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Imaging picture stones: Comparative studies of rendering techniques

Alexander Andreeff & Rich Potter

The results from different rendering techniques will be shown in this article and briefly discussed with regard to investigations of the pictorial surface on three picture stones from Gotland, Sweden. The island is the largest in the Baltic Sea and is well-known for its very rich and outstanding archaeological material, especially from the Viking Age and Early Medieval period. The picture stones that are the case studies for this article originate from three different sites on Gotland: Fröjel Bottarve, Fröjel Stenstugu and Buttle Änge. All of these sites are located in rural areas with rich agricultural lands and an abundance of ancient remains that speak of habitation and land use since at least the Bronze Age to present day. Fröjel Stenstugu and Buttle Änge are still standing at their original sites while Fröjel Bottarve was found re-used in a grave.

This study is a part of Alexander Andreeff's PhD-project about the Late Iron Age Gotlandic picture stones. The article is part of a work in progress and only preliminary results are presented here; a more comprehensive presentation and discussion will be available in forthcoming publications. Rich Potter was responsible for executing the RTI- and photographic analyses. The RTI renderings were made during a field study in May 2013.

About 570 picture stones of all types have been found on Gotland (Widerström 2012: 36). These Iron Age carved stones are mostly found re-used and inserted into the floors and walls of medieval stone churches on the island. The stone churches were built between the mid-12th until the mid-14th century incorporating stones from ancient remains in the vicinity as a building material; the picture stones were often placed with the pictorial side outwards, probably to be viewed. Whether or not this had a symbolic significance has been a topic in the scholarly discussion (Johansen 1997). Picture stones can also be found reused in pre-Christian inhumation graves that are mostly

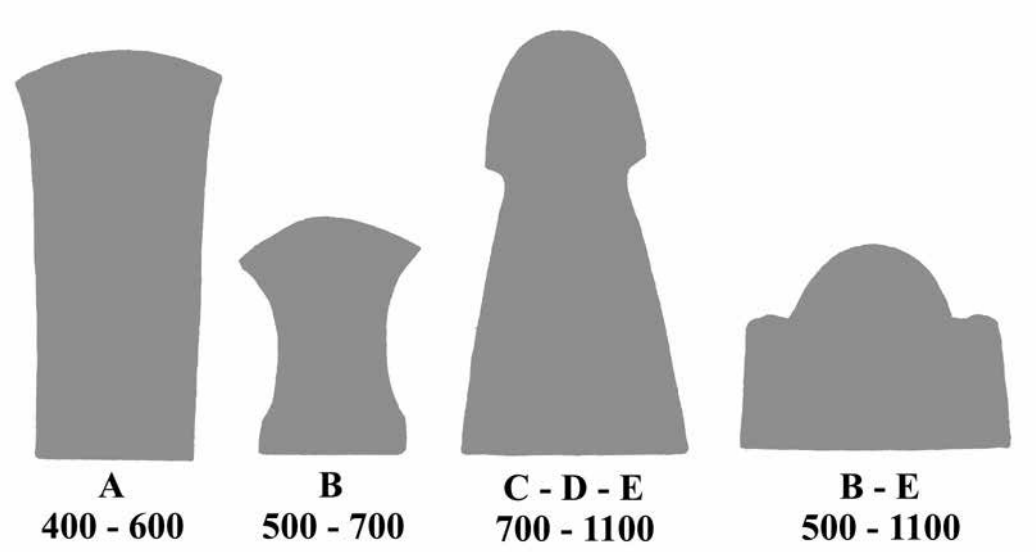


Fig. 1. *Typology of the picture stone according to Lindqvist, modified by Nylén and Lamm. After Nylén & Lamm 2003: 172.*

from the 10th and early 11th century (Måhl 1990; Burström 1996; Rundkvist 2012), however only about 15 picture stones are still found in the landscape at the site that they were originally erected. Picture stones as runestones are located in the landscape near pre-historic roads, crossroads and fords, often at borders between farms and older districts (Andrén 1989, 1993; Måhl 1990; Nylén & Lamm 2003; Andreeff 2012).

The picture stones are usually divided into five distinct types regarding typology and chronology (Fig. 1). This typology was created by Sune Lindqvist, the most prominent scholar within picture stone studies in the mid-20th century (Lindqvist 1941, 1942). The earliest type A is dated to the Late Roman Iron Age and Early Migration period, the type B to the Late Migration period and Vendel period, the type C to the Late Vendel period and the Early Viking Age, the type D to the Viking Age. The latest type E is dated to the Late Viking Age and Early Medieval period (Lindqvist 1941, 1942; Andrén 1989, 1993; Nylén & Lamm 2003; Herlin Karnell (Ed.) 2012; Varenius 2012; Andreeff, forthcoming).

Erik Nylén and Jan Peder Lamm divide the picture stones into four types according to shape, as seen in Fig. 1, which is a slight modification of Lindqvist's typology. Early period picture stones equate to type A, Middle period become type B, Late period type C/D/E, and lastly cist stones which are classified as a separate group (Nylén & Lamm 2003; Varenius 2012). What it is that the different shapes represent has been an ongoing discussion within picture stone research: axe, door, world tree, animal hide and phallus are among the suggestions (Arrhenius 1970; Andrén 1989, 1993, 2014).

The three picture stones presented here are all of type C, dated to late 8th and 9th century on typological and contextual grounds. A consensus

regarding the exact time frame for the different picture stone types has not been reached by scholars. The type C picture stones have a phallic or keyhole shape with the pictorial side showing a rather schematic set of figures and scenes divided into horizontal picture panels; they are always only carved on one side. They regularly repeat the same kind of motifs from top to bottom, rider and horse, women with a drinking horn, procession of warriors and sailing ship. In type D these motifs are also common but not in the same fixed order as is the case with type C. It is characteristic of type D that the scenes are blurred and interlinked with each other, often making it hard to distinguish one scene from another. These two later types have attracted the most interest from scholars and are the richest in iconography. When these monuments are found at the original site they stand alone or in groups in the landscape.

