig. 6. Group of finds from Kroměříž, Riegrovo náměstí 160. Source: Chybová 2009.

Age was found next to the wall of a house.⁸¹ A slightly damaged, Neolithic serpentine axe (Corded Ware culture) was found in Wels (Austria), in the wall of the former hospital building (Stelzhamerstraße 6) during demolition works (Fig. 9:1). The object was probably bricked up there in the years 1583-1585, although this may have happened in the previous century.⁸² A later example is a jade axe discovered at Saint-Aubin (Champagne, France) (Fig. 9:2), found between two large stones of the wall of an early modern house.⁸³ In Obervorschütz (northern Hesse, Germany), a Neolithic stone ploughshare (*Pflugschar*) was found bricked up in the wall of an 18th-century house (no. 66). It was located in a cavity adjusted to its shape, with the cutting edge facing upwards. The discovery was made during the extension of the house.⁸⁴ It is also worth mentioning Žišov in Czechia, where a heavily damaged specimen from the Neolithic period was found during the demolition of a house in the wall above the door.⁸⁵

The presence of thunderstones in various types of farm buildings, where they were placed in a similar way to houses, is also very well confirmed.

A partial demolition of a 19th-century utility room in Horst near Greifswald (Mecklenburg, Germany) uncovered a Neolithic basalt axe (Funnel Beaker culture), which lay on the ceiling joist⁸⁶ (Fig. 10:1). An analogous situation was found in the case of a barn in Taltitz (Saxony, Germany).⁸⁷ A Neolithic axe was found while demolishing the old cowshed at Rauskala estate

in Viitaila village (Finland), located in the ceiling in a hole carved in the beam and, interestingly, the artefact was girdled with twigs.⁸⁸ In the ruins of the Martha Hof Cistercian monastery in Bonn, a large jade axe was found, which was originally placed on the roof of the granary.⁸⁹ In the production and workshop part of the monastery of San Vincenzo al Volturino (Isernia, Italy), a fragmentally preserved stone axe made of non-local, fine-grained dark grey igneous rock such as basalt was discovered (Fig. 10:2) among the burnt tiles inside the granary, destroyed in the second half of the 9th century. This location suggests that the object hung on the rafters or was placed on top of the roof.⁹⁰

Thunderstones have also been found in the walls of sheds, cowsheds, stables, and pigsties, e.g., at the Nordli farm in Stjørdal (Norway),⁹¹ Ballintogher,⁹² Cloonagun⁹³ (Fig. 10:3), and Drumeague⁹⁴ (the latter three located in Ireland).

From Obermödlham (Austria) comes a Neolithic serpentine axe, which was discovered while demolishing the plinth wall of a granary from 200-300 years ago. Probably the object was inserted into the stone foundation of the building, as evidenced by residues of mortar on its surface⁹⁵ (Fig. 10:4). From under the floor of a stable comes a stone axe discovered at Newmarket-on-Fergus (Ireland).⁹⁶ In Fretheim (Norway), a stone axe with the engraved annual date '1617' (Fig. 10:5) was excavated from the remains of the foundations of the old brewhouse building (*ildhus*).⁹⁷

Thunderstones have also been found within castle fortifications. Among the most interesting are finds from Czechia. In particular, we should mention the axe-hammer (Stroke Wared culture) discovered at Křivoklát castle (Fig. 11:1), discovered in the destruction layer of the late Gothic Golden Bastion (Zlatá bašta), associated with the remains of its top part, where the object was most likely located (Fig. 12). It was placed there sometime between the time of the construction of the tower at the turn of the 15th and 16th centuries and the 1640s, when the building suffered a minor fire.⁹⁸ At Týřov castle, a volcanic tool was excavated in the destruction stone layer adjacent

⁸¹ Pyvovarov 2008, 108.

⁸² Riess 1981.

⁸³ Daunay 1978, 7-8.

⁸⁴ Heintel 1961, 129, Tabl. 6:2a; Reitingner 1976, 529.

⁸⁵ Fröhlich 1992, 240, 243.

⁸⁶ Samariter 2014.

⁸⁷ Geupel 1987, 4, Table 1:d.

⁸⁸ Hukantaival 2016, 182, 343.

⁸⁹ Evans 1897, 58.

⁹⁰ Francis and Kline 2014, 402, 409 [cat. no. 70], Fig. 9.5.

⁹¹ Kalseth 2000, 30.

⁹² Penney 1976, 70.

⁹³ Dowd 2018, 463.

⁹⁴ Penney 1976, 71.

⁹⁵ Hell 1962, 30-32, Fig. 2; Hell 1964, 301.

⁹⁶ Dowd 2018, 463.

⁹⁷ Lødøen 1993.

⁹⁸ Durdík 1997.

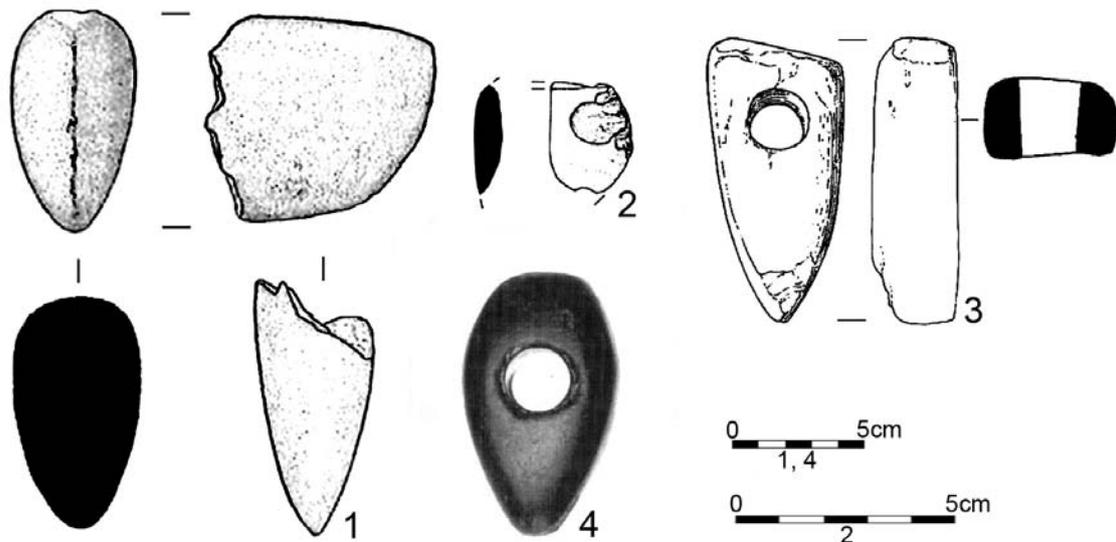


Fig. 7. Thunderstones placed under the floor. 1 – Zitternberg bei Gars am Kamp. Source: Maurer 2012, Fig. 1; 2 – Silverdale. Source: Elsworth and Boughton 2016, Fig. 1; 3 – Wiesa. Source: Geupel 1987, Fig. 2. Fig. unscaled; 4 – Bor. Source: Shevelev 2005.

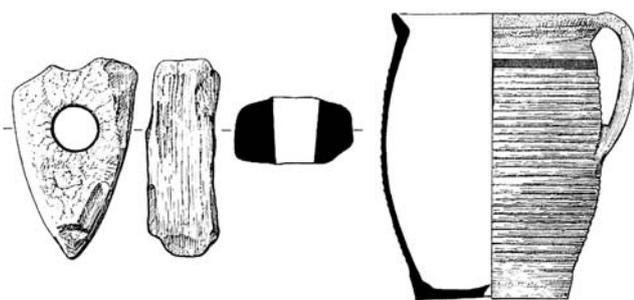


Fig. 8. Group of finds from Pockau. Source: Geupel 1987, Fig. 1.

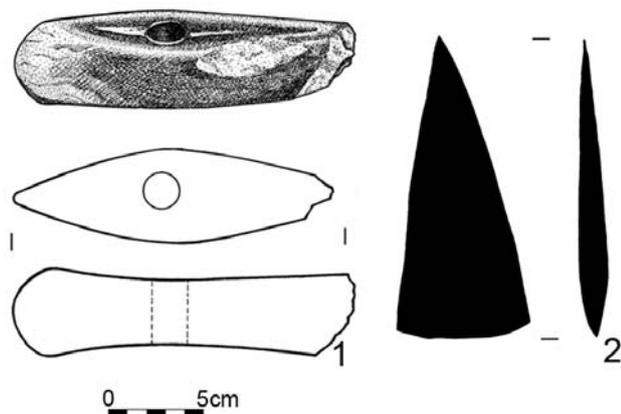


Fig. 9. Thunderstones placed in the walls. 1 – Wels. Source: Riess 1981, Fig. 1-3; 2 – Saint-Aubin. Source: Daunay 1978.

to the eastern wall from the first half of the 13th century, at the round tower of the upper castle (at this point, traces of an undefined frame construction were discovered) (Fig. 13). This artefact was probably an

Eneolithic small anvil (*kovadlinu*) used in the production of copper and gold ornaments⁹⁹ (Fig. 11:2).

