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Exploring the
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THE VISIONARY CROSS

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ARCHAEOLOGY IN THE STUDY

Scanning Anglo–Saxon Artifacts in the Visionary Cross Project

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THE VISIONARY CROSS IS AN INTERNATIONAL research project that studies the representation in Anglo-Saxon England of the Cross as a participant in Christ’s passion. The project is funded by the Canadian Social Sciences and Humanities Research Council (SSHRC) and the Canadian Foundation for Innovation (CFI). Its researchers and students come from the Universities of Lethbridge, Pennsylvania, Leeds, Turin, and Pisa and the Italian National Research Council.

The goal of this project is to prepare digital facsimiles and “editions” of texts and objects that contain examples of this motif or are related to its transmission in the Anglo-Saxon period (“editions” in this context are scientific transcriptions with explanatory notes and detailed research). These include some of the best known Anglo-Saxon artifacts:

- The **Dream of the Rood** and **Elene**, poems about the cross found in the Vercelli Book of Old English poetry and prose (a late tenth century, Southern English manuscript now in the cathedral library in Vercelli, near Turin, Italy);
- The **Ruthwell Cross**, one of the best preserved Anglo-Saxon stone crosses, which contains a version of the **Rood** poem in runic characters (late eighth-century, now located

in a specially built apse in Ruthwell Kirk, between Clarencefield and Ruthwell, near Dumfries);

- The **Bewcastle Cross** (late eighth-century, still on what is probably its original location in the churchyard of what is now St Cuthbert’s Church, Bewcastle near Carlisle);
- The **Brussels Reliquary or Altar Cross** (eleventh-century, of southern English manufacture, now in the treasury of the St Michael and St Gudula Cathedral, Brussels).

The project’s work involves preparing digital transcriptions and high-resolution photographic facsimiles of the poems and high-resolution 3D facsimiles of the crosses. The team has recently finished all of its photographic and scanning work. It is now preparing the data for publication and use in its editions. While these data and these editions will be highly detailed and suitable for advanced research, the needs of scholars are not our only focus. The majority of our material will be published to the web in free Open Access and Open Source viewers, allowing students, interested amateurs, members of the general public, and tourists to access and learn more about these treasures wherever there is an internet connection. Our first “beta” publications, indeed, are student editions that we are testing for use in the classroom.

The *Rood* poem and the Visionary Cross Motif

As our list of objects suggests, the “Visionary Cross” motif was very popular in Anglo-Saxon England. The Vercelli Book *Rood* poem is probably the best known manifestation of this to modern audiences, since the poem is frequently found in literary anthologies and textbooks.

As those of us who have read the poem will remember, the *Dream of the Rood* takes the form of a dream-vision in which an unnamed narrator introduces his or her vision of the cross, which is floating in the air and dressed like an altar cross with gems and cloths, but also showing the marks of Christ’s crucifixion. The Cross then speaks in its own voice, describing the crucifixion in heroic terms, discussing its role in assisting Christ as he offered himself up for our sins, and asserting its position now as an intercessor for mankind, honoured by God above all other objects in a manner similar to the way Mary is honoured above all other women. The poem closes with a short discussion by the narrator of the significance of his or her vision and the hope it provides.

The key part of this representation for the purposes of our project is the personification of the Cross as a follower of Christ who participates in his crucifixion. The Cross indicates how it could have struck down Christ’s tormenters, but dared not because of God’s commandment. It describes Christ’s heroic ascent to the Cross (The *Rood* poem is remarkable for the way it describes Christ and his passion in terms reminiscent of a Germanic hero preparing for battle). It recounts its subsequent loss and rediscovery and ends by discussing the honour it has received and its ability to intercede on behalf of those who invoke it.