Methodology

Studies with different photographic and alternative documenting techniques and re-examinations of earlier rendered motifs of picture stones and runestones on Gotland have recently been completed by Laila Kitzler Åhfeldt (2002, 2009a, 2009b, 2010, 2012) and Sigmund Oehrl (2009, 2010, 2011, 2012). Kitzler Åhfeldt has scanned the carved image surfaces of over 68 picture stones with a portable optical 3D-scanner (Kitzler Åhfeldt 2012). Her results are made public through the Swedish National Heritage Board website (www.raa.se). Kitzler Åhfeldt's studies focus on cutting techniques and the potential use of templates in order to determine if it is possible to identify individual stone carvers or workshops (Kitzler Åhfeldt 2012). Oehrl is more interested in re-interpreting the figural motifs with comparative studies with textual sources and analogies with similar imagery from continental Europe (Oehrl 2012).

The two main methods used in this study were frottage and RTI. Regular photography with the help of raking lights was also used in one case. The aim was to compare the various rending techniques to determine whether they would give different results.

The frottage or rubbing method involves placing a piece of paper on the carved surface, and then rubbing the paper with a piece of graphite. Carvings, lines and other depressions emerge by way of light patches on a dark background, or the opposite if the figures are made in high relief. This low-technology method has been used on rock art, runestones and picture stones in Sweden since at least the 19th century. It is still used in initial investigations, but needs to be complemented with photographic methods to give reliable results.

RTI is a method that involves a static camera and a moving light source in order to digitally create a normal map – a colour coded image that can be used to digitally simulate the surface of the picture stones. It is essentially a more modern variant of the raking light technique which produces an interactive picture in which the light can be moved dynamically on a computer.

The technique is fairly simple involving a black ball, tripods, a flash, a camera and various remote triggers (while there is no scope in this article to provide an in depth description of the technique, more information can be found at http://culturalheritageimaging.org/Technologies/RTI).

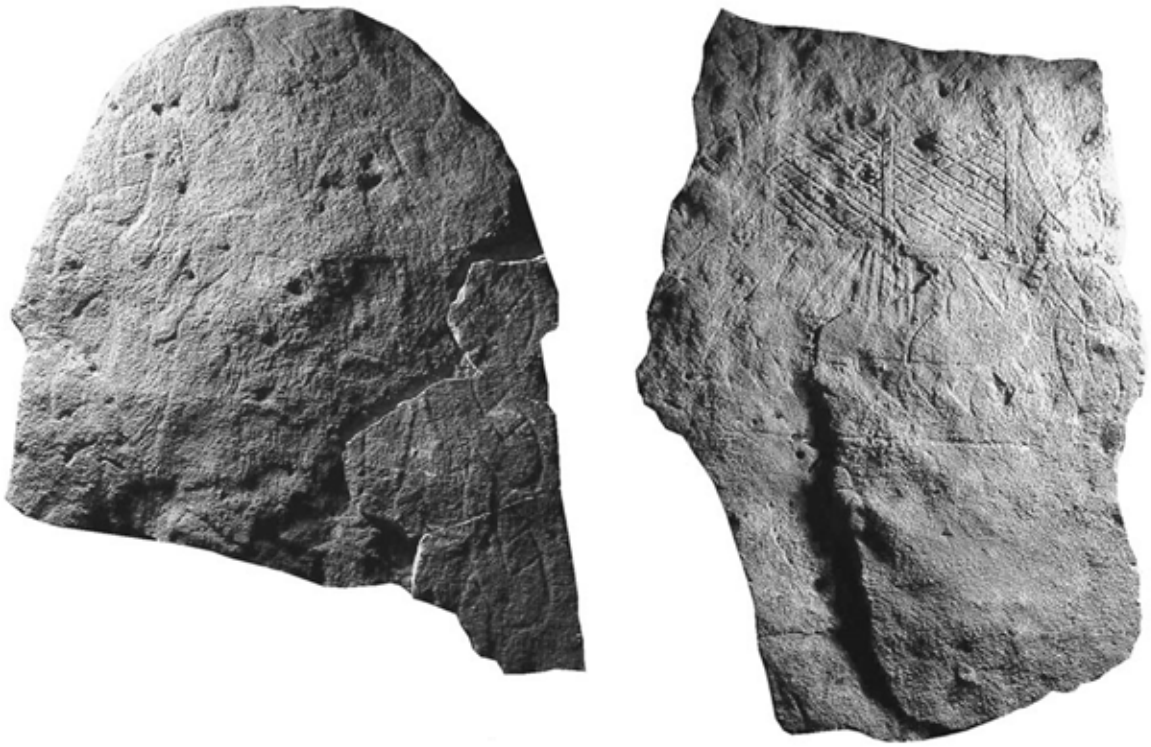


Fig. 2. *Fröjel Bottarve. Photos not according to scale in relation to each other. Photo: Helena Andreeff & Alexander Andreeff.*

Fröjel Bottarve

The picture stone from Fröjel Bottarve was found in two parts inserted into an inhumation grave on the northern cemetery at the Late Iron Age and Early Medieval trading place and harbour in Fröjel parish during archaeological investigations in 1999. Dan Carlsson conducted extensive archaeological excavations at the site mainly in the late 90s and early 00s. The investigations have unearthed remains from a seasonal settlement with workshops and two cemeteries from the Late Iron Age. In earlier excavations closer to Fröjel Church, Carlsson found an Early Medieval Christian cemetery and the remains of a stone house foundation, possibly a late 12th or 13th century vicarage. Fröjel parish is situated about 40 km south of the town of Visby on the west coast on Gotland. The site was one of the more important ports of trade along the Gotlandic shore during the 10th and 11th century (Carlsson 1999a, 1999b, 2004; Ahlquist, Olsson & Andreeff 2002).

