The Origin of the Runes and Language on the Kensington Rune Stone

For over a century certain details on the Kensington Rune Stone inscription were asserted to be most powerful proof of a modern forgery. Most of these details are now fully explained by the detailed examination of the runes of Gotland that follow and by the compelling identification that the Kensington Rune Stone has the traits of the dialects of Gotland and Eastern Götaland. This chapter begins with a section on the most compelling proof that the Kensington Rune Stone is medieval, the dotted R. This is followed by a section that demonstrates how most of the runic details on the Kensington Rune Stone are found in the medieval runic records of Gotland. The next section deals with the mutual dialect traits to be found either in Gotland or Eastern Götaland, with those on the Kensington Rune Stone. This is followed by a section on the Eastern Table derived date on the KRS. The last section deals with the recently discovered rune-rows on the Larsson documents discovered in Sweden in 2004, and the Yoke inscription which was discovered in Sweden in 2003.

The well-known phrase, “the devil is in the details” could not be more appropriate when it comes to the inscription on the Kensington Rune Stone. It is these details that give compelling proof that the runes and language of the KRS are indeed medieval and could only have been applied in the 14th century.

The Dotted R

The most compelling indication that the runes of the Kensington Rune Stone are medieval is the dotted R’s found on the inscription. R represents a palatal r sound, but is a sound no longer found in Scandinavian. The reader may have wondered why English has a word “their” and a word “there” that both sound the same but have totally different meanings. One
can blame the Viking settlements in England during the period 800-1150 for this fact, since the Scandinavian baIR (their) and her (there) became English loan words. With time <R> and <r> merged to one common sound in English. The same merger took place in Scandinavia, first in Norway and Northern Sweden and finally in Denmark and southern Sweden. When the KRS was discovered in 1898, runologists thought that the palatal R, designated by the pitch fork shaped rune (ᚎ) was out of the language at the end of the Viking age (latest 1100). However Otto van Friesen (1933: Fig. 64, 231-2) included (ᚎ) in his rune-row as applicable in Gotland until around 1300. In her recent Doctor’s thesis Snædal (2002) has shown that (ᚎ) was used in Gotland as late as the mid-1300s at Fide Church in inscription G 28 and that during the 1300s (ᚎ) was often applied incorrectly as at Tofta Church Inscription G-195 of circa 1347. (It is this use of (ᚎ) for <r> that indicated that the Larsson rune-row is medieval in origin). Therefore the use of the palatal R on the KRS would be in keeping with the times.

But there is something else that is very important. A special sign was introduced in medieval times for the palatal R, namely the dotted (ᛋ). This rune form was documented in Ukna Church in Småland, Sweden on the southern coast opposite Gotland and in Lund, Skåne, Sweden at the southern end of the Baltic. Both of these inscriptions were found in the 1930s, 40 years after the KRS was discovered.

The three dotted R’s present on the Kensington Rune Stone provide definitive and compelling proof of its medieval origin. The following is a comprehensive look at the dotted R’s on known medieval inscriptions and on the Kensington Rune Stone.

**Ukna Church Inscription**

In 1935 the dotted ᛋ first came to the attention of runologists on an inscription (Sm-145) in the Ukna church in Småland, Sweden. The words braR: boniR, (their prayers) appear in the inscription with both R’s being dotted. The dot was used to indicate the R sound when pronounced with the tip of the tongue on the roof of the mouth. This is also called the “palatal R.” Jacobsen and Moltke (1942: 968) report this discovery in their manual of runes.
This inscription (SM-145), from about 1300 was found in the 1935 at Uckna church near Kalmar, Småland, Sweden. The dotted R's, the first one painted and the second not painted, in this inscription are cited in Jacobsen and Moltke (1942: 968).

Lund Bone 4 in Skåne, Sweden

The Lund Bone 4 in Jacobsen and Moltke (1942: 968) was discovered in 1938.

\[
\text{araR ara aru fiaRhaR}
\]

"The oars of the eagle are its wings"

Another inscription was found with two dotted Rs, in the 1938 excavation of a medieval site in Lund, Sweden from the Elder Middle Danish period, circa 1200 (see color section, plate 21). The Lund Bone 4 (Danish Rune Annex 5) has two dotted Rs in the words fiaRhaR (feathers) and arar (oars) in the poetic expression "The eagle's feathers (wings) are its oars."

Dotted R's on the Kensington Rune Stone

The first dotted R to be noticed on the Kensington Rune Stone was made by Erik Wahlgren in 1958 in the word nor (north), which can be seen on the inside cover of his book. Based on photographs, Wahlgren detected the sequence RR on line 4 of the inscription, but made no attempt to interpret them. Barry Hanson made a visual inspection in 2001, which indicated
There are several examples of the “palatal R”, where the top of the tongue is placed on the roof of the mouth when pronouncing the R, in inscriptions that were carved during medieval times. The palatal R usually occurs at the end of a word or syllable.