Nu ðu miht gehyran, hæleð min se leofa,
þæt ic bealuwara weorc gebiden hæbbe,
sarra sorga. Is nu sæl cumen
þæt me weorðiað wide ond side
menn ofer moldan, ond eall þeos mære gesceaft,
gebiddaþ him to þyssum beacne. On me bearn godes
þrowode hwile. Forþan ic þrymfæst nu
hlifige under heofenum, ond ic hælan mæg
æghwylcne anra, þara þe him bið egesa to me.
Iu ic wæs geworden wita heardost,
leodum laðost, ærþan ic him lifes weg
rihtne gerymde, reordberendum.
Hwæt, me þa geweorðode wuldres ealdor
ofer holmwudu, heofonrices weard!
(*Dream of the Rood*, lines 78 - 91)

Now you can hear, my dear man,
that I have outlasted the deeds of the evil-doers,
of painful sorrow. Now the time has come
that people near and far around the earth,
and all this great creation honour me,
pray to this beacon. On me the Son of God
suffered awhile. Therefore I triumphant
now tower under the heavens, and I can heal
any individual, within whom there is fear of me.
Long ago I was made into the hardest of torments,
most hateful to men, before I showed
the true way of life to them, the ones bearing speech.
Listen—the Lord of Glory honored me then
Above all trees of the forest, the guardian of the heavenly
kingdom!

Knowledge of the *Rood* poem in Anglo-Saxon England

In addition to being well-known to modern audiences, there is also considerable evidence to suggest that the *Rood* poem was also well-known to Anglo-Saxons. While the best known version of the poem is found in the Vercelli Book, the poem is also known from two other sources: a shorter text, containing a version in the Cross’s voice, found in runic characters on the Ruthwell Cross, and what appears to be a quotation from two lines (also in the Cross’s voice) engraved as part of a dedicatory inscription on the Brussels Reliquary Cross. Since the Ruthwell Cross dates from the eighth-century and is found in South West Scotland, and the Brussels Cross is from eleventh-century and the South of England, this suggests in turn that knowledge of the poem spanned Anglo-Saxon England, both temporally and geographically.

Very few Old English poems are known from this many copies and almost none from copies spanning more than one dialect or ranging in date from the earliest to the latest written records. In fact, only 3% of surviving Old English poetry survives in more than one Anglo-Saxon copy; and most of these poems are found in no more than two. Of the poems that are found in more than two copies, the *Rood* poem is unique in that it is the only text that is not associated with some larger text that accounts for its popularity - unlike, say, *Cædmon’s Hymn* (which is always found in the context of Bede’s *History of the English Church and People*) or the *Battle of Brunanburh* (which survives only in copies of the *Anglo-Saxon Chronicle*), the *Rood* poem appears to have been known independently of

any particular context. Beyond this, moreover, the **Rood** poem stands out from the rest of Old English poetry in a host of other ways:

- It is one of only two poems known from Anglo-Saxon copies in more than one dialect (the other is **Cædmon's Hymn**).
- It is one of only two poems quoted by the author of an otherwise completely different text (the other example is a quotation from the poetic translation of the Psalms in the Old English **Menologium** poem).
- It is the only poem found in both manuscript and monumental contexts.
- It is the only poem from the period that is found in Runic and Latin versions.

Relationship between the objects and texts

This **Rood** tradition accounts for three out of the five texts and objects we are studying in this project: the Vercelli Book **Dream of the Rood** poem; the Ruthwell Cross, with its runic inscription from the **Rood** poem; and the Brussel's Cross, with its quotation. Each of these versions, however, also is associated with other representations of Christ's Crucifixion.

Elene

In addition to the longest text of the **Rood** poem, the Vercelli Book also contains the only known copy of the Anglo-Saxon poem **Elene**. This poem describes the finding of the true cross in Jerusalem after it appeared to the emperor Constantine in his battlefield vision. In this poem too, the cross is described as a heavenly beacon, is decorated in gold and gems, and appears in the sky (this is a theme found in most examples of this motif). As with the other examples, this cross also has writing on it, promising Constantine victory over his enemies.