The grave was not visible above ground prior to excavation and was constructed as a pit burial in which the individual had been laid down at the bottom and covered by a stone pavement. The larger lower part (62.5 x 90 cm) of the picture stone was placed at the feet of the male skeleton and the upper part (52.5 x 55.2 cm) at the head end in the grave. The lower part had fallen into

the burial over the man's lower limbs, but the headstone was still relatively vertical close to the cranium. The pictorial side of both parts of the stone were facing the skeleton. The grave did not contain any grave goods, but the surrounding burials at this cemetery were mainly dated to the 10th century; this grave probably also originates from this century in the Late Iron Age. Because the stones were protected from weathering in the grave for over a thousand years, their images could be seen with the naked eye. The total length of the picture stone is 145.2 cm when the parts are put together (Dahlström & Eriksson 2000; Andreeff 2001; Carlsson 2004; Norderäng & Widerström 2004).

The picture stone is currently displayed in the parish community house next to Fröjel Church. In 2001 Helena Andreeff and Alexander Andreeff examined the two pieces. The stone was so sharply divided before it was inserted in the grave that it could be perfectly pieced together for the renderings. The stone was first photographed with the help of raking lights (Fig. 2), and then a frottage was made of the pictorial side. The frottage of the stone gave excellent results due to the good preservation of the imagery (Fig. 3).

The RTI presented here was taken from the lower part of the picture stone which displays a ship with a rig and a sail, waves and crew members (Fig. 4). The weather vane at the top of the mast is also visible. In the RTI taken at the top of the stone there are also various carved figures including what appears to be a rider on a horse, a figure holding a drinking horn, a bearded figure and a long necked wading bird.

Fig. 3. *Fröjel Bottarve. Frottage: Helena Andreeff & Alexander Andreeff.*

Fig. 4. *Fröjel Bottarve. Lower part with ship with sail. RTI: Rich Potter.*

RTI samples were taken over the whole of the carved stone. The carved lines were very evident in all of the RTIs taken, but since they were mostly visible to the naked eye this was not entirely surprising. The results were also particularly good due to the dark conditions they were taken in.

Due to the excellent preservation state of the picture stone, all three methods gave great results. On the lower half of the stone a ship, a rig and chequered sail can be seen. On top of the mast there is a wind vane or a bird, and there are rolling waves under the ship's keel. On board the ship are three human figures, a steersman at the stern and two bearded figures at the prow which has an elaborated dragon's head. In the partly damaged midsection, due the breaking of the stone prior to its insertion into the grave, three human bearded figures carrying different objects (weapons?) can be seen walking in procession. Above these figures a human figure in a long dress holding a drinking horn is facing a bearded figure who is followed by a wading bird. A bearded rider on a horse is seen at the top of the stone. The motifs are enclosed by an intricate braided edge ornamentation.

Fröjel Stenstugu

Fröjel Stenstugu is also situated in Fröjel parish, but in the inland bordering Klinte parish towards the north. The picture stone is still standing at what is presumably its original site on the farm Stenstugu (Fig. 5). It is located adjacent to a pre-historic road, which is still used by farmers, near the present parish border. The picture stone is 1.97 m above ground and 1.06 m wide at its base. It is badly weathered and no carved images can be discerned. Due to its specific shape the picture stone can be classified as a Late Iron Age type. The illustrator of antiquities C.G.G. Hilfeling described, measured and sketched the picture stone as early as in 1799 on one of his trips to Gotland (Hilfeling 1799). The stone is also mentioned and documented by Lindqvist. On his photographs it can be seen that the landscape was much more open in the 1940s than today (Lindqvist 1942: 42, 44). The area is currently comprised of forest and pastures.

Prior to the excavation, the picture stone was at a 30 degree backward slant in relation to the former road which runs directly north of the picture stone. This road is marked on the 18th century map, and runs between Klinte and Fröjel parish church on a ridge, the Litorina Bank - a shingle beach ridge formed during a developmental stage of the Baltic Sea.

Today the boundary between Fröjel and Klinte parishes is situated not far from the picture stone. Its location near the later parish boundary may reflect a former border between the areas that existed when the picture stone was erected. The area in the vicinity of the picture stones is very interesting with plenty of pre-historic remains such as a hill fort, stone house foundations, Celtic fields, grave mounds and cairns.

Greta Arwidsson, the principal antiquarian at the time with the responsibility of the ancient remains and monuments on Gotland, sent a letter to the National Heritage Board in 1947 asking them to contact the County Board of Administration to establish a fine, and also urging the local police authorities to carry out an investigation. The matter at hand was that the picture stone Fröjel Stenstugu had been damaged by graffiti. Arwidson states in her letter that she had been examining the stone and had reported that she could see both older and newer graffiti. Among the older graffiti were the glyphs 1928, HP, R and AM (in two places), the graffiti that she interpreted as newer was Arnold, Holger, Elis, Lubbe Olsson, TL (on two places), AV or AK and the number 10/12 1942 (Gotlands Fornsal, Dnr. 150/47). In the following police investigation it was revealed that it was local farmers and farm labourers who had defaced the stone but that they had no knowledge that the stone was an ancient monument protected by law. The local police stated that the period of prosecution had expired for the alleged crime, and that the inscriptions were very shallow anyway, only about 0.5 mm, and could therefore easily be removed. The police then deemed the damage as slight and closed the case (Gotland Fornsal, Dnr. 143/48: Avskrift 1605/48). Traces of these letters and numbers cannot plainly be seen today, except maybe AV in the upper left corner of the picture stone.