Similar finds were also recorded in other European regions, such as the fragment of a stone axe (similar to Corded Ware culture specimens) found at the castle hill in Lihula (Estonia). The fragment was made of limestone, which is rare among such finds (Fig. 11:3). The item was located near the remains of a 13th-14th century building, so perhaps it was originally placed in the eaves.¹⁰⁰ A partially preserved axe was found in Tartu (Estonia) in a destruction layer created after the collapse of a medieval castle wall. The axe has damaged surfaces that indicate intensive use. The circumstances of the discovery may indicate that the item might have been placed in the wall.¹⁰¹ A Neolithic axe made of hornblende was obtained during the removal of the buildings of the medieval castle in Ibm in Austria (Fig. 11:4). Presumably, this item was embedded in the building.¹⁰² During the research on the foundations of the late medieval castle Groesbeek (Netherlands), a Neolithic stone axe made of quartzite was found in the destruction layer of one of the rooms. The object has large blade defects¹⁰³ (Fig. 11:5). At Ketzelsburg castle in Haibach (Bavaria, Germany), two Neolithic amphibolite products were found under the foundations of the wall of the residential tower and in the filling

⁹⁹ Hložek and Menšík 2014.

¹⁰⁰ Johanson 2018a, 149-150, Tab. 3, pos. 28. However, one should take into account the possibility that it is not a fragment of an axe, but a limestone construction element.

¹⁰¹ Johanson 2018a, 147, Tab. 3, pos. 110.

¹⁰² Hell 1959, 96-97, Fig. 2; Hell 1964, 301; Reitingger 1976, 513, Fig. 4:3.

¹⁰³ Tuijn 1992.



Fig. 10. Thunderstones placed in outbuildings. 1 – Horst. Source: Samariter 2014, Fig. 1; 2 – San Vincenzo al Volturno. Source: Francis and Kline 2014, Fig. 9.5; 3 – Cloonagun. Source: Dowd 2018, Fig. 8. Fig. unscaled; 4 – Obermödlham. Source: Hell 1962, Fig. 2; 5 – Fretheim. Source: Lødøen 1993.

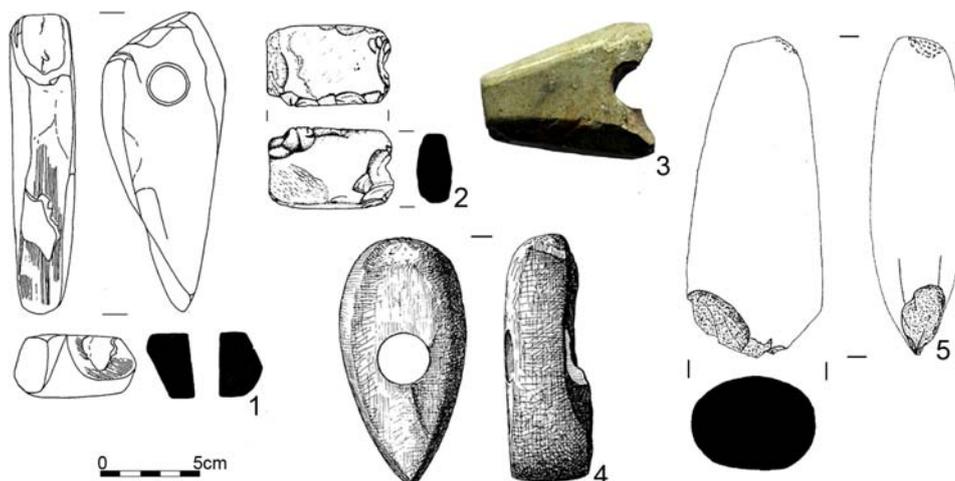


Fig. 11. Thunderstones in castle buildings. 1 – Krivoklát. Source: Durdík 1997, Fig. 2:1; 2 – Týřov. Source: Hložek and Menšík 2014, Fig. 3; 3 – Lihula. Source: Johanson 2018a; 4 – Ibm. Source: Hell 1959, Fig. 2; 5 – Groesbeek. Source: Tuijn 1992.

of the gate wall.¹⁰⁴ Both items were placed on the castle hill in the second half of the 12th century.¹⁰⁵

Another manifestation of the presence of prehistoric tools within medieval fortifications is their placement within the town walls, as was the case in Northeim (Lower Saxony, Germany).¹⁰⁶

To the above list of thunderstones it is worth adding the Neolithic stone axe discovered in 1932 in the wall of the church cemetery in Ostroróg near Czaplinek¹⁰⁷ (Fig. 14).

¹⁰⁴ Roth 2006.

¹⁰⁵ Rosmanitz 2006, 58.

¹⁰⁶ Mildenerger 1961, 5; Sklenář 1999, 29.

¹⁰⁷ Kunkel 1932, 126-127, Fig.1; Galiński et al. 2012, 95; Kowalski and Matuszewska 2012, 69.

Discussion

These considerations touch on the extremely important issue of human relationship to their surrounding environment. In the course of taming and taking possession of space through ritual actions, it becomes necessary to define the boundaries within which a 'safe' and 'orderly' existence becomes possible. This is reflected in the opposing categories: cosmos vs. chaos, *orbis interior* vs. *orbis exterior*, wild vs. tame, alien vs. familiar. According to M. Eliade's concept, in traditional societies the inhabited area becomes a cosmos (as opposed to the demonic and chaotic 'other world' outside) due to the ritual repetition of cosmogony. 'Taking over the world' is identical to the repetition of the divine act of creation, which is the model according to which it was

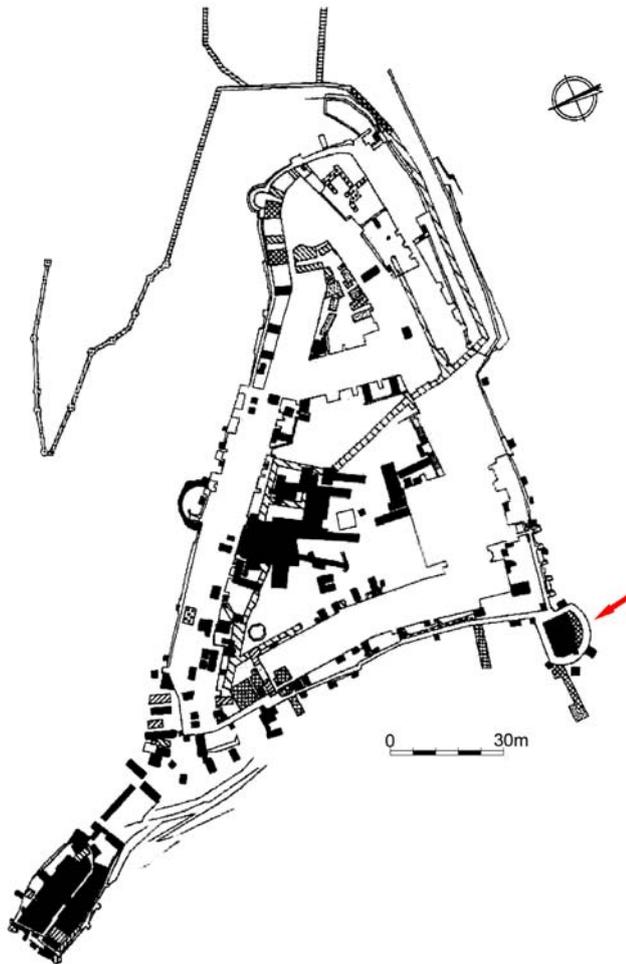


Fig. 12. Location of the thunderstone at Křivoklát castle.
Source: Durdík 1997, Fig. 1.

possible to give it a proper form.¹⁰⁸ This is the ritual-mythological sense of the act of erecting a house, with the most important stages – the foundation offering, the laying of the sill plate, and the laying of the roof.¹⁰⁹ The same applies to residential¹¹⁰ and temple¹¹¹ buildings. Thus, each structurally separated human residence, both on a microscale (homestead, croft) and macroscale (settlement, village, town, fortifications), was a place saturated with sanctity. Its separation from the surroundings was associated with a ritual establishment of the border, e.g., by

¹⁰⁸ Eliade 1999, 23.

¹⁰⁹ See Bajburin 1990; Dalewski 1990; Benedyktowicz and Benedyktowicz 1992; Sulima 2007; Józefów-Czerwińska 2017, 168-173. As B. Kunicka emphasized, ‘The series of magical treatments accompanying the construction of the house was aimed at distinguishing it from the space as an individual of a different sacred quality. Due to the magical construction of space, it has become a habitable area with a clear positive value as opposed to the external space, which had a negative value’. (Kunicka 1979, 191).

¹¹⁰ Ziemiński 1996.

¹¹¹ Wesołowska-Starzec 2016.

walking, driving, or ploughing around it,¹¹² as well as by erecting dikes, walls or other barriers. All efforts could then be directed to defending the inhabited area from ‘alien’ influences and controlling contact with fear-arousing forces, using all sorts of magical means and treatments. The domesticated sphere has never been a monolith, completely separated from the outside world. In the case of a household, all crevices and openings through which demonic creatures could penetrate were particularly dangerous.¹¹³

Due to the beliefs about the relationship of thunderstones with the heavenly sphere, it becomes understandable to use them in protection against lightning and the destructive effects of storms.¹¹⁴ The placement of the objects in question in this role is deeply rooted in the past and observed in many cultures, as evidenced by the above-mentioned medieval sources and numerous ethnographic and folklore mentions, due to the overriding belief that lightning never struck twice in the same place. It was therefore believed that a thunderstone found at the site of a lightning strike and taken home would protect its new location from storms.¹¹⁵ Widely recognised as an effective fire-fighting measure, it was to provide protection and safety to the household members and their property.¹¹⁶

The motivated action was therefore to place objects considered to be thunderstones in those points of the house and farm buildings that were most exposed to lightning strikes and, consequently, to fire and destruction. Towers were especially vulnerable to this kind of disaster. Despite its revelatory and purifying nature, lightning caused fear with its destructiveness, imposing the need to develop methods to prevent contact with it and the powers it manifested.¹¹⁷ The most obvious step was to protect the roof and chimney, hence the frequent presence of pre-historic artefacts found in these places¹¹⁸ (Fig. 15).