Brussels Cross

About a foot and a half in height, the Brussels Cross is of a size suitable for placing on an altar or carrying in a procession. It is built on an oak core and was once covered in gilt silver and precious gems with perhaps a crucifixion on its face (the gilt survives on the back and

edges and impressions can be seen in the wood where the gems were once attached). It probably once contained a relic from the "True Cross" (i.e. fragments of wood that were claimed to have come from the actual cross on which Christ was crucified) and looked much like the cross depicted in the Vercelli **Rood** poem and **Elene**. The quotation from the **Rood** poem (roughly equivalent to lines 44 and 48 of the Vercelli Book poem), is inscribed along the edges: **Rod is min nama; geo ic ricne cyning bæc byfigynde, blod bestemed** ("Rood' is my name; Once I bore a powerful king, trembling, stained with blood"). A further inscription identifies the object's donors and dedicatee: **þas rod het Æþmær wyrican and Aðelwold hys beropþo[r] Criste to lofe for Ælfrices saule hyra beropþor** ("Æþmær and his brother Aðelwold ordered this cross to be made in praise of Christ and for the soul of their brother Ælfric"). Across the arms, the artisan responsible for the cross has inscribed his name in large letters: **Drahmal me worhte** ("Drahmal made me").

Ruthwell Cross

The Ruthwell Cross carries both a version of the **Rood** poem and echoes the presentation of the Cross in that poem and **Elene**. Among the finest of the remaining Anglo-Saxon stone crosses, its version of the **Rood** poem is one of the longest runic inscriptions from the Anglo-Saxon period. If the inscription is coeval with the cross itself (there has been some debate over the years, though our research suggests that it is contemporary), the inscription is one of two candidates for the earliest surviving example of Old English poetry (the only competitor is **Cædmon's Hymn**, the earliest manuscripts of which date to the early- to mid-eighth century). Its (current) North and South faces contain a number of figural panels, including the stunning "Mary Magdalene washing the feet of Christ" and "Annunciation" panels shown here (for a variety of reasons, including parallels to the Bewcastle Cross, scholars believe that the current East and West faces were originally North and South).

The Ruthwell Cross is now the centrepiece of local religious life and carefully protected by both the parish and Scottish government. But it has not always been so loved. During the Reformation, the cross was pulled down, defaced, and broken into pieces in response to the Church of Scotland **Act anect Idolatrous Monuments in Ruthwell 1642** (the cross was pulled down in 1643 and there is some evidence that the local parishioners may have resisted the edict). The crosspiece, which has never been

recovered, is said to have been buried in the churchyard (current local lore says in the “Catholic” part - i.e. where those with allegedly recusant tendencies were buried in this very old and well-established parish). A large piece of the cross was reportedly later recovered from a particularly deep grave that was dug to accommodate the burial of a husband and wife who died a few days apart (we’ve been unable to identify this burial). Another large piece was partially buried in the floor of the church, where it is said to have served as bench for many years.

The cross was restored to its current form--actually an amalgam of cross fragments, mortar, stone blocks, and a nineteenth-century transom with Masonic symbols - by Henry Duncan during his appointment as minister to the kirk (1799 - 1843). Duncan placed the Cross in his garden, where it sat exposed to the Scottish elements from almost eighty years before it was finally moved inside in 1887 by the Reverend James McFarlan. The Cross was formally scheduled as an ancient monument in 1921. As our team reported in a recent article in the *Old English Newsletter*, however, it has continued to reflect human interaction. Since moving indoors, it has acquired several knife cuts (made when plaster casts were removed in the 19th century), some pencil graffiti (date unknown), and some drops of paint from the last time the church was painted.



Bewcastle church and cross

Bewcastle Cross

The Bewcastle Cross, finally, is found approximately twenty miles across the border from Ruthwell in the churchyard of St Cuthbert’s, a later medieval church in the

Carlisle borderlands. The Bewcastle Cross shows considerable artistic overlap with the Ruthwell Cross and is thought to be of the same artistic school. It too has runic inscriptions, although no poetry. Unlike the Ruthwell Cross, it is still located outside in what is likely to have been its original Anglo-Saxon location. It is, as a result, severely weathered. As at Ruthwell, the original cross-piece is missing (although some scholars argue that both Ruthwell and Bewcastle may have been columns rather than crosses). The remains of a small sundial survive on one side, and the cross may have been painted and decorated with metalwork and / or glass fragments, reminding us of both the Brussels Cross and the depiction of the Cross in the Vercelli Book *Dream of the Rood and Elene*. The west face is carved with three figural panels, two of which have close parallels on the Ruthwell Cross. The east face is decorated with a continuous vinescroll similar to those of the current east and west faces at Ruthwell. The north and south sides are decorated with panels of interlace, geometric, and foliate ornament. As with the Brussels Cross, the Bewcastle Cross seems to have had a commemorative function: the lowest panel on the west face shows a falconer wearing secular dress who is usually understood to represent the deceased man commemorated in a now largely illegible runic inscription and the names of other individuals, mostly unreadable, inscribed in the borders between panels on the north and south sides.