The excavation of the picture stone site was conducted by Andreeff in July 2007 with the help of archaeologists and students from the University of Gothenburg and former Gotland University (Fig. 6). The immediate area at the base of the picture stone and a narrow cross section of the

Fig. 6. *Excavation. Fröjel Stenstugu. Photo: Alexander Andreeff.*

former road were excavated, about 27 m^2 in all. Following the field work, the picture stone was straightened up to minimize the risk of further weathering of the surface (Andreeff 2012: 131-133; Andreeff & Bakunic Fridén 2014).

A low oval-shaped earth filled stone pavement, about 3 m in diameter and 15 cm deep closest to the picture stone was discerned when the turf was removed. Cremated highly fragmented bones were found scattered in the stone fill, concentrated in a semicircle in front of the picture stone. Artefacts of iron and bronze, 16 fire damaged glass beads and a fragment of a silver bracelet were also found. The iron objects comprised of nails, rivets and an arrowhead. Bronze objects included various mounts, a belt buckle, a strap end mount and a button-shaped mount with animal art ornaments. These bronze objects may have been attached to leather straps. A spindle whorl of red quartz was also among the finds. These finds are probably the remains of a cremation that was placed here as a deposition at the picture stone. The artefacts can be dated through typology to the Late Vendel period or Early Viking Age (Andreeff 2012: 132-137; Andreeff & Bakunic Fridén 2014).

Fig. 5. (image to the left) *Fröjel Stenstugu. Photo: Alexander Andreeff.*

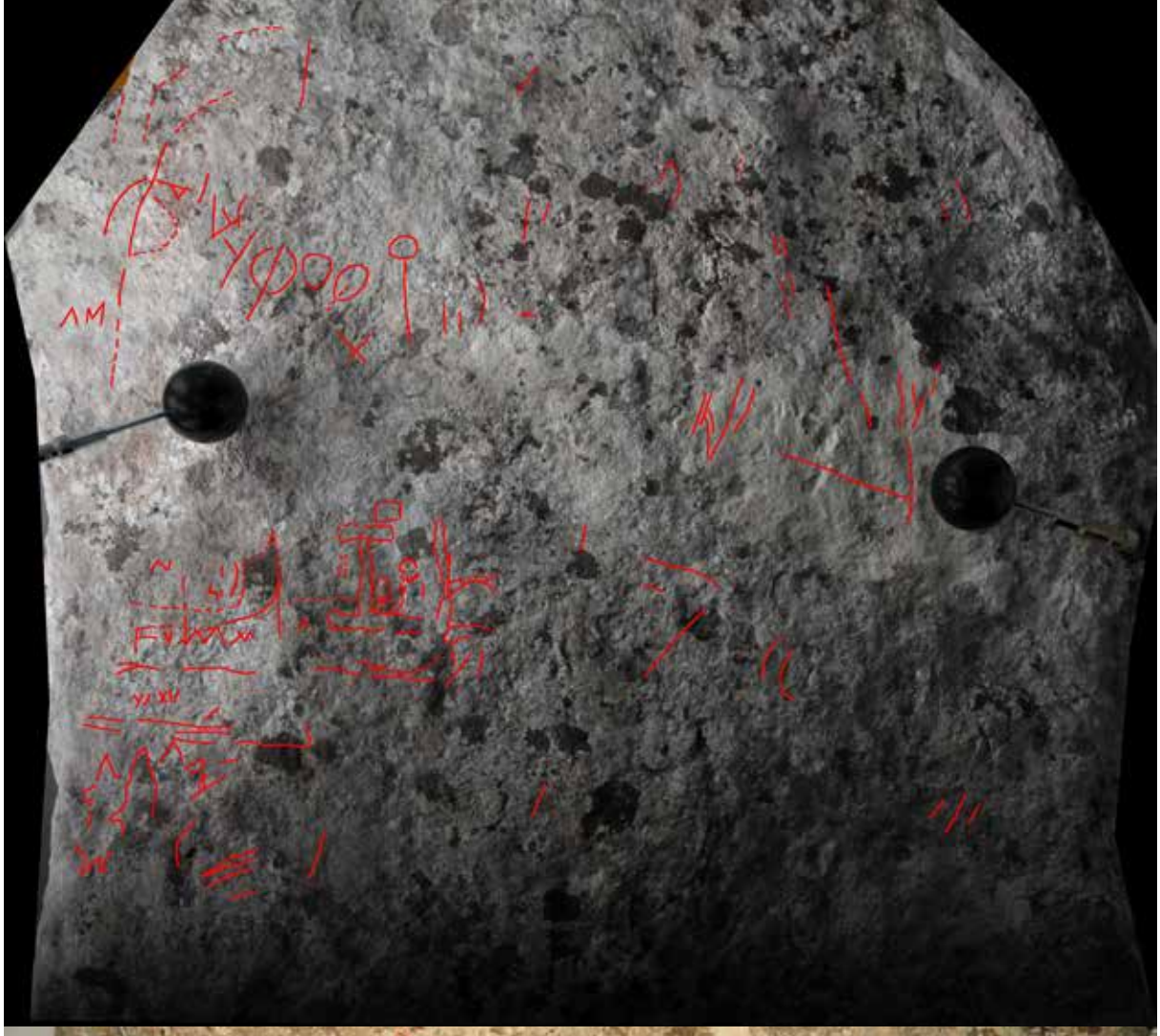
A total of 846.9 g of cremated skeletal material was unearthed at the excavation. The bones are overall very fragmented and the colouring and state suggest high temperatures. They were found scattered in a semicircle mostly around the pictorial side of the stone with a concentration towards the front. The bone material was analysed by osteologist Emelie Franzén (2013) who classified at least one individual of the following animals: domestic pig, dog, cattle and seal. Unburnt teeth fragments were preserved from the pig, the cattle bones were partly burnt, but the dog and the seal bones were cremated at high temperatures. The dog was identified through teeth and a mandible and the seal through metacarpals and metatarsals. The very fragmented human bones consisted of parts of the cranium and limbs belonging to at least one individual, the fragmented skull bones had adult characteristics. It was not possible to sex the material due to its fragmented state (Franzén 2013). Two ^{14}C analyses of cremated bones were carried out by Radiocarbon Dating Laboratory, Lund University. The samples cover a time span from the 8th until the 9th century (Andreeff 2012: 134; Andreeff & Bakunic Fridén 2014).