¹¹² Dalewski 1990, 20.

¹¹³ Piotrowski 2019.

¹¹⁴ Reitinger 1976, 528.

¹¹⁵ E.g., Blinkenberg 1911, 70-71; Olbrich 1987, 327; Muhonen 2006, 8; Belaj 2007, 118; Verhart 2015, 84. The principle was that where there is one thunderstone, others will not fall (Pedrosa 2009, 262, 267, 269; Rúa Aller and García Armesto 2010, 65).

¹¹⁶ Carelli 1997, 404. In northern European countries (Sweden, Finland) the thunderstones in question were used as a kind of fire protection measure. It was believed that the fire would not spread beyond the area around which it was moved with an axe or other ancient stone tool (e.g., Kjellmark and Thordeman 1939, 80; Muhonen 2006, 8). This was the use of specimens from Entsebo and Huskölen in Sweden (Hammarstedt 1920, 15, 16, Figs. 12, 18). In the 19th century, thunderstones were taken on ships to protect against thunderstorms (Cartailhac 1878, 17; Baudouin and Bonnemère 1904, 498; Sébillot 1904, 104).

¹¹⁷ Kowalski 1998, 456.

¹¹⁸ See Reitinger 1976, 528; Heidelk-Schacht 1983, 108.

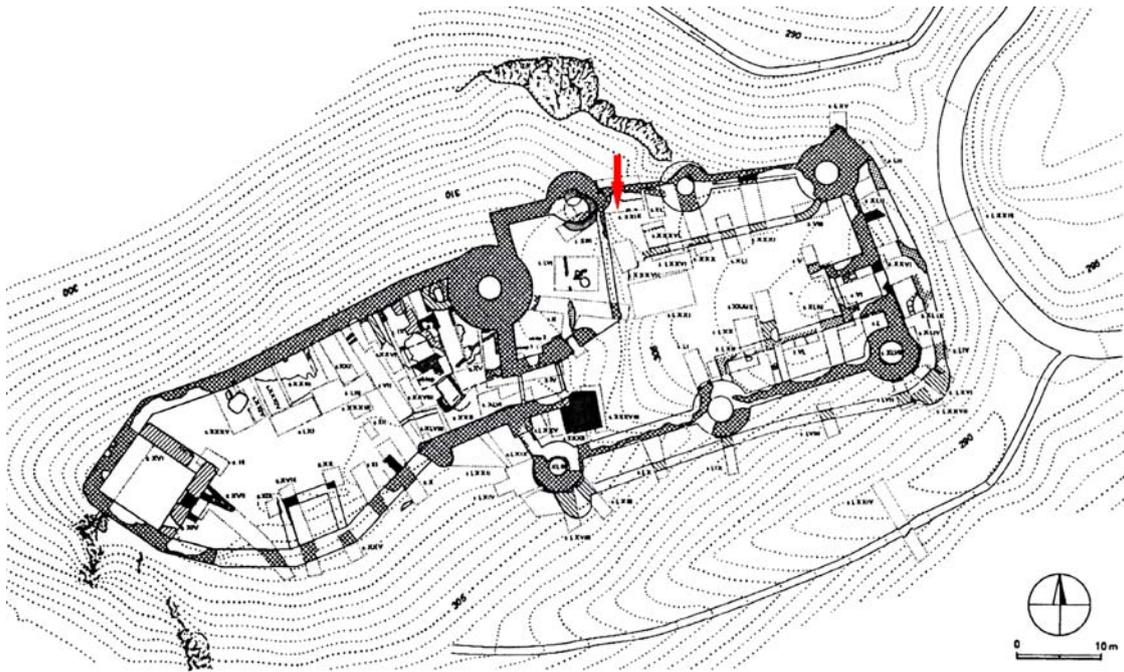


Fig. 13. Location of the thunderstone at Týřov Castle. Source: Hložek and Menšík 2014, Fig. 1.



Fig. 14. Thunderstone from Ostroróg found in the wall of a graveyard. Source: Galiński et al. 2012.

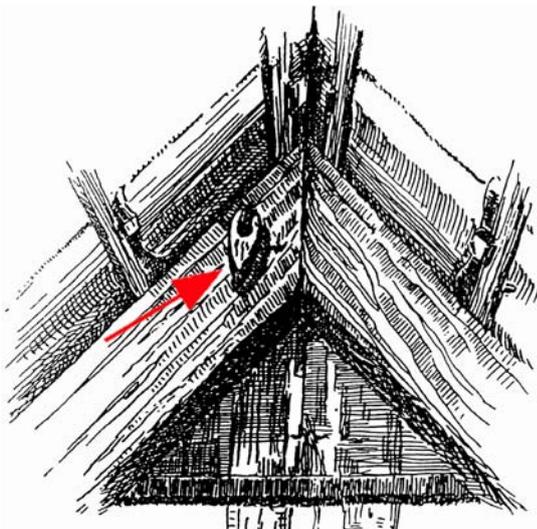


Fig. 15. Thunderstone hung in the ridge of a barn in Banteln, Germany. Source: Barner 1957, Fig. 2.

On a symbolic plan, the roof (with an attic) as the culmination of the house was associated with the upper zone of the cosmic *universum* – the sky. For this reason, it showed positive connotations. On the other hand, it was a horizontal border between the ‘safe’ residential zone and the frightening outside world. It was believed that the roof space was inhabited by demons that harm people and animals. Items through which attempts were made to establish contact with the afterlife were also placed in the roof to protect from storms and other misfortunes.¹¹⁹

The roof zone included the chimney, which defined the vertical order of the world as an extension of the furnace. It was a border place, open to heaven and the afterlife, but also exposed to the penetration of undesirable forces from outside. For this reason, the chimney had to be cared for and guarded, especially when the inhabitants of the household were in a phase of periodic disorganisation, e.g., death, childbirth, and during religious celebrations.¹²⁰

However, the frequent hiding of thunderstones in fire-related spaces (such as furnaces, chimneys, and stoves) could not only be due to the fact that they were access points for negative forces. These spaces also evoked positive associations (as in ‘hearth and home’), hence their key importance for home and family, both in a literal and metaphorical sense. Thus, not only

¹¹⁹ Wójtowicz 2011, 85-86.

¹²⁰ Benedyktowicz and Benedyktowicz 1992, 121-122; Kowalski 1998, 234-235; Pascual Chanel and Serrano Simarro 2008, 109; Wójtowicz 2011, 86; Piotrowski 2019, 306-307.

the need to remove evil, but also to preserve the good and successful, determined the above-mentioned location of the discussed items.¹²¹

At the same time, the thunderstones were carefully hidden in the recesses of the walls and under the floors, which ensured that all liminal locations in the household and the croft were covered by their power,¹²² which – as B. Hoggart vividly expresses – constituted ‘part of the spiritual armoury of the house’.¹²³

The threshold was a particularly sensitive place, very clearly defining the demarcation line between the internal and familiar space and the invisible, external space. While the walls of the house constituted a permanent, impassable barrier, requiring at most periodic magical renewal, the threshold was a breaking point in the liminal continuity: the border was constantly crossed. Each crossing was associated with the danger of letting in frightening powers. Therefore, crossing the threshold was subject to a whole range of ritualistic behaviours and the threshold itself required special measures to protect against external evil,¹²⁴ which included the practice of placing a thunderstone under it. Such an object located there brought happiness to people and the home while simultaneously protecting them from lightning.¹²⁵ In Finland, it was believed that a thunderstone was an effective barrier against witchcraft and witches, or simply acted as a ‘guardian.’ As such, it was hidden under the cowshed threshold so that witches could not cross it to harm the cattle.¹²⁶ The same was done in Bohemia. When the activity of witches was supposed to be a threat, housewives would bury thunderstones under the thresholds of the cowsheds in clay vessels.¹²⁷

Doors also indicate a direct break in space continuity. When open they connect, and when closed they isolate two worlds: the friendly from the sinister, life from the afterlife. Hence, doors also required magical protection.¹²⁸ This function was performed by various types of apotropaia and signs, including thunderstones hung over the door (as in the aforementioned Žišov).

In the spatial structure of the house, it is possible to indicate places which, due to their ambiguity, show many features of the borderland, also requiring magical closure and protection against foreign influences. They

include the entrance hall (in Polish *sien*) – a place that is usually dark and gloomy, a kind of buffer between the living area and the exterior of the house.¹²⁹ As we remember, thunderstones were also found there (specifically, under the floor).

Placing thunderstones in foundations and basements and under floors, thresholds, or posts also resembles a foundation offering (*Bauopfer, ofiara zakladzinowa*),¹³⁰ which has the purpose of, among others, pleasing the gods, defining the boundaries of domesticated space, and ensuring the overall happiness of the erected structure. This is likely the case with specimens that are accompanied by other finds that are often used as foundation offerings, such as clay vessels or animals.