The word vahR (were), with a palatal R (ɬ), appears in the G-370 inscription from Hablingbo church on Gotland, circa 1150.

On the Förtuna fragment U1003B, circa 1100, both R-letters are used at this time (ɬ and ɬ) in the word ἄτιλαρ (E) BTIΛRH (after). This rune stone fragment was discovered in 1923.

Examples of the correct usage of the palatal R (ɬ) persist as late as the 1400s in Gotland (G-28, G-289 and G-290). However, the surprisingly sparse usage of the palatal R is found in(G-151) (after) in Gotland, and on the Kensington Rune Stone. In the Norrlanda Church inscription G-151, both the r and R are used, which indicates the carver’s uncertainty concerning which r-letter to use, so he apparently used both. The same seems to be true with the late Viking era inscription U-1003B (circa 1100). Thompson (1975: 136) referred to this rune as the “strange dotted r-rune of 1003B.” Runic commentators have considered this dotted R to be a decoration, but no reference was made to the existence of the dotted R, and it must be presumed that such a possibility was ignored.
The Norrlanda church inscription from around 1300 (G-151, Plate 13) has the word ᚪᛋᛖ (after). The last ᚪ-runes have only the left arm, a Gotlandic unilateral ᚩ, as opposed to a bilateral ᚪ (ᛖ).

Examples of the correct usage of ᚪ (ᛖ) are present as late as 1400 in Gotland (G-28 Fide Church circa middle 1300s).

The following are examples of the dotted ᚪ on inscriptions in Gotland are cited by the authors and include the discovery of a previously undocumented dotted ᚪ’s found in 2005.

Dotted ᚪ’s Recorded by Swedish Investigators on Gotland

Five dotted ᚪ’s are described runic inscriptions on Gotland including G-57 Hemse, G-100 Lye, G-158 Gothem, G-70 Urgude, and G-128 Guldrup, but their significance has been overlooked by examining runologists.

Hemse Church

The Hemse church inscription (G-57) on Gotland, circa 1150, has an apparent dotted ᚪ documented by runologists as GAIRALF. The dotted ᚪ was treated in the texts as a normal ᚪ without a dot.
The Hemse church inscription (G-57) on Gotland, circa 1150, contains a dotted R ($\mathbf{R}$) which was curiously ignored in the text write-up for the name Gairalf. Acknowledging the dot yields GaiRalf and is etymologically correct for this name. The runologists went on to say that G-57 indicated an early transition of the palatal "R" to the modern "r" before 1150. Instead, it apparently indicates the first record of the dotted $\mathbf{R}$ on the island of Gotland.

Lye Chruch

The G-100 Lye Church inscription has a dotted R at the end of the word byr$\mathbf{R}$ byrp (birth) from 1449. Byrp (birth) is the normal spelling but for some reason the carver apparently heard a palatal R when he spoke the word and recorded it. It is not etymologically correct and occurred 50 years after the G-28 Pide Church inscription with a correct usage $\mathbf{R}$ bar (their). $\mathbf{P}$IR (there) later became the English words "their" and "there." This explains why there are two meanings for the same sound in English, since these words were originally introduced by the Viking settlements in England.

Gothem Church G-158

A dotted $\mathbf{R}$ was identified in the word $\textit{pors}$ (Sunday number Thor) by Pehr A. Säve in 1864.

A dotted R was recorded by Säve on a grave slab in Gotland on the east edge of the inscription (G-158) at Gothem Church circa 1305. $\textit{PORS}$ (Thor) is the name of the $\mathbf{p}$-rune.
This R is seen as the 5th rune from the end of the 7th line in the inscription. \( \text{þ} \equiv R \equiv H = \text{þors} \) (Thors). When plotted on the Easter Table the Golden Year date on the G-158 inscription gives the year as 1305 (Snádal 2002: 142). In another surprising twist runologist Pehr A. Säve had already noted the dotted R in an inscription (G-158) on Gotland in 1864, but its significance has remained unrecognized by runologists to this day. For one thing, the R is not etymologically correct however by 1305 many uses of the \( \text{þ} \) symbol for R were incorrectly applied in Gotland.

Urgunda Inscription G-70 from Sproge Parish

This dotted R from 1514 on the G-70 Urgunda inscription was likely copied as a decoration from an earlier inscription since the palatal R was reportedly no longer in use. The inscription says BETAR (Peter)

The G-70 inscription, called Urgunda, is a dated inscription by the Easter calendar from 1514 and has a dotted R that could have been copied as a decoration from some earlier inscription(s) likely carved a century or two before. There were likely many other inscriptions that were still in good condition in 1514, but now almost five hundred years later most are now either destroyed or weathered to the point where they are illegible.