Helena Andreeff and Alexander Andreeff created a frottage on site at Fröjel Stenstugu in 2012 (Fig. 7). Some carved lines could be detected, but the overall results were inconclusive.

The results of the RTI showed carved/cut lines that could clearly be detected, though they were difficult to interpret and merge into understandable motifs as the lines often did not connect or were not diagnostic (Fig. 8). In the upper left corner there are cut lines that look like letters and/or numbers, it is not clear but it is thought that these may represent the modern graffiti mentioned above. In the centre there is a house like feature which may have two human figures inside. There is potentially a small boat to the left of the house shown by what could well be the prow of a ship. Down to the left there are potentially figures in a procession with helmets. The lower part of the picture stone is less cognitive. There appear to be some wave formations or at least hatching over a larger part of the stone which may well be indicative of a ship or a sail. Lines and patterns around the outside of the picture stone demonstrate that there was almost certainly a decorative edging round the picture stone.

Fig. 7. *Helena Andreeff securing the sheet of paper for the frottage on the picture stone Fröjel Stenstugu. Photo: Alexander Andreeff.*

Fig 8. *RTI interpretations from the top and bottom half of the Fröjel Stenstugu. The top was created with a regular flash, the lower with a halogen lamp. RTI: Rich Potter.*



The applied methods of the picture stone from Fröjel Stenstugu gave very different results. In this case the frottage gave no certain information, but human made carved lines could be distinguished with RTI. Further analyses of the RTI photographs must be done to distinguish which inscriptions are traces of early 20th century graffiti and which motifs may stem from the Late Iron Age.

Buttle Änge

Two picture stones of the Late Iron Age type stand in their original location next to the farm Änge in Buttle parish: Buttle Änge I and II (Fig. 9). A pre-historic road runs adjacent to the picture stones, with the preserved section of the road embankment being about 200 m long and 3-3.5 m wide. The carved surfaces on the picture stones face north towards the road, which was once the main communication route through the parish from the south. In the surrounding area there are many pre-historic remains, including several Early Iron Age house foundations, Celtic fields and cemeteries.

The larger picture stone is 1.85 m wide at the foot and rises 3.85 m above the ground surface making it Gotland's tallest picture stone of the later type. The north side has a distinct and very well preserved image surface with numerous interesting motifs and figures including a ship with a sail at the bottom. The adjacent picture stone is 2 m tall and 1.67 m wide at the foot, though it may have been taller, since the top is damaged and it has signs of breaking.

Fredrik Nordin investigated many picture stone sites in the late 19th and early 20th century on Gotland. His results were first published by Lindqvist in the volumes *Gotlands Bildsteine* I och II (1941, 1942). Nordin opened a trench at the foundation of two stones at Buttle Änge, where he found charcoal, animal bones and pottery (Lindqvist 1942: 38; Måhl 1990: 23). Behind these two stones he found five smaller picture stones, four of which, according to Lindqvist's interpretation, formed a smaller stone cist (Lindqvist 1941: Taf. 49, Fig. 120-124; 1942: 38-39). This stone cist has now been reconstructed and is on display in the picture stone hall at Gotland Museum.

Re-investigation of the site was initiated by Andreeff in 2009 as a part of his PhD-project. Continued excavations were conducted in 2013 and 2014 as a regular university field course in archaeology for Uppsala University. The excavation season in 2015 is also planned to take place at the site. The first two years of Andreeff's excavations focused on the area around the two picture stones. The aim of the re-investigation was to try and find undisturbed cultural layers similar to those Fredrik Nordin reported from Buttle Änge, which bear witness to ritual activities- and other practices in relation to picture stones. If further finds and undisturbed layers are unearthed, it will contribute to an increased chronological and contextual understanding of the relationship between the picture stones and other archaeological materials and features at this site, while offering a comparison with other picture stone sites such as Fröjel Stenstugu.

In 2009, part of a Medieval or Early Modern house foundation with two stone clad post holes was excavated directly north of the picture stones. One of postholes was constructed partly of lime stone slabs consisting of re-used fragments of extremely weathered picture stones. Frottage of these stones gave promising results,

Fig. 9. *Buttle Änge picture stone site. Photo: Alexander Andreeff.*

but these results need to be confirmed with other rendering methods. On the east side about 1.5 m from Buttle Änge II a large lime stone slab was found that may have been the top part which had been broken off. A cross section of the road was also investigated (Andreeff 2012; Andreeff, Melander & Bakunic Fridén 2014).