This is the case in the aforementioned Pockau, where a set consisting of a stone axe and a clay vessel was found under the floor¹³¹ (Fig. 8). Two other discoveries have already been mentioned: the first at Ketzelsburg castle in Haibach, under the residential tower a dog skeleton, carefully covered with several stone slabs and a layer of compacted earth, was discovered accompanied by a Neolithic tool,¹³² and the second in Kroměříž, sheep or goat bones were discovered together with an inverted vessel covering a stone wedge¹³³ (Fig. 6).

However, in the light of the available data, it seems that depositing the items in question as foundation offering was rather incidental. The finds described above should be treated only as very hypothetical cases of such use of thunderstones.¹³⁴ Undoubtedly, however, this problem is far from being solved and requires further discussion, which can only be noted here. First of all, it should be noted that, according to some views, ‘foundation offerings’ were not limited to the foundation part of the building, but were also deposited in walls, various

¹²⁹ Szlachta-Misztal 2015.

¹³⁰ This is how the axe from Gnoien (Mecklenburg, Germany) was interpreted (see Heidelk-Schacht 1983, 107). It is worth noting, however, that the location of the object within the household is not known, which calls into question whether it would be assigned such a function.

¹³¹ Such an interpretation of this find was proposed by V. Geupel (1987, 2-3).

¹³² In the opinion of G. Ermischer ‘Die Kombination von Hund und Steinbeil gibt auch einen Hinweis auf die wahrscheinlichste Interpretation des Fundes: es handelt sich hier um ‘Bauopfer’, die Unheil von dem Gebäude abhalten sollten’ (Ermischer 2006, 99). Although there were no signs of deliberate killing of the dog on the bones, this does not exclude the choice of this animal as a sacrifice (Ermischer 2006, 100-102).

¹³³ Chybová 2009, 146.

¹³⁴ Kurasiński 2021a, 34. Cases of discovery of stone tools in postholes from Litenčice in the Czechia (Fojtík and Popelka 2018) and from Önnarup near Lund in Sweden (Carelli 1996, 163, Fig. 7; Carelli 1997, 413, Fig. 8), being a trace of the existence of construction elements of medieval houses.

¹²¹ Houlbrook 2019, 196-197.

¹²² Dowd 2018, 465.

¹²³ Hoggart 2004, 182.

¹²⁴ E.g., Kunicka 1979, 191-192; Lehr-Lenda 1982, 282; Kowalski 1998, 480-485; Marczyk 1999; Sulima 2007, 89; Wójtowicz 2011, 83.

¹²⁵ Laurinkienė 1996a, 26; Laurinkienė 1996b, 112.

¹²⁶ Hukantaival 2016, 183-184; Hukantaival 2019, 348.

¹²⁷ Skutil 1932, 36; see also Tolstoy 1995, 562.

¹²⁸ Kowalski 1998, 101-105; Wójtowicz 2011, 83-84.

structural elements, under the threshold or other hard-to-reach places, and even under furniture such as a table or bed.¹³⁵ At the same time, thunderstones discovered within houses and other types of buildings are assigned a sacrificial meaning.¹³⁶ However, there are no additional premises allowing for their interpretation specifically as ‘foundation offerings.’

On the other hand, the objects in question could have been buried under the floor only during the use of the building, and such a procedure could have been dictated by the need of apotropaic protection against the ‘alien’ world.¹³⁷ Also, the location of a thunderstone under the threshold did not have to be closely related to the foundation offering. As J. Reitinger has already noted ‘In all den Fällen, in denen Donnerkeile in den Fundamenten, im Keller, unter der Türschwelle oder sonst irgendwo im Mauerwerk verborgen gefunden wurden, ist die Entscheidung, ob es sich um einen Blitzschutz oder um eltn Bauopfer oder um eltn Bauopfer, nicht immer leicht’.¹³⁸

We should add that ethnographic sources mention other ways of using these ancient stone tools as protection against natural elements. When a thunderstorm came, the thunderstone was often simply placed on the table or on the hearth in an attempt to ward off the storm. In the Spanish peasant tradition (León region), when placed in a window or in a visible place next to a burning blessed candle, it caused a dangerous hail cloud to turn into harmless and beneficial rain.¹³⁹ The same measures were taken, inter alia, in Westphalia.¹⁴⁰ A case is known from Silesia when a candle was placed directly in the shaft-hole of a thunderstone, and thus the stone axe acted as a candlestick when placed on the table.¹⁴¹ In turn, in the province of Salamanca, to ward off storms, a thunderstone was put in the burning embers, which were carried out the door of the house to be extinguished by rainwater.¹⁴² In Bohemia, when fighting a fire, it was forbidden to hold a thunderstone with one’s naked hand, but only through a cloth.¹⁴³ In Masuria, during an approaching storm, one’s finger should be put

into the hole of a stone axe and, while uttering spells, it should be rotated three times, and then thrown with all one’s might at the door of the room.¹⁴⁴ Very similar practices were observed in the Sieradz region.¹⁴⁵

In addition to individual buildings, a larger inhabited area such as a castle or a town also required protection. Security was ensured by the surrounding walls, which separated the interior from the external chaos, not only in the military architectural and monumental sense, but also in the symbolic, religious, and magical sense.¹⁴⁶ Walls constitute yet another material realisation of the binary perception of the world in which there was a need to isolate oneself from what the unfriendly *orbis extra muros* carried with it in the human imagination.¹⁴⁷ Like every border zone, the walls focused around each other and attracted evil powers, hence it was no coincidence that people ‘marked with the stigma of marginality were located in the outermost areas of the town adjacent to the wall or even excluded outside the wall sanctioning the tamed space’.¹⁴⁸ In the above context, the presence of thunderstones in defensive walls is therefore not surprising.¹⁴⁹

A ‘barrier’ such as a wall or fence fulfilled its protective function even when it was not really a serious obstacle.¹⁵⁰ One can point to church walls that surround a church and the adjacent graveyard but do not create

¹⁴⁴ Toeppen 1867, 42; Moszyński 1967, 488; Olbrich 1987, 327.

¹⁴⁵ Wdowiak and Wysokiński 2013, 535.

¹⁴⁶ In early medieval centres, deliberately shaped sacral topography served to ensure divine protection by adding churches (dedicated to properly selected saints) to the town plan. Sometimes these churches were laid out in the form of a cross, with one church situated in the centre and four surrounding it (see Skwierzyński 1996; Zygnier 2017; for a broader meaning and chronological approach, see Manikowska 2008; Manikowska and Słoń 2017). It is also worth mentioning the apotropaic function of bells (e.g., Kowalski 1998, 123; Masłowska 2014, 76-77).

¹⁴⁷ See Antoniuk 2008. A significant role here was played by the gates, where objects with apotropaic effects or attesting to the presence of supernatural entities taking care of the town also appeared. These were often Marian images (Slivka 2004, 14; Woziński 2013, 253-254; about the sacred function of gates in the spatial aspect, see Swaryczewska 2013). In the Middle Ages and later, the castle or town chapel, situated in the gatehouse or in its immediate vicinity – sometimes even within the walls themselves – was to protect against the interference of evil forces. Such a chapel contained items to ward off demons: crosses, holy pictures, and relics (Lasek 2005; Woziński 2013, 256-267; Saczyńska 2016, 312).

¹⁴⁸ Antoniuk 2008, 237. One such was a hangman who, due to his profession, could only live outside the town’s proper area, between the defensive walls or in one of the towers belonging to the fortifications (Zaremska 1986, 28, 107).

¹⁴⁹ It is possible that the fragmentary early Neolithic boat-shaped axe (*Bootaxt*) from the semi-circular wall in Hedeby/Haithabu had a similar meaning (Schultrich 2018, 121, 389).

¹⁵⁰ Slivka 2004, 10-11.

¹³⁵ See Vařeka 1991, 117; Hložek et al. 2015, 275; Duma 2020, 70.

¹³⁶ E.g., Vařeka 1991, 117; Hložek et al. 2015, 275.

¹³⁷ Cf. Chybová 2009, 146-148.

¹³⁸ Reitinger 1976, 530.

¹³⁹ Pedrosa 2009, 261, 263, 265; Rúa Aller and García Armes-to 2010, 65. It was important to remember about the tendency to return to clouds of such stones, especially when it thundered. To avoid this, in the villages of the Pyrenees, an incision was made on the side or a heavier stone was placed on them (Pedrosa 2009, 264).

¹⁴⁰ Andree 1889, 33.

¹⁴¹ Sklenář 1999, 52.

¹⁴² Pedrosa 2009, 268.

¹⁴³ Hraše 1898, 83.

a barrier that is difficult to cross physically.¹⁵¹ In this sense, such barriers were symbolic, isolating the world of the dead from the world of the living. The purpose of the axe found in the cemetery wall in Ostroróg remains an open question:¹⁵² it could have been intended to protect against the interference of the dead, or – on the contrary – to provide peace to their souls; these concepts are not mutually exclusive.

At the end of this part of the considerations, it is worth adding that at least some of the objects in question could have had a different function before they were incorporated into the structural elements of the buildings. This is suggested by traces of secondary interference in the structure of some of them. For example, the clearly intentional abrasion of both surfaces of the Křivoklát castle axe-hammer could have occurred as a result of using it as a whetstone or obtaining powder for medical purposes¹⁵³ (Fig. 11:1). In another example, the perforation of an axe found under a threshold in Hønborggård could indicate that it was previously worn as an amulet (Fig. 4:3).