“Capturing” our data

As important as these objects are to the study of Anglo-Saxon England, none has been the subject of detailed analysis since the beginning of the digital age. The last edition of the Vercelli Book *Dream of the Rood* poem is based on work done in the 1970s. The Bewcastle and Ruthwell Crosses are known primarily from black and white analogue photography from the last century. The last facsimile of the Vercelli Book was a 1977 black and white volume that currently costs almost \$1000 to purchase.

Our project is using new digital tools and techniques to study these objects in ways that have never been possible before. The Vercelli Book *Rood* and *Elene* poems are being edited by a sister project led by Roberto Rosselli Del Turco on the basis of high-resolution colour photography and using the latest in eXtensible Markup Language (XML)-based technology (XML is the language that powers the

modern Internet). In the case of the Brussels Cross, our project inherited several hundred high-resolution digital colour photographs which will allow us to build a 3D model using a combination of automatic and assisted 3D modelling.



Marco Callieri, Matteo Dellepiane, James Graham, Daniel O'Donnell at Ruthwell Cross Scaffold

It is the stone crosses at Ruthwell and Bewcastle, however, that will benefit the most from our use of these new digital tools and techniques. Researchers have always had difficulty capturing good representations of these objects. In the case of the Bewcastle Cross, the issues are physical size, location, and the damage done by exposure to the elements. The cross is about fifteen feet tall and located about two and a half metres to the south of the current (post Anglo-Saxon) church. There is no infrastructure nearby that would allow access to the top of the cross. Due to the exterior location, the cross is also covered in mosses and lichen, making the detail difficult to capture using traditional photography.

The cross in Ruthwell is in better shape physically, but also very difficult to capture using analogue technology due to its size and location. The Ruthwell Cross is about seventeen feet tall. This is in fact taller than the interior of the church in which it is now located: when Rev MacFarlan moved the cross indoors, he therefore had the cross installed in an approximately four foot deep well behind the minister's table. This well is itself quite close to the north wall of the church: at its closest, there is less than three metres space between the cross and the exterior wall of the apse.

Taken together, this means that it is impossible to take a photograph of the complete cross from any angle, without using a fish-bowl type lens: while it is possible to photograph the top three quarters of the cross from the West, South, and East sides (though the size means that a photographer needs to stand quite far away), the well makes it impossible to capture the bottom three or four feet at the same time. On the North side, the close proximity of the wall means that it is impossible to capture more than a few feet of the face of the cross with any level of fidelity at a time. As at Bewcastle, there is no infrastructure nearby from which it is possible to photograph the top of the cross easily.

3D scanning

Using 3D scanning technology and high-definition photography, we have been able to overcome all of these problems. The process by which the scanning is done is quite simple, though it involved a lot of planning.

Blue light scanning the Bewcastle Cross

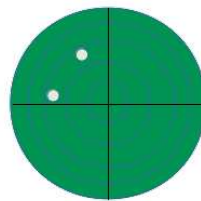


Scaffolding

The first thing we did in each case was hire a professional scaffolder to build a scaffold around the cross. This was to allow us to get close enough to the crosses to scan them, and also to allow us access to the top of each monument.

At Ruthwell, the process of building the scaffold was complicated by the fact that the church itself is a listed monument: in addition to not touching the Anglo-Saxon cross, we also had to avoid touching the later medieval church and the nineteenth century church fittings. In Bewcastle, scaffolding was complicated by the location and weather: the scaffold needed to be free-standing and avoid the nearby gravestones; it also needed to be covered to protect researchers and their equipment from wind and rain as they worked on the cross during our scanning.