In 2013 two main trenches were opened, the first south of the standing pictures stones and the second through a supposed clearance cairn about 20 m west of the monuments. The trench at the picture stone was aligned with Nordin's trench, excavated in 1911, and the excavation trench from 2009. This trench was later extended in several directions. The same kind of thick black ceramics Nordin had reported at the foundation of the picture stones were found in the part of the trench closest to the standing picture stone (Lindqvist 1942: 38; Måhl 1990: 23). About two metres south behind the larger picture stone a 15 cm deep pit with dark thick soil, charcoal, cremated bones and a few metal artefacts, including part of a javelin from the Late Vendel period or of Early Viking Age type. In the same area, but

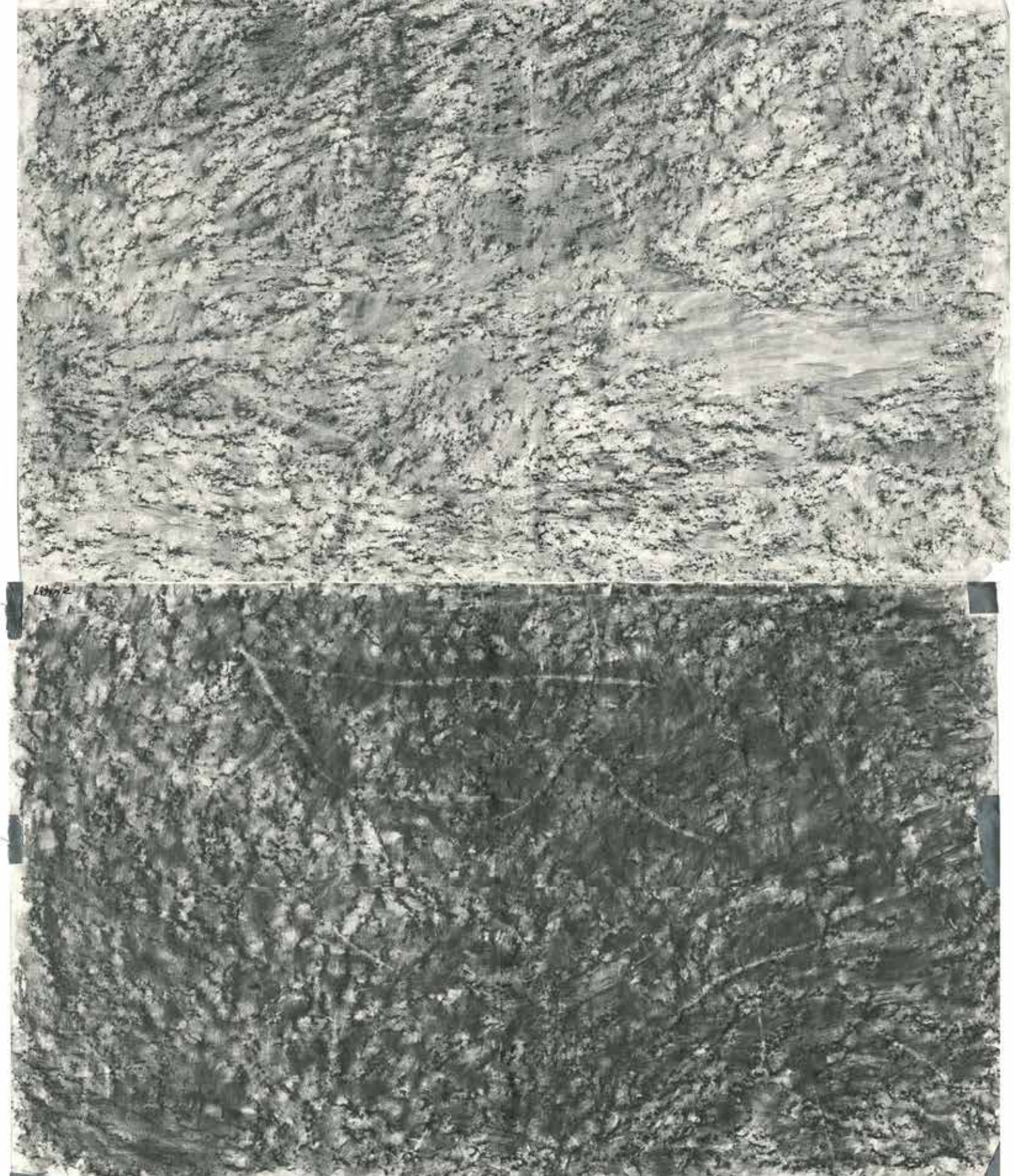
Fig. 10. *Buttle Änge picture stone site with reconstructed stone setting. Photo: Alexander Andreeff.*

outside this deposition, finds of bronze and glass beads were also made. Some of this material may originate from disturbed or destroyed cremation burials. This material is probably part of the remains from cremations similar to those known from Fröjel Stenstugu (Andreeff 2012; Andreeff & Bakunic Fridén 2014) and Nordin's excavations of picture stone sites (Lindqvist 1941, 1942).

The other trench was placed through a feature registered as a clearance cairn that consists of an oval shaped low mound of earth and gravel on which stones have been thrown throughout centuries of agricultural work. Only a few larger stones, that were revealed to be part of a circular shaped stone setting, were seen prior to our excavation. The dumped stones were removed and the stone setting was uncovered and fully investigated. Along the south end of the stone circle, cremated bones, glass beads, comb fragments, iron rivets and bronze objects were unearthed, mostly directly outside, but also under the stones. Among the recovered bronze objects were a pair of tweezers, several mounts and fragments of pendants. The most remarkable find was a lunula pendant of silver-copper alloy. Analysis of the findings shows that the grave artefacts are from two different burials or depositions, with part of the material belonging to a "female" burial in the 9th century, and the rest from a "male" burial that was probably from the later part of the 10th century. The sexing of the material is formed through traditional gendered divisions of the artefacts; the osteological material is yet to be analysed (Andreeff, Melander & Bakunic Fridén 2014). The stone setting was reconstructed after excavation (Fig. 10). The relation between the picture stones and the stone circle, depositions and burials will be further discussed in future publications.