Summary

The considerations included in this work were aimed at drawing attention to the magical and symbolic meaning of the specific group of finds usually referred to as ‘thunderstones.’ Because of the supernatural properties attributed to them, they have been used, among others, in the protection of places and areas recognised as developed and tamed by humans (*orbis interior*) from the highly disturbing outside world (*orbis exterior*) from which came diseases, disasters, and other

misfortunes. These domains shared boundaries (and the boundaries that formed around them) – highly ambivalent zones accompanied by a menacing aura. Due to the transitional and mediating nature of such places, precautionary measures became necessary. Thunderstones, deposited at peripheral points, particularly exposed to destructive external influences, were used to drive away, neutralise, and control bad powers, well-documented by ethnographic and folklore sources as well as the finds presented in this selection – mostly accidental, but also from archaeological research.¹⁵⁴ The items in question were particularly predestined for such a role, because – as it was long believed – they themselves came from an undomesticated, anomic zone, and were therefore imbued with magical power that could be used in a crisis situation requiring ritual actions.¹⁵⁵ The energy locked in the stone, having its supernatural source in the lightning, could be directed against lightning and other misfortunes,¹⁵⁶ according to the rule of ‘like prevents like.’

The clearly marked repetition of the same deposition locations of prehistoric stone products within places inhabited and used by humans, confirmed in many European regions, indicates that we are dealing with a chronologically and territorially widespread phenomenon. Of course, thunderstones are only one of the means of apotropaic protection of the inhabited sphere against undesirable external interference, the repertoire of which over the centuries has been extensive.¹⁵⁷ Therefore, warding off and eliminating evil forces with thunderstones is part of a broad strategy of human struggle with the elements, plagues, and other misfortunes that have always haunted us.

SOURCES

- Book of Minerals* – Albertus Magnus, *Book of Minerals*, transl. and ed. D. Wyckoff. Oxford 1967.
Buch der Natur – Konrad von Megenberg, *Buch der Natur*, ed. F. Pfeiffer. Stuttgart 1861.
De mineralibus et rebus metallicis – *De mineralibus et rebus metallicis libri quinque, auctore Alberto Magno summo Philosopho. Solerti cura repurgati, & rerum natural, studiosis publicati.* Coloniae 1569.
Marbodi Liber Lapidum – *Marbodi Liber Lapidum seu de Gemmis*, ed. J. Beckmann. Gottingae 1799.

¹⁵¹ Antoniak 2008, 238.

¹⁵² It is reported that the item may have been placed there by some farmer who found it in the field (Kunkel 1932, 126).

¹⁵³ Durdík 1997, 110; on the ‘healing’ scraping of weapons and prehistoric tools, see Kurasiński 2021b, 14-16. The axe from Železná Ruda also shows scratches and defects. In this case, it cannot be ruled out that the damage occurred only when the object was already used as a protective measure against lightning (Menšík 2018, 29-30).

¹⁵⁴ For further examples of finds of interest, see Bartels 1893; Kaufmann 1936; Mildenerger 1961; Reitingner 1976; Hukantaival 2016; Johanson 2018a.

¹⁵⁵ Kajkowski 2020, 309; Kurasiński 2021b, 18.

¹⁵⁶ Cherici 1989, 374.

¹⁵⁷ E.g., Vařeka 1991; Hoggart 2004; Herva and Ylimaunu 2009; Houlbrook 2013; Hložek et al. 2015; Hukantaival 2016; Søvsø 2017; Johanson 2018a; Johanson 2018b; Reed 2019; Duma 2020; extensive literature in these works.

REFERENCES

- Abramowicz A. 1979. *Urny i ceraunie*. Acta Archaeologica Lodziensia 27. Łódź.
- Adamowski J. 1991. *Kulturowe funkcje miedzy*. "Etnolingwistyka" 4, 65-82.
- Andree R. 1889. *Etnographische Parallelen und Vergleichen*. Neue Folge. Leipzig.
- Antoniak P. 2008. *Mur miejski – przyczynek do rozważań o tożsamości miasta*. "Teksty Drugie" 4, 231-242.
- Bajburin A. K. 1990. *W sprawie opisu struktury słowiańskiego rytuału budowniczego*. "Konteksty. Polska Sztuka Ludowa" 3, 62-67.
- Barner W. 1957. *Von Kultäxten, Beilzauber und rituellem Bohren*. "Die Kunde. N. F." 8(3-4), 175-186.
- Barner W. 1968. *Bauopfer und Hausschutzzauber im Land zwischen Hildesheimer Wald und Ith*. Niedersachsen. "Zeitschrift für Heimat und Kultur" 5, 236-266.
- Bartels M. 1893. *Beiträge zum Steinbeil-Aberglauben in Nord-Deutschland*. "Verhandlungen der Berliner anthropologischen Gesellschaft" 1893, 558-564.
- Bednarek S. 2006. *O pojęciu pogranicza w refleksji kulturoznawczej*. In: A. Kisielewska, N. Szydłowska (eds.), *Kultura i przyszłość. Prace ofiarowane Prof. Sławowi Krzemieniowi-Ojakowi z okazji 75 lecia urodzin*. Białyłystok, 75-83.
- Belaj V. 2007. *Hod groz godinu. Pokušaj rekonstrukcije prahrvatskoga mitskoga svjetonazora*. Zagreb.
- Benedyktowicz D., Benedyktowicz Z. 1992. *Dom w tradycji ludowej*. Wrocław.
- Beuker J. 1997. *Donderstenen in het museum*. "Waardeel" 17(4), 20-24.
- Blinkenberg Ch. 1911. *The Thunderweapon in Religion and Folklore. A Study in Comparative Archaeology*. Cambridge.
- Baudouin M., Bonnemère L. 1904. *Les haches polies dans l'histoire jusqu'au XIXe siècle*. "Bulletins et Mémoires de la Société d'anthropologie de Paris" 5(5), 496-548.
- Bukowska-Floreńska I. 1994. *Pogranicze jako kategoria wewnątrzspołeczna i wewnątrzkulturowa*. In: T. Smolińska (ed.), *Pogranicze jako problem kultury. Materiały konferencji naukowej, Opole 13-14.12.1993 r.* Opole, 165-173.
- Cackowski Z. 1998. *Osobliwości przestrzeni ludzkiego świata*. In: S. Symotiuk, G. Nowak (eds.), *Przestrzeń w nauce współczesnej*. Lublin, 31-44.
- Carelli P. 1996. *Blixtar och dunder, magiska under. Om åskstenstraditionen och förekomsten av stenåldersfynd i medeltida kulturlager*. "Fornvännen" 91, 153-170.
- Carelli P. 1997. *Thunder and Lightning, Magical Miracles. On the Popular Myth of Thunderbolts and the Presence of Stone Age Artefacts in Medieval deposits*. In: H. Andersson, P. Carelli, L. Ersgård (eds.), *Visions of the Past. Trends and Traditions in Swedish Medieval Archaeology*. Stockholm, 393-417.
- Cartailhac É. 1878. *L'Âge de pierre dans les souvenirs et superstitions populaires*. Paris.
- Červinka I. L. 1897. „*Hromové kameny*“ *Pravěké nástroje v lidovém léčení*. "Časopis Společnosti přátel starožitností českých v Praze" 5(2), 46-49.
- Cherici A. 1989. *Keraunia*. "Archeologia Classica" 41, 329-382.
- Chybová H. 2009. *Kroměříž zmizelá a znovu objevená aneb Historie ukrytá pod dlažbou města*. Kroměříž.
- Clavén M., Scharmach K., Schirren M. 2012. *Donnerkeil und Brauhaus. Archäologische Untersuchungen in der Gutsanlage von Falkenhagen bei Reinberg, Lkr. Vorpommern-Rügen*. "Archäologische Berichte aus Mecklenburg-Vorpommern" 19, 195-223.
- Czaplicka M. 1985. *Piorun w wierzeniach różnych ludów*. "Ziemia" 1985, 256-259.
- Czarnowski S. 1956. *Podział przestrzeni i jej rozgraniczanie w religii i magii*. In: S. Czarnowski, *Dzieła* 3. Warszawa, 221-236.
- Dalewski Z. 1990. *Zakładziny: obrzęd i mit. O słowiańskich zwyczajach i wierzeniach związanych z budową domu i zakładaniem miasta*. "Konteksty. Polska Sztuka Ludowa" 4, 17-24.
- Daunay J. 1978. *La foudre et la tradition*. "Folklore de Champagne" 66, 3-10.
- Demuth V. 2002. *Ein „Donnerkeil“ aus Groß Steinum am Dorm (Landkreis Helmstedt). Neolithisches Steingerät als Zeugnis frühneuzeitlichen Volksglaubens*. "Die Kunde N. F." 53, 109-116.
- Dowd M. 2018. *Bewitched by an Elf Dart: Fairy Archaeology, Folk Magic and Traditional Medicine in Ireland*. "Cambridge Archaeological Journal" 28(3), 1-23.
- Duma P. 2020. *Magia ochronna przeciw czarownicom, złemu urokowi oraz inne środki apotropaiczne w świetle znalezisk archeologicznych w Europie*. "Klio" 53(2), 67-81.
- Durdík T. 1997. „*Hromový klín*“ *z hradu Křivoklátu*. "Sborník kruhu přátel Muzea hlavního města Prahy" 1, 107-110.