Guldupe Church

The G-128 inscription in plaster at Guldupe Church is dated from the Easter calendar to 1508 and has an initial dotted R. The dot could be a decoration or it could be a dotted R being used as a vowel.

This dated inscription for 1508 is deemed too late for the Palatal R on Gotland, but in Guldupe it is used initially meaning that it could take a vowel sound. If not used as a decoration, this word might mean EYGP (cross-eyed). This inscription would be the only one where the dotted R is used for a vowel. In the Sm-145 Ukna Church inscription the
dotted Rs are used for the Palatal R sound, but in the same inscription (ฤ) is used for <y>, since it is between two consonants, for Pyrhilsär (Tyrgil’s).

The Uknna Church inscription Sm 145 from circa 1300 has an R (ฤ) used for <y> between two consonants in the word Pyrhilsär (Tyrgil’s).

Dotted R’s Recorded by the Authors on Gotland

The authors’ investigation of the word ງ利物浦 (all) in the G-192 inscription at Västergarn Church revealed the first dotted R on Gotland in the lower loop of the Ṛ. This usage is identical to Ṛ on the Kensington Rune Stone. ງ利物浦 is etymologically correct with the terminal palatal R. This means there are now five dotted R’s found in Scandinavia. It would not be surprising if a number of other examples in Gotland remain to be discovered upon re-examination of previously studied inscriptions.

Another example of the dotted R in the word ງ利物浦 (all) appears in G-192 inscription, from circa 1400, at the Västergarn church. The dot in this R is in the lower section and not the top section of the R.
Overstrikes of the R

A double dotted R with both dots on the main stave was found on this inscription (G-115), circa 1300, in the word [botuilpr] from the Gammelgarns church on Gotland.

Since the dots on the R in the word botuilpr are not at the same elevation as the word separator they may not indicate an overstrike. This usage is identical to the dotted R in the Kensington Rune Stone word lägeR (camp), and does not appear to be an overstrike of the shaft in the R. A palatal R is not etymologically correct in this word and it seems to be an overstrike of a premature word divider. These dots do have the approximate spacing of the inscription’s word dividers.

The KRS word lägeR (camp) with a likely overstrike on the R.

The discovery of the dotted R’s on the Kensington Rune Stone, are undeniable proof of the inscription’s medieval origin and the connection of the author to the island of Gotland.
Comparing the Runes of Kensington and Gotland

The runes used on the Kensington Stone can be divided into two basic groups. The first group is the standard late Viking Age runes that were still in use on Gotland at the beginning of the 1300s: %E %F %G %H %I %J %K %L %M %N %O %P %Q %R %S %T. The second group is comprised of the special runes on the Kensington Rune Stone. These include both a crossed l-rune (F) and a dotted L-rune (Ψ). The remaining five other special runes are: Χ Ψ Φ Ψ Ψ.

The Crossed "L"

Perhaps the best example of a rune found on the Kensington Rune Stone that was completely bungled by past scholars is the infamous “J” or crossed “L” rune. All Scandinavian runologists said this rune form never existed in Scandinavia and its absence was clear proof of forgery on the KRS. Their unfamiliarity with this rune is puzzling since it is clearly found on both the Codex Runicus and the Mariaklagen documents of the 1300s.

The equivalent of the dotted "L" rune on the Kensington Rune Stone is the crossed "L" rune (R(ow)-4; C(haracter)-84), which appears in the enigmatic word *F&F = sk&F.

Prior to author Nielsen (1987), all investigators commenting on the Kensington Rune Stone inexplicability ignored the well-known evidence in the Codex Runicus and Mariaklagen, and proclaimed the crossed L-rune (Ψ) an invention of the carver and therefore sure proof of a modern artifact. The crossed L only follows a vowel, and there is none carved on the Kensington Rune Stone. Perhaps if sk stands for the palatalized ski here, then a case could be made that the word skylar > skiular (shelters) stands on the Kensington Rune Stone.
Codex Runicus is a runic manuscript of the Scandia Law written in Danish circa 1319. Two crossed L's can be seen in the first and last words (ᚦᚦᚦ and ᚦᚦᚦ) on the last line of the last page. This rune is found on other pages in the document as well.

The Dotted L Rune

The Kensington Rune Stone has a dotted L-rune in ᚦᚦᚦᚦ (Vinland). This special rune indicates the long L sound.

The Kensington Rune Stone has a dotted L-rune in the word ᚦᚦᚦᚦ (Vinland), which indicates that land is pronounced with a long l shown here as L. There are several instances of this L in the medieval runic corpus of Gotland, some of these are listed and discussed here.
This grave slab (G-63) at the Silte church, circa 1300s, contains a dotted L-rune in the word aLum (all). The first to discuss this dotted rune was Snædal (2002: 212), who identified the marking as indicative of a long L sound.