Fig.11. *On the ladder making frottage in front of Buttle Änge I, Michael Markström to the left and Alexander Andreeff to the right. Buttle Änge II in the background with the half completed frottage attached seen on Fig. 12. Photo: Helena Andreeff.*

Frottage were made of parts of both Buttle Änge I and II as a workshop for students in 2013 (Fig. 11). Buttle Änge I is very well preserved and Lindqvist has created a very good rendering of this stone (Lindqvist 1941: Taf. 50, 1942: 37; Herlin Karnell (Ed.) 2012: 45). Anton Snell Redon made the frottage of the upper central part of Buttle Änge II (Fig. 12) - the relatively smaller standing picture stone at the site, but in all other circumstances should be counted among the larger picture stones with a height of 2 m; as previously stated, the top part was been damaged and may have been broken off. On Buttle Änge II no carvings have hitherto been recorded. Lindqvist reported the stone as "blind",



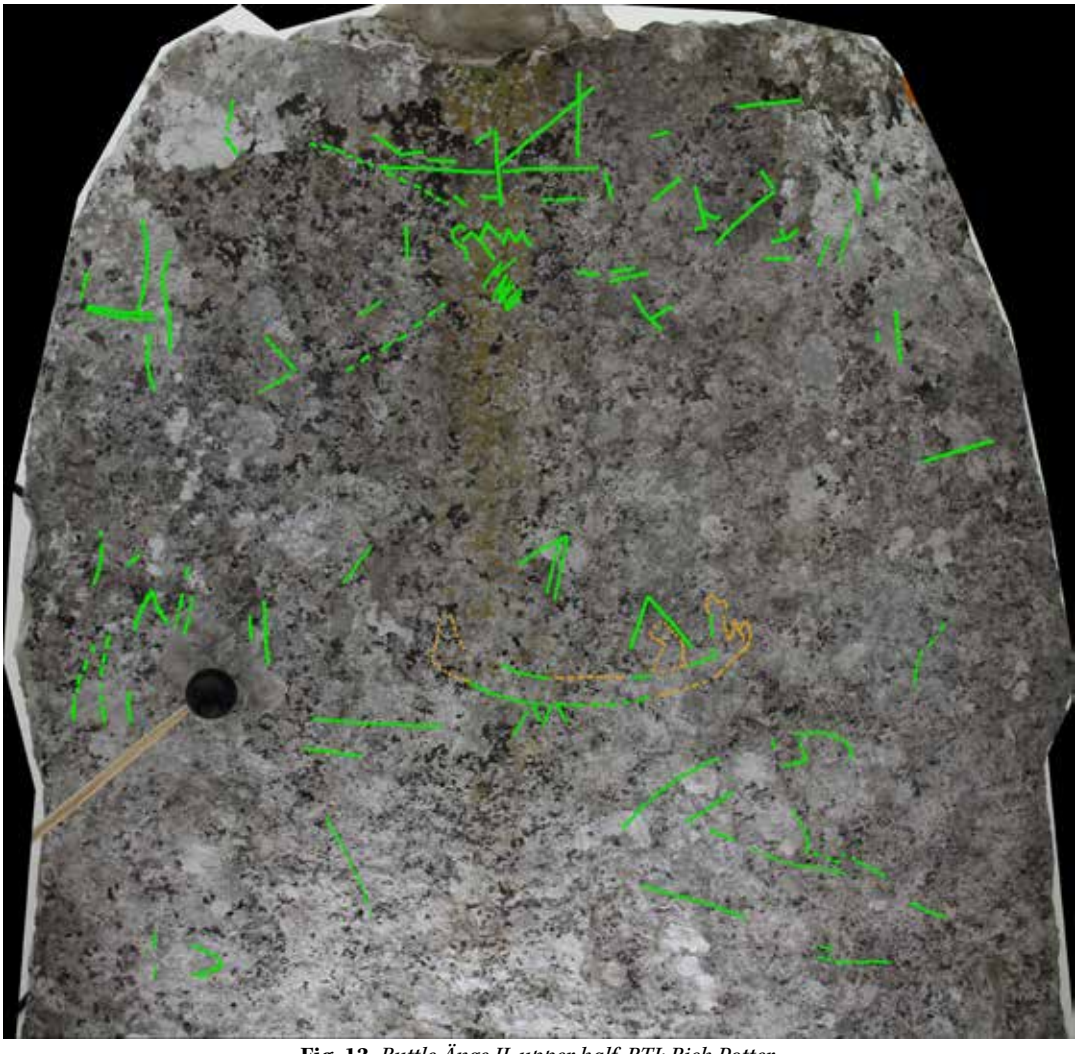


Fig. 13. *Buttle Änge II, upper half. RTI: Rich Potter.*

but with an ocular examination of Buttle Änge II and through the frottage, rather deep straight carved lines can be seen in the upper part that probably represented a sail (Fig. 12). The curved lines at the border up to the right may be the remains of the edge ornamentation.

The extremely sunny weather conditions and the placement of the stone made obtaining a good RTI image relatively hard. A tent was used as covering in order to create some shadow, but it was relatively ineffective. The marginally translucent nature of some elements within the stones caused some issues with the light being reflected back from both the sunlight and the flash.