- Eijk G. van 2007. *De dondersteen van Uden. Een neolithische bijl uit een middeleeuwse waterput*. "Westerheem" 56(4), 208-216.
- Eijk G. van 2008. *De dondersteen van Uden. Een neolithische bijl uit een middeleeuwse waterput*. "Westerheem" 57(3), 170-172.
- Eliade M. 1999. *Sacrum i profanum. O istocie religijności*. Warszawa.
- Elsworth D. W., Boughton D. 2016. *Prehistoric finds from Slackwood farm, Silverdale*. "Contrebis" 34, 8-12.
- Ermischer G. 2006. *Hier liegt der Hund begraben*. In: H. Rosmanitz (ed.), *Die Ketzelsburg in Haibach. Eine archäologisch-historische Spurensuche*. Neustadt a. d. Aisch, 99-102.
- Evans J. 1897. *The stone implements, weapons and ornaments of Great Britain*. London, Bombay.
- Fojtík A., Popelka M. 2018. *Litenčice (okr. Kroměříž)*. "Přehled výzkumů" 59(1), 132.
- Francis K., Kline M. Ph. 2011. *Prehistoric Stone Tools in Medieval Contexts*. In: S. Leppard, J. Mitchell, E. G. Clark, K. Francis, Ph. Kline (eds.), *San Vincenzo Maggiore and its Workshops*. London, 397-410.
- Franz A. 1909. *Die kirchlichen Benediktionen im Mittelalter 2*. Freiburg im Breisgau.
- Fröhlich J. 1992. *Hromové klíny v jižních Čechách*. "Výběr z prací členů Historického klubu při Jihočeském muzeu v Českých Budějovicích" 29, 237-245.
- Galiński T., Dziewanowski M., Kowalski K. 2012. *Epoka kamienia – katalog zabytków / The Stone – Catalogue of the Archaeological Finds*. In: K. Kowalski, D. Kozłowska-Skoczka (eds.), *Zaginione – ocalone. Szczecińska kolekcja starożytności pomorskich / Lost – Saved. The Pomeranian Antiquities Collection of Szczecin*. Szczecin, 81-101.
- Geupel V. 1987. *Ein Bauopfer aus Pockau, Kr. Marienberg*. "Ausgrabungen und Funde" 32(1), 2-5.
- Greszczuk B. 2005. *Doświadczenie przestrzeni jako podstawa konceptualizacji świata tekstów religijnych i tekstów kultury motywowanych religią*. In: J. Adamowski (ed.), *Przestrzeń w języku i w kulturze. Problemy teoretyczne. Interpretacje tekstów religijnych*. Lublin, 225-241.
- Gurewicz A. 1972. „Makrokosmos” i „mikrokosmos” (*Wyobrażenia przestrzenne w średniowiecznej Europie*). "Historyka" 3, 23-51.
- Guriewicz A. 1976. *Kategorie kultury średniowiecznej*. Warszawa.
- Hammarstedt N. E. 1920. *Svensk forntro och folksed i bild och ord*. Stockholm.
- Heidelk-Schacht S. 1983. "Donnerkeile" aus dem Bezirk Neubrandenburg. "Ausgrabungen und Funde" 28(3), 105-109.
- Heintel H. 1961. *Blitzschutz und Beilzauber*. "Fundberichte aus Hessen" 1, 129-130.
- Hell M. 1959. *Steinbeile als Bauopfer aus Oberösterreich*. "Archaeologia Austriaca" 26, 96-99.
- Hell M. 1962. *Neue jungsteinzeitliche Funde aus dem Lande Salzburg*. "Archaeologia Austriaca" 32, 27-34.
- Hell M. 1964. *Alter Schutz- und Segensbrauch (Bauopfer) im salzburgischen Flachgau*. "Mitteilungen der Gesellschaft für Salzburger Landeskunde" 104, 271-300.
- Herva V.-P., Ylimaunu T. 2009. *Folk Beliefs, Special Deposits, and Engagement with the Environment in Early Modern Northern Finland*. "Journal of Anthropological Archaeology" 28, 234-243.
- Hložek J., Menšík P. 2009. „Hromové klíny“ z Kozího hrádku na Táborsku aneb „Účinné“ zajištění hradu před přírodní pohromou, nebo starší pravěké sídliště? "Kuděj" 1, 63-73.
- Hložek J., Menšík P. 2014. *Příspěvek k interpretaci broušeného artefaktu z hradu Týřova*. "Archeologie západních Čech" 7, 46-50.
- Hložek J., Menšík P., Procházka M. 2015. *Bauopfer im mittelalterlichen Böhmen*. "Fines Transire" 24, 271-280.
- Hoggart B. 2004. *The Archaeology of Counter-witchcraft and Popular Magic*. In: O. Davies, W. de Blécourt (eds.), *Beyond the Witch Trials. Witchcraft and Magic in Enlightenment Europe*. Manchester, New York, 167-186.
- Houlbrook C. 2013. *Ritual, Recycling and Recontextualization: Putting the Concealed Shoe into Context*. "Cambridge Archaeological Journal" 23(1), 99-112.
- Houlbrook C. 2019. *The Stone Axe from Way Back: A Mutable Magical Object in Folklore and Fiction*. "Folklore" 130(2), 192-202.
- Hraše J. K. 1898. *Hromové klíny aneb kameny*. "Český lid" 7, 82-83.
- Hukantaival S. 2016. "For a Witch Cannot Cross Such a Threshold!" *Building Concealment Traditions in Finland c. 1200–1950*. Archaeologia Medii Aevi Finlandia 23. Turku.
- Hukantaival S. 2019. *Ukonvaajojen monet kasvot – Luokittelu-ja tulkintakysymyksiä*. In: J. Harjula, V. Immonen, J. Ruohonen (eds.), *Puukenkien kopinaa. Henrik Asplundin juhlakirja*. Turku, 345-381.
- Jacko J. F. 2005. *Struktura symboli wertykalnych a ich rola w komunikacji międzykulturowej w zarządzaniu*. In: E. Klima (ed.), *Religion in the Time of Change*. Łódź, 177-194.

- Jacko J. F. 2008. *Ideologie wyrażane przestrzenią. Przykład symboliki wertykalnej*. In: I. Mamińska-Szmaj, T. Piekot, M. Poprawa (eds.), *Ideologie w słowach i obrazach*. Wrocław, 265-278.
- Jałowicki B. 1985. *Przestrzeń jako pamięć*. "Studia Socjologiczne" 97(2), 131-142.
- Janeczek A. 2011. *Frontiers and Borderlands in Medieval Europe. Introductory Remarks*. "Quaestiones Mediaevali Novae" 16, 5-14.
- Johanson K. 2018a. *Missing Interpretations. Natural and Residual Finds in Estonian Archaeological Collections*. Tartu.
- Johanson K. 2018b. *Missing Interpretations: Tracing Natural Artefacts in Estonian Archaeological Material*. "Fennoscandia archaeologica" 35, 87-106.
- John J. 2003. *O lidech (minulých) a fosiliích (ještě minulejších)*. „Sborník Muzea středního Posázaví v Ratajích nad Sázavou a Archeologické společnosti při Katedře archeologie Západočeské univerzity v Plzni" 2, 15-20.
- Józefów-Czerwińska B. 2017. *Zabobnem nazwano... O wierzeniach, wartościach i dawnych przekonaniach mieszkańców pogranicza polsko-białoruskiego w ich związkach z przeszłością*. Warszawa.
- Kajkowski K. 2020. *Między sferą niebiańską a zaświatami. Rola artefaktów pradziejowych w kulturze wczesnośredniowiecznych Pomorzan*. In: A. Kasprzak, A. Kuczkowski, M. Krzepkowski (eds.), *Archaeologia Pomoranica Musealia. Studia z okazji 80. urodzin Ignacego Skrzypka*. Koszalin, 301-332.
- Kalseth J. 2010. *Steinøks eller torndenkile*. "Spor" 25(2), 28-30.
- Kaufmann D. 1936. *Vorgeschichtliche Steinwerkzeuge im Volksglauben*. "Der Spatenforscher" 1(4), 29-35.
- Kjellmark K., Thordeman B. 1939. *Hällkistan och myntskatten från Rappe i Öjaby socken, Småland*. "Fornvännen" 1939, 65-89.
- Klecanda J. 1901. *Hromové kameny (předhistorické mlaty) v XV. a XVI věku*. "Český lid" 10, 214-215.
- Knight M. G., Boughton D., Wilkinson R. E. 2019. *Objects of the Past in the Past*. In: M. G. Knight, D. Boughton, R. E. Wilkinson (eds.), *Objects of the Past in the Past Investigating the Significance of Earlier Artefacts in Later Contexts*. Oxford, 1-18.
- Košťurík P., Kovárník J., Měřínský Z., Oliva M. 1986. *Pravěk Třebíčska*. Brno.
- Koudelka F. 1882. *Die Donnersteine als Medicin bei den mährischen Slaven*. "Mittheilungen der Anthropologischen Gesellschaft in Wien" 12(NF 2), 159-160.
- Kowalski P. 1994. *Granica. Próba uporządkowania kategorii antropologicznych*. In: T. Smolińska (ed.), *Pogranicze jako problem kultury. Materiały konferencji naukowej Opole 13-14. 12. 1993 r.* Opole, 143-151.
- Kowalski P. 1996. *Granice i mediacje. Uwagi o antropologicznej lekturze świata*. In: J. Kolbuszewski (ed.), *Góry – literatura – kultura 1*. Acta Universitatis Wratislaviensis 1802. Wrocław, 7-20.
- Kowalski P. 1998. *Leksykon znaki świata. Omen, przesąd, przeznaczenie*. Warszawa, Wrocław.
- Kowalski K., Matuszewska A. 2012. *Wprowadzenie do problematyki kulturowej zabytków neolitycznych / The Cultural Issues of the Neolithic Antiquities: an Introduction*. In: K. Kowalski, D. Kozłowska-Skoczka (eds.), *Zaginione – ocalone. Szczecińska kolekcja starożytności pomorskich / Lost – Saved. The Pomeranian Antiquities Collection of Szczecin*. Szczecin, 69-79.
- Kunicka B. 1979. *Organizacja przestrzeni domowej według tradycyjnych wyobrażeń ludowych*. "Etnografia Polska" 23(1), 175-202.
- Kunkel O. 1932. *Urgeschichtliches aus dem Land Draheim*. "Unser Pommerland" 17(5), 125-135.
- Kurasiński T. 2021a. *Kamienie zrodzone z pioruna. O nietypowej recyklingu w średniowieczu i czasach nowożytnych*. "Przegląd Archeologiczny" 69, 5-62.
- Kurasiński T. 2021b. *Against Disease, Suffering and Other Plagues: the Magic-healing Role of the Thunderstones in the Middle Ages and Modern Times*. "Fasciculi Archaeologiae Historicae" 34, 7-24.
- Kurasiński T. 2022. *Proshloye, sokhranennoye v kamne. O neobychnom oruzhii Srednevekov'ya i rannego Novogo vremeni*. "Stratum plus" 5, 415-425.
- Kurasiński T., Skóra K. 2020. *From the Past into the Future – Archaica as a Research Problem (on the Basis of Medieval and Modern Period Finds from Central-Eastern Europe) / Z przeszłości w przyszłość – archaika jako problem badawczy (na podstawie średniowiecznych i nowożytnych materiałów z Europy Środkowo-Wschodniej)*. In: M. Bogucki, A. Dymowski, G. Śnieżko (eds.), *Silvers of the Antiquity. The Use of Ancient Coins in Central, Eastern and Northern Europe in the Medieval and Modern Periods / Okruchy starożytności. Użytkowanie monet antycznych w Europie Środkowej, Wschodniej i Północnej w średniowieczu i w okresie nowożytnym*. Warszawa, 301-366.
- Lasek P. 2005. *O apotropaicznej funkcji niektórych kaplic zamkowych w średniowiecznej Polsce – zarys problematyki*. Stowarzyszenie Historyków Sztuki, Oddział w Poznaniu. https://www.academia.edu/3028154/O_apotropaicznej_funkcji_niekt%C3%B3rych_kaplic_zamkowych_w_%C5%9Bredniowiecznej_Polsce_Zarys_problematyki. Available online 15.10.2022.