Among the dotted Ls found in the runic inscriptions on Gotland is G-163, circa 1510, from the Mulde church (kiaLera “The cellar”).

Another example of the Dotted L appears in aLir (all) in G-192, circa 1300, from the Västergarns church.

The $R$ Rune

The wooden ownership tag (N-648) was retrieved from just above the 1332 Bergen wharf burn layer begins with $\text{*I\!$}: $\text{PRIYI} = \text{hau grimi}$ for the word “Hafgrimi.” Johnsen (1990:99) stated that the use of $\text{I}$ for $\text{P}$ (u for f) in the conservative runic tradition was evidence of the change in the phonetic system which is seen in manuscripts from the same period. Author Wolter found a similar indication with a bind-rune during his photo investigation on the Kensington Rune Stone in 2002. The rune $\text{R}$ is the result of an after strike of $\text{K}$ on the $\text{P}$ rune which yields the etymologically correct word: $\text{XRT}=\text{haupe} > \text{hafdhe}$ (had).

I have disagreed with this finding in numerous mails to Dick.
($t$ Bergen is pretty far from Gotland...
This unusual bind-rune was found on the Kensington Rune Stone in 2002, represents the combined U and Œ runes, and is present in the word *hafidhe* (had). (R-4, C-67)

Author Wolter (2002) found the rune Œ during his photo investigation on the Kensington Rune Stone in 2002. This rune is the result of an after strike of a Gotlandic variant of the u-rune (ʊ) on the Œ-rune which yields the etymologically correct word form: Œ rух_ in *haupe > hafidhe* (had). There is no way that even runologists had this type of knowledge in 1898 and this rare bind-rune offers compelling proof that the Kensington Rune Stone is indeed a medieval artifact.

How the *<u>* became pronounced as an *<t>* is explained by the wooden ownership tag (N-648) that was retrieved from just above the 1332 Bergen wharf burn layer. The inscription begins with Œ_rυ_ in *hau grimi* for the word "Hafgrimi." Johnsen (1990:99) stated that the use of Œ for *<u>* (Luna) for *<t>* in the conservative runic tradition was evidence of the change in the phonetic system which is seen in manuscripts from the same period.
A four-stick letter written in runes (N-648) was found just above the 1332 burn layer at the Bergen wharf. The first stick contains the same rendering of the word Hafðhe (had) as the Kensington Rune Stone. The author's translation of N-648 is, “To Hafgrimi, his partner, Pórir sends God’s and his own greetings in true comradeship and friendship. Many shortages ...” The word Hafgrimi in N-648 bears on the rendering of an <ð> in hafðhe (had) on the KRS.

Examples of the Short u Rune (k) in Gotland

The G-166 inscription at Klinte Church has the words BΣRIR: Π δηλί baulir (Pautir Nostur = Pater Noster). This triple bind rune has the same u-rune found on the Kensington Rune Stone.

This inscription is important to the since the “mule shoe” u rune is used in exactly the same way in the Kensington Rune Stone k.
The late Viking age G-186 inscription at Sanda church, circa 1100, has the word Friðmunr. This inscription also has the same short u rune as the Kensington Rune Stone’s bind-rune (ᛉ).

This late Viking Age inscription (G-186), circa 1100, contains two “mule-shoe” u runes (ᛉ) in the name ruπur.

The K Rune

The Viklau church inscription’s (G-133) inverted rune-row, which is from about 1400, has a Latin k-rune in the word Viko which is seen in the circle in the center.

The Viklau church inscription (G-133) is the only evidence of the Latin K-rune used on Gotland, but it was also used sporadically in Denmark and Norway, and on mainland Sweden in medieval times. The Kensington Rune Stone k-rune (ᛉ) is the reverse image of the Latin K rune that appears on G-133. Had Wahlgren (1958: 116) seen this inscription, he would likely not have written of the Kensington Rune Stone, “The symbol for k is suspicious.”
The Double Dotted Runes

The Gotlandic runic tradition used two, and sometimes three vertical dots to denote the letter y in yftir (after) and other words.

The word Husfruy (housewife), with three dots occurs in the G-34 inscription at Näs church. Two dots occur in the word yvir (over) in the G-103 inscription at Lye Church.

The author’s inspection in 2005 showed that the G-42 inscription at Havdhem church (left) has only one dot. Inscription G-66 at Sproge Church also has one dot for y and both are found in the word yftir (after).

The Y Rune

Sometimes runes were carved upside down, as seen in the discussion on the k-rune above in G-133 at Viklau church and in the G-33 Näs church on Gotland.

The U-rune was used in a variety of ways in inscriptions on Gotland during medieval times. Variations included the upside down U in the word yvir (over), in the G-33 inscription at Näs church, circa 1500.