The RTI of the upper half of Buttle Änge II shows what appears to be a small ship with at least one

Fig. 12. (Image to the left) *Buttle Änge II, central upper half. Frottage: Anton Snell Redon and Michael Markström.*

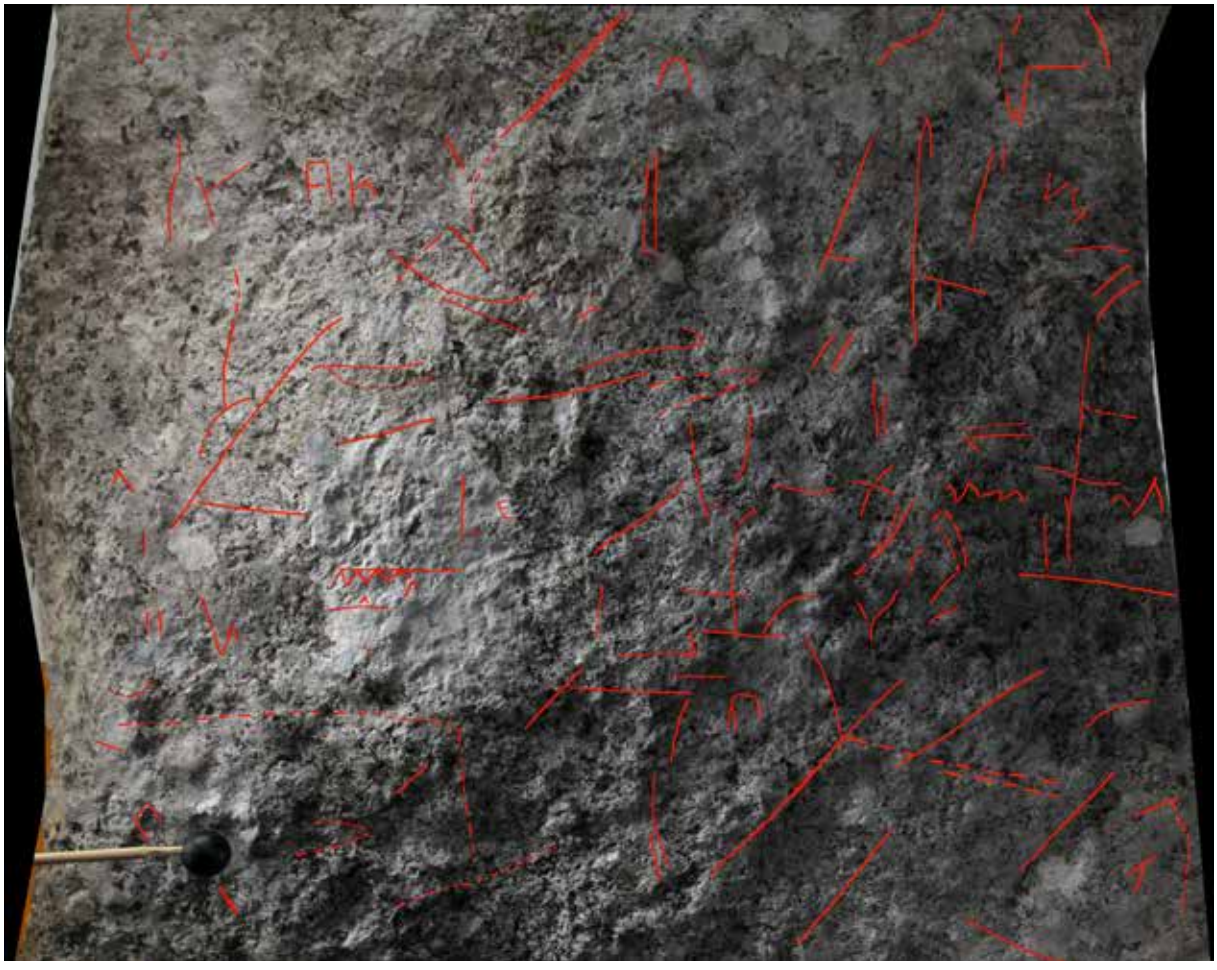


Fig. 14. *Buttle Änge II, lower half. RTI: Rich Potter.*

potential crew member, there also appears to be a larger second ship at the top of the stone given the size of what appears to be a mast and a sail (Fig 14). Although most of the lines are not diagnostic, it is clear that this stone was carved, but only a limited amount of material is currently detectable. It is evident that there was also a decorative edging on the border of the stone. The RTI of the lower half of Buttle Änge II shows a lot of carving activity, but none of which is particularly diagnostic (Fig. 14). It is possible that there are some sort of waves, or at least a hatched pattern, there also appears to be some continuation of the edging round the border of the stone.

The methods applied to the picture stone from Buttle Änge gave fairly similar results as those from Fröjel Stenstugu. In this case the frottage showed distinct human made carved lines that could also be distinguished with RTI. Further analyses of the RTI photographs must be

done in order to distinguish further patterns. It may also be beneficial to return on a less bright day to retake samples.

Conclusion

So called blind picture stones have their own category in Lindqvist 1941, 1942. They are stones that are either weathered to the point that all traces of carvings are gone, or they were never carved. It has been suggested that they might instead have been painted (Nylén & Lamm 2003: 16-17). It is doubtful that this category is valid in its own right as when re-examined many of these reported "blind" picture stones, such as Fröjel Stenstugu and Buttle Änge II, have the remains of motifs, although they are often inconclusive regarding precise figures and motifs.

RTI photographs gave good results on all the picture stones, even though the method is light sensitive and using a tent to shield the sunlight is preferable. Due to the good preservation of the picture stone from Fröjel Bottarve very good results could be gained from all methods. In the case of Fröjel Stenstugu the RTI method proved that human made carvings were present on the surface, however the results from the frottage were inconclusive. At Buttle Änge II, although the frottage indicated that there were carved lines and curves, more information could be discerned from the results of the RTI.

This study highlights the necessity of using different rendering techniques to obtain a reliable end result. As mentioned earlier in this article, this study very much represents a work in progress. The experience learnt is that diverse techniques sometimes give quite different results. No one technique is better than the other, but all three techniques working together allow for the development of a clearer and more reliable result. Further work may include the addition of further techniques to expand the comparison and to evaluate the strengths and weaknesses of the methodologies of recording picture stones.

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