- Laurinkienė N. 1996a. *Perkūnkulkė – griautinio dievo ženklas*. "Liaudies kultūra" 1, 23-26.
- Laurinkienė N. 1996b. *Senovės lietuvių dievas Perkūnas. Kalboje, tautosakoje, istoriniuose šal tiniuose*. Vilnius.
- Lehr-Lenda U. 1982. *Wierzenia i zabiegi magiczne zabezpieczające zagrodę*. "Etnografia Polska" 26(1), 277-283.
- Lejman J. 1999. *Człowiek jako „zwierzę terytorialne"*. In: S. Symotiuk, G. Nowak (eds.), *Przestrzeń w nauce współczesnej* 2. Lublin, 81-107.
- Lødøen T. K. 1993. *Tor-steinen*. "Arkeo. Nytt fra Historisk Museum i Bergen" 1, 32.
- Manikowska H. 2008. *Geografia sakralna miasta*. In: H. Manikowska, W. Brojer (eds.), *Animarum cultura. Studia nad kulturą religijną na ziemiach polskich w średniowieczu 1: Struktury kościelno-publiczne*. Warszawa, 95-131.
- Manikowska H., Słoń M. 2017. *Über zwei Dimensionen hinaus. Die sakrale Geografie der mittelalterlichen Stadt „nach innen“ und „nach oben“*. "Biuletyn Polskiej Misji Historycznej" 12, 75-104.
- Manikowska H., Pomierny-Wąsińska A. 2015. *Główne nurty badań nad przestrzenią miasta średniowiecznego*. "Kwartalnik Historii Kultury Materialnej" 63(2), 189-199.
- Marczyk M. 1999. *Wybrane zagadnienia dotyczące progę w magii*. In: J. Bohdanowicz (ed.), *Zwyczaje, obrzędy i wierzenia pogrzebowe*. Komentarze do Polskiego Atlasu Etnograficznego 5. Wrocław, 183-195.
- Masłowska E. 2014. *Symbolika i profile znaczeniowe dzwonów kościelnych*. In: J. Szadura (ed.), *Gawędy o kulturach* 1. Lublin, 69-83.
- Maurer H. 2012. *Ein Donnerkeil von Zitternberg bei Gars am Gamp, BH Horn, Niederösterreich*. "Unsere Heimat" 83(3-4), 241-243.
- Menšík P. 2018. *Nový nález „hromového klínu“ ze Železné Rudy, okr. Klatovy*. "Archeologie západních Čech" 9(1), 29-31.
- Mildenberger G. 1969. *Verschleppte Bodenfunde. Ein Beitrag zur Fundkritik*. "Bonner Jahrbücher" 169, 1-28.
- Mitmannsgruber A. 1962. *Ein Donnerkeil im niederösterreichischen Mostviertel*. "Österreichische Zeitschrift für Volkskunde" 65(NS 16), 177.
- Moszyński K. 1967. *Kultura ludowa Słowian 2: Kultura duchowa* 1. Warszawa.
- Muhonen T. 2006. *Kolme ajallista näkökulmaa ukonvaajoihin. Kivikauden kiviesineet myöhempien aikojen kurioositeina*. "Kuriositeetikabi.net" 3, 1-23.
- Niczyporuk D. 1998. *Przestrzeń w kulturowym obrazie świata*. In: S. Symotiuk, G. Nowak (eds.), *Przestrzeń w nauce współczesnej*. Lublin, 45-60.
- Niebrzegowska-Bartmińska S. 2016. *W najwyższe góry bije piorun z chmury. Trzy modele pioruna w polskim ludowym obrazie świata*. "Konteksty. Polska Sztuka Ludowa" 70(3-4), 473-482.
- Norkus J. 1959. *Ein „Donnerkeil“ und ein Schalenstein aus dem Kreise Hameln-Pyrmont*. "Die Kunde N.F." 10(3-4), 219-220.
- Novotný B. 1991. *Hromový klin z Lúčnice nad Žitavou*. In: O. Oždáni, M. Rejholcová (eds.), *Archeologické výskumy a nálezy na Slovensku v roku 1989*. Nitra, 73.
- Olbrich K. 1987. *Donnerkeil*. In: H. Bächtold-Stäubli, E. Hoffmann-Krayer (eds.), *Handwörterbuch des deutschen Aberglaubens* 2. Berlin, New York, 325-331.
- O'Sullivan A. 2017. *Magic in Early Medieval Ireland: Some Observations from Archaeological Evidence*. "Ulster Journal of Archaeology" 74(2017-2018), 107-117.
- Pascual Chanel Á., Serrano Simarro A. 2008. *Słownik symboli*. Warszawa.
- Pedrosa J. M. 2009. *Jussieu, Feijoo y las piedras del rayo, o la razón moderna frente a la vieja superstición*. "Revista Murciana de Antropología" 16, 245-270.
- Pelcowa H. 2005. *Przestrzeń jako sposób postrzegania świata przez użytkowników gwary*. In: J. Adamowski (ed.), *Przestrzeń w języku i w kulturze. Problemy teoretyczne. Interpretacje tekstów religijnych*. Lublin, 125-135.
- Penney S. H. 1976. *Axes, Arrowheads and Other Antiquities in Irish Folklore*. "Ulster Folklife" 22, 70-75.
- Piotrowski R. 2019. *Oslabiona granica – ekspresje świata demonicznego w przestrzeni domu na podstawie przekazów folklorystycznych i etnograficznych z XIX i XX wieku*. "Politeja" 1(58), 301-310.
- Pyvovarov S. V. 2008. *Vikoristannya arkeolohichnikh artefaktiv u mahichniy praktysi davn'oho naselennya Bukoviny*. "Memoria ethnologica" 28-29, 104-108.
- Ramminger B. 2007. *Blitzschutz und Fruchtbarkeitsspende: noch einmal zu den 'Donnerkeilen'*. "Denkmalpflege und Kulturgeschichte" 4, 11-13.
- Rapan Papeša A. 2020. *Magic or Practicality? "Antiquities" in Avar Period Graves in Eastern Croatia*. In: S. Krznar, T. Sekelj Ivančan, J. Belaj, T. Tkalčec (eds.), *Life and Death in Medieval and Early Modern Times. Proceedings of the 5th International Scientific Conference of Mediaeval Archaeology of the Institute of Archaeology Zagreb, 6th and 7th June 2018*. Zagreb, 17-31.