The KRS double-dotted u-rune (-indent) also appears in the Larsson rune-row without the cross-bar ( ). With the idea that a double-dotted u-rune had the value ë it was not a big innovation for a carver to make the ( ) rune with the same format.
The manuscript \( \nu \) was used for the w-sound. The w-rune on the Kensington Rune Stone can be seen to be made up of a combination of a mirror image v-rune (\( \Upsilon \)) and the u-rune (\( \Upsilon \)) both in inverse position (\( \Upsilon + \Upsilon \)) to make up a w-rune (\( \Psi \)) which is consistent with upside down runes found in Gotland. It could also be a reverse G-rune (\( \Psi \)) superimposed on the normal m-rune (\( \Psi \)).

**The Bilateral N, A and T Runes**

The Mästerby Church inscription (G-191) depicts the bi-lateral n (\( \Upsilon \)) and t (\( \Upsilon \)) runes and dates from circa 1300. Both of these runes appear on the Kensington Rune Stone. Translated into English reads, “The maiden girl recites the prayer in the proper way.”

Had Wahlgren (1958: 115) known of the G-191 inscription he likely would not have written, “The Kensington form of the rune n (\( \Upsilon \)) had passed out of existence by the year 1100.” As it turns out Wahlgren was only 200 years short of this inscription’s evidence of this that shows the bilateral n was being used in the 14th century.

In Gotland the bilateral (\( \Upsilon \)) sometimes approached this shape of an X. On mainland Sweden, the \( \Upsilon \) was used for the æ-rune from the 13th century, but continued on Gotland into the 14th century.
The Lund knife handle [DaRun 306] (Moltke 1985: 467) from about 1299 shows how the ae-rune approaches an X shape. The inscription reads, "Sigvor's Ingemar shall have my grief and misfortune—aallatti." Moltke claims "aallatti" is a curse.

The X shapes in both the Kensington Rune Stone a (X) and æ (Ẋ) are not too far a field from the shapes for a and æ found on both the Lund weaving tablet and knife shaft.

This Weaving Tablet is from Lund, Sweden (Denmark during medieval times) and contains Danish Inscription 311 from the end of the Viking Period (circa 1100) (Moltke 1985: 358-9). ἴπαρκάριος ἅμα ἑλπίζω γὰρ ἵλιον ἁμαρτείναι:

skauraR : iki : mar : afa : (m)an : mn : krat : aallatti :

Sigvor's Ingemar shall have my misfortune— aallatti!

The Split of the First Word on the Kensington Rune Stone

The first word on the Kensington Rune Stone is G:öter (Götlanders) which has a runic word divider after G.
The first word on the Kensington Rune Stone is Göter (Götalanders) has a runic word divider after G, which is the characteristic mark of two runic inscriptions in Gotland at Othem Church, G-282 and G-283. Here the first word in both inscriptions is i: r (you) which is divided in the same way. This is the only known place where this occurs in Gotland and anywhere else. These inscriptions link the KRS to the Gotlandic runic practice and further link the KRS party to the Knights Templar.

The Othem Church inscriptions G-282 and G-283, of circa 1400, both start with i: r (you) and both inscriptions have the Knights Templars Cross. The inscription reads, I : R BIBIH: PAK: PARI

(You must pray well for ...)
Dialect Traits from Gotland on the Kensington Rune Stone

The unique runic inscriptions of Gotland and the Kensington Rune Stone have numerous language and orthographic traits in common. Erik Moltke (1949, 1951 and 1953) maintained that the Kensington Rune Stone word og (and) was impossible for the Swedish language in the 14th century. He asserted og proved the Kensington Rune Stone was a modern artifact, but two examples from Gotland prove that he was wrong.

An early example of the voicing of k to g occurs in the word ok (and) appears on the runic inscription G-182, dated 1324, from Sanda church on Gotland.

Another early example of the voicing of k to g appears in the word aug (and) on the runic inscription G-181, circa 1050, also from the Sanda church.

The two inscriptions below have the root vowel a, just like the disputed farh (journey) on the Kensington Rune Stone. In 1952, Wahlgren claimed that this a-form did not exist in the medieval Scandinavian language and that its use on the Kensington Rune Stone was clear proof of forgery. He obviously did not consider the inscriptions on Gotland.
The word upfar(p)u (in outward journey) appears in singular dative on the G-134 inscription from Sjonhems Church on Gotland that dates from between 1150 and 1225.

At Fole Church the G-249 inscription, from circa 1300, the words in far(p)wag (fairway = journey path) appear. The rune book has the runes: faueh: ginum:

E Dialect

Gotland is a recognized e-dialect region, as are the western reaches of West Götaland along the Göta River (Brøndum-Nielsen, 1927). Word endings on the Kensington Rune Stone, such as fiske (fish) rather than fiska (fish), indicate that it is an e-dialect.

6 134 is Viking Age and does not make any distinction between a and æ. Cf.