Complicating matters was the issue of security: the Ruthwell and Bewcastle crosses are both easily accessible and frequently unattended; once our scaffolding was in place, it would be difficult to prevent members of the public using this to gain unauthorised access to the tops of these monuments when our team was not on site, placing themselves and the monuments at risk of physical harm. This meant that the scaffolding needed to be constructed with as little lead time as possible before our team arrived to begin the scanning. It also needed to be broken down as soon as possible after we were finished. In the case of Bewcastle, moreover, there was always the threat of inclement weather: if the winds became strong enough or a thunderstorm rolled in, it would prove impossible to work on site (as it turned out, the days we scanned were in fact too sunny for daylight scanning--a problem we had not anticipated, but solved by working through the evening and night).



Similarities between RADAR (left) and 3D scanning (right)

Scanning and photography

Once the scaffolding was in place and the research team assembled from Pisa, Lethbridge, Pennsylvania, and Leeds, the scanning and photographic work began.

3D scanning is actually more like radar than photography. It works by projecting a signal (i.e. laser or structured light) on an object and then using the reflection to calculate the location of individual points (radar works on a similar principle, except using sound waves, to locate and measure the distance in space between “points” such as airplanes or ships). The resolution of the scanner determines how close the points measured can be. In our case, we did most of our scanning at a resolution of 0.25 mm, meaning that we had four measurements per millimetre of surface on the crosses.

The output of the scanner is what is known as a “point cloud” because, like the screen on a radar set at an airport, it consists entirely of individually measured locations, rather than lines and angles. In contrast to an airport, however, which might have a few hundred “points” in the surrounding area and, as a result, a lot of blank space between them, our scanners took millions of

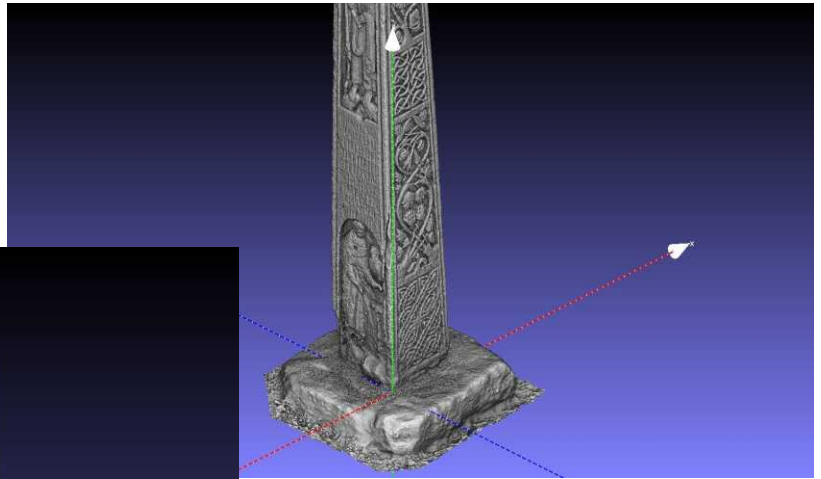
measurements from the cross, producing a very dense representation of the points on its surface. Since every single scan covers only a portion of the surface (less than a square metre), a post-processing step aligns all the scans, rebuilding the entire object in a puzzle-like fashion. If 2D photography is available of the same surface, it is possible to add colour and visual “texture” to the 3D representation by matching points on the photo with points in our cloud. When this processing is finished, the result is a photo-realistic 3D model of the scanned object that can then be manipulated in a variety of ways to emphasise different features: adjust or remove colour and other texture, artificially create shadows, enlarge or shrink the resolution,

or even send the object to a 3D printer or router to manufacture highly accurate physical replicas.

We are currently in the process of finishing these models and preparing them for publication. We have published two preliminary experimental

viewers that can be used for free by anybody on the internet to interact with the Bewcastle and Ruthwell Crosses.

Because these models are being served out over the internet, they are currently relatively low resolution (about 1/4 our most detailed scans). In the course of the



Bewcastle Cross reference mesh (above) and 3D model

next two years, we intend to publish more detailed models and better viewers. Our goal is to produce representations of these objects that can be used by scholars and the general public alike for both research and personal enjoyment.

If you are interested in more information about this project, please contact Daniel Paul O'Donnell.