- Reed K. 2019. *Ritual Household Deposits and the Religious Imaginaries of Early Medieval Dalmatia (Croatia)*. "Journal of Anthropological Archaeology" 56, 1-10.
- Reitinger J. 1976. "Donnerkeile" aus Oberösterreich und Salzburg. In: H. Mitscha-Märheim, H. Friesinger, H. Kerchler (eds.), *Festschrift für Richard Pittioni zum 70. Geburtstag* 2. Archaeologia Austriaca 14. Wien, 511-546.
- Riess W. 1981. *Ein Donnerkeil aus Wels*. "Jahrbuch des Musealvereines Wels" 23, 41-52.
- Rosmanitz H. 2006. *Die archäologischen Untersuchungen auf der Ketzelburg – Ein Überblick*. In: H. Rosmanitz (ed.), *Die Ketzelburg in Haibach. Eine archäologisch-historische Spurensuche*. Neustadt a.d. Aisch, 55-70.
- Roth Th. 2006. *Als die Donnerkeile noch vom Himmel fielen*. In: H. Rosmanitz (ed.), *Die Ketzelburg in Haibach. Eine archäologisch-historische Spurensuche*. Neustadt a.d. Aisch, 107-111.
- Rúa Aller F. J., García Armesto M. J. 2010. *Usos y creencias de las piedras de rayo de León*. "Revista de Folklore" 344, 61-68.
- Rynne E. 1964-1965. *Two Stone Axeheads from Killamoat Upper, Co. Wicklow*. "Journal of the County Kildare Archaeological Society" 14(1), 50-53.
- Saczyńska M. 2016. *O kaplicach w siedzibach rycerskich i możnowładczych późnośredniowiecznej Polski uwag kilka*. "Kwartalnik Historii Kultury Materialnej" 64(3), 307-325.
- Samariter R. 2014. *Das Beil auf dem Balken. Ein Fund aus Horst bei Greifswald, Lkr. Vorpommern-Rügen*. "Archäologische Berichte aus Mecklenburg-Vorpommern" 21, 215-217.
- Samdal M. 2000. *Amuletter. Gjenstander med amulettkarakter i vestnorske graver I tidsrommet 350-1000 e. Kr.* Bergen. <https://bora.uib.no/bora-xmlui/bitstream/handle/1956/1785/Masteroppgave-samdal.pdf?sequence=1&isAllowed=y> Available online 05.10.2022.
- Schoknecht U. 1978. *Kurze Fundberichte 1977. Bezirk Neubrandenburg*. "Bodendenkmalpflege in Mecklenburg" 1978, 355-417.
- Schultrich S. 2018. *Das Jungneolithikum in Schleswig-Holstein*. Leiden.
- Sébillot P. 1904. *Le folklore de France 1: Le ciel et la terre*. Paris.
- Sedova M. V. 1957. *Amulet iz drevnego Novgoroda*. "Sovetskaya arkheologiya" 4, 166-167.
- Shevelev V. V. 2005. *Gromovye strely" proroka Il'ia. Étnograficheskie realii*. "Zhivaya starina" 1, 2-3.
- Sklenář K. 1999. *Hromové klíny a hrnce trpaslíků. Z pokladnice české folklorní archeology*. Praha.
- Skutil J. 1932. *Dva příspěvky k československému folkloru prehistorickému*. "Český lid" 32, 35-52.
- Skutil J. 1963. *Opracujmy słowiański folklor prahistoryczny. Pradzieje Słowiańszczyzny w słowiańskich wyobrażeniach ludowych*. "Z Otchłani Wieków" 29(1), 84-87.
- Skwierczyński K. 1996. *Custodia civitatis. Sakralny system ochrony miasta w Polsce wcześniejszego średniowiecza na przykładzie siedzib biskupich*. "Kwartalnik Historyczny" 103(3), 3-51.
- Slivka M. 2004. *Hranice v mentálnom chápaní stredovekého človeka*. "Archaeologia historica" 29, 9-36.
- Søvsø M. 2017. *Votive Offerings in Buildings from Rural Settlements*. In: Ch. Bis-Worch, C. Theune (eds.), *Religion, Cults & Rituals in the Medieval Rural Environment*. Rurialia 11. Leiden, 337-345.
- Søvsø M., Søvsø M. H., Siggaard A. L. 2016. *Om hugorme, dyrekranier og tordensten – bygningsofre og andre skikke med dybe rødder i folketroen*. "By Marsk og Geest" 28, 57-89.
- Sulima M. 2007. *Symboliczne przestrzenie domu*. "Zeszyty Naukowe Politechniki Białostockiej. Architektura" 20, 81-91.
- Swaryczewska A. 2013. *Brama w strukturze i koncepcji kompozycyjnej krajobrazu sakralnego*. In: R. Knapiński, A. Kramiszewska (eds.), *U drzwi Twoich*. Lublin, 279-295.
- Szlachta-Misztal J. 2015. *Sień jako pogranicze – pogranicze jako sień*. "Studia Wschodniosłowiańskie" 15, 609-616.
- Šantalab D. 2008. *Kamena strela. Neka vjerovanja seljaka s područja Višnjice o kamenom oruđu i oruđu iz neolitika i eneolitika*. "Ivanečka škrinjica" 4, 34-36.
- Toeppen M. 1867. *Aberglauben aus Masuren mit einem Anhang, enthaltend: Masurische Sagen und Märchen*. Danzig.
- Toporow W. N. 2003. *Przestrzeń i rzecz*. Kraków.
- Tolstoy N. I. 1995. *Gromovaya strela*. In: N. I. Tolstoy (ed.), *Slavyanskije drevnosti 1*. Moskva, 561-563.
- Trigger B. G. 2006. *A History of Archaeological Thought*. Cambridge.
- Tuan Y. 1987. *Przestrzeń i miejsce*. Warszawa.
- Tuijn W. 1992. *Middleleeuws hergebruik van stenen bijl?* "Jaarverslag" 25, 40-41.
- Tyszka P. 1995. *Postrzeganie granicy w średniowieczu*. "Kultura i Społeczeństwo" 39, 105-117.
- Watte J.-P., Jullien M. 2007. *Un biface employé comme "ceraunie" ou "pierre de foudre" a Livet-sur-Authou (Eure)*. "Haute-Normandie Archéologique" 12, 5-8.

- Wdowiak L., Wysokiński P. 2013. *Piorunowe strzałki, grzmoty i gromy w medycynie ludowej na ziemiach polskich w okresie rozbiorów*. In: M. Z. Felsmann, J. Szarek, M. Felsmann (eds.), *Dawna medycyna i weterynaria. Środowisko a człowiek*. Chełmno, 519-545.
- Wesołowska-Starzec H. 2016. *Architektoniczne sacrum i profanum – czyli o świątyni i jej sakralności raz jeszcze*. In: B. Bigaj-Zwonek, B. Hryszko, S. Góra (eds.), *Sztuka, wartość, sacrum*. Kraków, 187-204.
- Wozniński A. 2013. *O kilku średniowiecznych bramach miejskich w Prusach, ich funkcji i symbolice*. In: R. Knapieński, A. Kramiszewska (eds.), *U drzwi Twoich*. Lublin. 251-278.
- Wójtowicz M. 2011. *Ambiwalentne znaczenie przypisywane granicom przestrzennym i czasowym w kulturze ludowej*. In: M. Roszczyńska, B. Serwatka (eds.), *Granice i pogranicza w humanistyce*. Kraków, 79-95.
- Vařeka P. 1991. *Stavební obětiny z české a moravské vesnice v archeologických pramenech*. "Český lid" 78(2), 117-119.
- Verhart L. 2015. *Vuurstenen werktuigen*. In: T. Derks, B. de Fraiture (eds.), *Een Romeins heiligdom en een vroegmiddeleeuws grafveld bij Buchten (L). Verslag van een archeologisch noodonderzoek (1976)*. Amersfoort, 83-86.
- Verhart L., Creemers G., Dreesen R., Goemaere E. 2021. *Een donderbijl tussen de panlatten: een hamerbijl van Muntendam-type I met een bijzonder verhaal (Soerendonk, gemeente Cranendonck, prov. Noord-Brabant, Nederland)*. "Lunula" 29, 7-11.
- Vesly L. de. 1909. *La fana ou petits temples Gallo-romains de la région Normande*. Rouen.
- Vích D., Kašpar P. 2014. *Nález hromového klínu v Panošim Újezdu na Rakovnicku*. "Archeologie ve středních Čechách" 18, 901-902.
- Zajac P. 2003. „*Nadprzyrodzone*” w kulturze ludowej. In: E. Przybył (ed.), *Nadprzyrodzone*. Kraków, 85-98.
- Zajac P. 2004. „*Nadprzyrodzone*” w kulturze ludowej. "Literatura Ludowa" 4-5, 19-29.
- Zaremska H. 1986. *Niegodne rzemiosło. Kat w społeczeństwie Polski XIV-XVI w.* Warszawa.
- Ziemiński J. 1996. *Kosmologiczne aspekty architektury rezydencjonalnej*. "Materiały Państwowego Muzeum Zamkowego w Pszczynie" 9, 258-283.
- Zoller D. 1981. *Beiträge zur archäologischen Landesaufnahme für den Landkreis Ammerland Gemeinde Apen (I)*. "Oldenburger Jahrbuch" 81, 277-302.
- Zygner L. 2017. *Sakrale Topografie der mittelalterlichen Stadt Plock*. "Biuletyn Polskiej Misji Historycznej" 12, 199-228.