But more importantly - in neither inscription does the word fara occur. In 6 134 it is utfara ‘expedition’ (cf. fara ut)

are in 6 249 fa[r]veg ‘passage’
South of this heavily stapled line is the region in medieval times where the definite article "-et" (the) prevailed, as drawn by Brändum-Nielsen (1927: Map 5). North of this line the "-t" is dropped at the end of the definite article, thus leaving only "-e." The KRS has the word havet (the inland sea, the sea) indicating the writer was from south of this stapled line. Since the KRS text also displays an e-dialect, the conclusion is drawn that the writer was probably from East Götaland.

- et is Standard Swedish, too --
From, från (from)

Gotland lies just south of the Estonian Islands where the Swedish dialect studies by Vendel (1882) indicate that från ("from") was used by Swedish immigrants some time after the crusades against Estonia in the 13th century. All Scandinavian runologists and linguists, with the exception of Karl Martin Nielsen (1950), have maintained that "from" was an English word on the Kensington Rune Stone. Nielsen considered it to be the form reported by Axel Kock (1890) on the Estonia Island of Runö (Run Island) situated near Gotland.

Ave Maria

On the eighth and ninth lines of the Kensington Rune Stone there is a unique Christian prayer that is a combination of the Lord's Prayer and Ave Maria. The early experts scoffed at the notion that Ave Maria would be used to ask anything such as "Save from evil." This usage had never been seen before and in the minds of experts it was inconsistent with common medieval religious practice. In Sven B. Jansson's 1949 paper, he said, "A Catholic would never think of addressing such a prayer to the Virgin Mary..." However, in 2000 the Massey twins found this type of address in prayer books from 1380 in the St. Birgitta monastery in Syon, England. In 2003, Richard Nielsen and Henrik Williams found this hybrid prayer documented in the St. Birgitta cloister at Valstena, Sweden. These two discoveries indicate that there was a close association between Valstena and the Cistercians.

Abbreviations

A Cistercian would have been adept at Latin, of course, and could have easily used abbreviations in the Kensington Rune Stone inscription. In 1347, a Latin inscription was carved around a runic inner ring at Tofta church (G-195). This Latin inscription of 140 characters is abbreviated, as was typical, just as other medieval runic inscriptions could be (See color section, plate 27). The Tofta inscription above reads, "The year of our lord 1347, on May 13th, [Sic 16th] the Sunday next after Jesus' Ascension date Siglaiv and his son Nikulas were killed. May their souls rest in peace, Amen." The Latin text for the outer ring is, ANNO: DOMini[: ] M: CCC: XLVII: In DIE[I:] DOMiniCA: REXISMA: POST: ASCEmIONEm: DOMini: OCCISI: SuntT: SIGLEW[us: C]Vm: FILIO + SVO: NICHOLAO: QVorum: AnImE: REQviESCAnT: IN [P]ACE: : AMEN III IDus MAii. The character in the center (the reverse Z) may be the trademark of the farm of the deceased.

When taking abbreviations into consideration, the text of the Kensington Rune Stone begins to look very logical. Using abbreviations was as common then as it is now. At least 106 runes would not have to be carved because abbreviations were used.

Considering the writing instruments of the day were a hammer and chisel, it would have been highly desirable to abbreviate whenever possible. The difficulty of carving rock, and the amount of time required to create an inscription, are the most likely reasons for
the carver's decision to use the shorthand pentadic date, and may explain the contractions of *warum* to *war* (were), *komum* to *kom* (come), and *fanom* to *fan* (found).

**Orthographic Traits**

**H-insert (Initial)**

Misleading. These are from 1000 -1500! Not contemporary. H-inserts abound! Upland and are unusually rare on Gotland. Only certain medieval inscriptions leave a missing word.

Inscriptions from Hablingbo church, hebiR for *ehtr* (after) (G-112), and heftlR for *eftr* (after) (G-59) as in the initial *h* in *hær* (are) on the Kensington Rune Stone.

**H-insert (Medial)**

The last two words on the Kensington Rune Stone, *oh* and *ahr* (year), have in effect two medial *h* inserts. The word *vahR vaR* (were) in the G-370 inscription from Hablingbo church is the <h> insert sequence -ahR, which is reminiscent of *ahr* (year) on the Kensington Rune Stone.

This is a drawing. The inscription is gone.
Alllum *allum* (all) in the G-38 inscription from Grötlingbo church; Lhit *lit* (let) in the G-118 inscription from Anga church, and uahR (were) in the G-370 inscription from Hablingbo church, all have medial H-inserts from circa 1150.

**Double Letters**

Double letters are not that common in runic inscriptions, but the Kensington Rune Stone has three such words. The same trait is found in several Gotlandic inscriptions.

**Double L**

The double l (ll) appears on the Kensington Rune Stone in the word *illu* (evil). It also appears in the word *allir* (all), on the G-195 inscription at Västergarn Church on Gotland.

**Double R**

The Double r is found in the Kensington Rune Stone words *norR* (north) and *norrmen* (Northmen). They are also found in at least three inscriptions on Gotland.
Double r's are found in fyrre fyrre (for) in the G-170 inscription from Hejde church, circa 1506, and Fru fru (wife) in the G-178 inscription from Väte church, circa ???, and Gerra gera (do) in the G-128 inscription from Guldrup Church.

In Gotland the G-242 inscription at Hejnum Church has the word norprbo (North City). The KRS form norR < norpr is an analogy with the 13th century inscription with midr > milt (hos = with), where r > R when p is dropped. The G-114 inscription at Andre Church has the word meR (hos = with).

The same may be true of the Kensington Rune Stone with norpr > norR. The three consonant rule would also explain the Kensington Rune Stone form norprmen > norrmen (Norwegian), whereby the middle consonant is dropped.
The G-242 inscription at Hejnum Church begins with Æ: gairuacr : af : norprby : huillis hiar (Gairvat from Norrby rests here).

GH Digraph as on the Kensington Rune Stone

The G-283 inscription from Othem Church has the word akhnebo > agnebo (Agnes farm). This inscription has the digraph gh just as the Kensington Rune Stone word bagh (day). This together with the Lärbro Church inscription G-294, are the only three runic inscriptions that have this runic gh digraph.

Starting in the black mark above the Knights Templar cross in the G-283 inscription at Othem Church, are the words [a]khnabo agnabo (Agnes farm). This gh digraph is also found on the KRS.

The T Rune for the D Rune

In the G-182 inscription from Sanda Church, circa 1324, the t-rune (†) is used for <d> in the word tagr : H (day H).

The þ Rune used for T.

The þ rune was used for t in the words optagelse (reclaiming) and teno (this) on the Kensington Rune Stone. The þ-rune was sometimes used for t in Gotland as seen in the G-2 Sundre Inscription in span sten (stone) and līp līt (let).
span sten (stone) and lip lit (let) appear in the G-2 inscription, circa 1400, at Sundre Church. Lip was recorded by Linneck in 1641, but the word has since weathered away.

If the initial þ-rune is used for t on the Kensington Rune Stone, þagð could also stand for tagh > dagh (day) and þeth > deth (death). In the dialect on the Gotlandic runic inscriptions, both tag/dag (day) and to/do (died) are found. It would seem that the normal shift from i > ð is somewhat ambivalent in Gotland due in part to the heavy number of Germans in the population which likely had some influence, as Danish did after the Danish takeover in 1361.

The L Rune for the T Rune

In the G-65 inscription at Sproge church on Gotland the name Bolvibir Botvïðir is an example of the L-rune (l) used in place of the T-rune (t).

In the G-65 inscription at Sproge Church, the name Bolvibir Botvïðir is an example of the Gotlandic use of l-rune (l) for t. The runic use of l for t, and t for l was completely ambivalent in Gotlandic inscriptions. This means the Kensington Rune Stone's þaþ XR could stand for þaþ þ XR > þaþ þ XR skæðr skæðar (long boats).

Use of the Unilateral and Bilateral T Rune in the Same Inscription

but then this is not a dotted T 1!
In the G-65 inscription at Sproge Church on Gotland, the word "volufristana" (graveslab) is a medieval German word. This word used the bilateral t-rune (†). In the same inscription is Aupualtr (name) with a unilateral t (†).

The Profile of the Carver

The runes of Gotland also answer other nagging questions on the Kensington Rune Stone. No longer is the Kensington Rune Stone the earliest record of og [and] the only record of farp (journey) with an a-root vowel. In addition, <h> inserts abound in both initial and medial position on Gotland.

Robert Hall (1982: Appendix) first pointed out to an old Indo-European type of sentence structure on the Kensington Rune Stone whereby the beginning is constructed with a subject and modifier, but without a verb. This was then followed up by a pronoun and verb as in the Kensington Rune Stone:

Subject: 8 Goths and 22 Norwegians
Modifier: on this journey of reclaiming far west from Vinland
Pronoun: We had camp by two .... One day’s march north from this stone

This unique structure is found in many Gotlandic inscriptions, a trait peculiar to Gotland, such as the Näs Church G-33 inscription:

Subject: Rudvi,
Modifier: daughter to Hägvid in Hagnastäde
Pronoun and verb ...: She placed this stone over her husband Botolv ...

Another example is Hablingbo G-60:
Who: Katrin and Botvid and Nikulas
Modifier: none this inscription
Pronoun: They placed this stone over their good father.


The Profile of the Carver

A profile of the author of the Kensington Rune Stone looks something like this:

Traits that could have been acquired in Gotland

1. The carver was likely a Cistercian monk from the Gutnalia Cloister on Gotland, a carver of grave slabs and an avid reader of the hundreds of stones extant in 1360 on Gotland.

2. Whoever carved the Kensington Rune Stone created the rune-row from the runes he read daily as a priest in Gotland. He used common medieval runes: B + Y* | Y†
R|h|P, with some medieval runes that were being used in Gotland and Småland in the 1300s: T † F † B R T.

3. Used an a-root vowel in farp (journey)

4. Spoke and pronounced norr (north) and norrmen (Northmen) with a double rr.

5. Voiced k to g like cok > cog in English.

6. Learned and used the Gotlandic calendar system. This system was introduced in 1140 at a conference at Linkoping Cathedral

7. Knew the use of illuí (ill) with the German orthography ü

8. Learned use of the German loan words or forms: 10 man (10 men), risé (journey).

9. Was traveled, and had perhaps served in the Swedish held Estonian islands at the head of the Bay of Riga where from fraam (from) was in the dialect used by people just to the north of Gotland.

Why would he adopt only this word? He didn't adopt any Gutnish forms such as the diphongs.
10. Gotlandic writing had no runes for monophthongs since Gotlandic language, called Gutnish, only used diphthongs, such as <ai> for å and <au> and <ey> for ö. New runes were created with German orthography, which were well known by the learned Cistercians in Gotland, and used for the umlauts ū, ā, and ö.

11. The Kensington Rune Stone carver used pentadic numbers from his church calendar. Cistercians were adept with Arabic placement and numbers because they used the system to count boards and in compiling church records. The Templars had introduced letters of credit and knew Arabic placement very well.

12. A Cistercian priest from Götaland, having been stationed in Gotland and Estonia, would possess all of the above traits and have been quite familiar with the Middle Low German of Gotland.

13. The carver of the Kensington Rune Stone was aware of the use of palatal Rs, Ṛ and Ḣ, from reading numerous grave slabs, and used the dotted R in ḪÔTĦR (Götlanders), ḨśRś (north), and Ḫ॥R (were).

14. The Gotlandic form G-114 meR (with) from the earlier development mepr > meR is perhaps an analogy to the Gotlandic norpr > norR (north) on the KRS. However, the palatal R was not always applied correctly in the 1300s in Gotland, so this is not a necessary requirement for the Kensington Rune Stone form.

15. Continued to use ḹ in his dialect on the Kensington Rune Stone for both the initial position like Ṽeno (this), in the medial position like the rōbe (red), and in the final position like the KRS bōp (blood). The Kensington Rune Stone uses the ḹ 7 times in initial position, 2 in the medial position and 4 in the final position. The Lye G-99 from 1449, 87 years after 1362, still used ḹ in all positions, 5 in the initial, 6 in medial, and 3 in the final position. D is not used in either the Kensington Rune Stone or the Lye Church G-99 inscriptions.

16. Used the t-rune for d as in tagr (day) and to (died), and the Ṽ -rune for t. This leaves the possibility that Ṽagh on the Kensington Rune Stone stands for Ṽagh dagh (day) and Ṽep stands for tetth deth (death).

Summary: The Gotlandic runes help validate the KRS forms normmen (Norwegian), oppagelse (taking up), farp (journey), wi hafpe (we had), norR (north), wi waR (we were), Ṽagh (day), bōp (blood), og (and), Ṽep (death), hār (is), ōh (island), and ahr (year). All these forms were considered problems by the early investigators.

KRS traits that could have been acquired in East Götaland
The Goths identified on the Kensington Rune Stone would have had their origin in Östergötland, where three key dialect traits are found as on the Kensington Rune Stone:

1. An e-dialect (characterized by weak stress on the end of the word) as the endings in optagelse (taking up), fiske (fish), röbe (red), rise (journey), se (see), etc. Gotland also has an e-dialect.

2. Use of monophthongs, as found in göter (Götalander), röbe (red) and öh (island) and in äptir (after), läger (camp), hår (is), and frälse (save). Gotland used diphthongs in 1362.

3. Use of the definite article –et in neuter as in the Kensington Rune Stone word havet (the inland Sea), and not (the inland Sea) have, as would be found in the Swedish provinces to the north and west of Östergötland.

The connections between Östergötland and Gotland were close not only in proximity to each other but in culture as well since Gotland was part of the diocese of the Archbishop housed in Linköping, Östergötland. He would have supplied the priests for the 92 churches in Gotland. By the 1300s this influence was quite noticeable.

**The Carver**

1. Had likely stopped at Ukna Church while traveling from Linköping to Gotland and had seen the dotted Rs, R.

2. Knew the dative phrase af blod og pep (of blood and death) on the Kensington Rune Stone from the “notes of the Priest of Vidum circa 1325” which has the same couplet construction af forfalum ok döde (of decline and death).

3. Used the definite article –et in the neuter form hav (sea, inland sea) to form the Kensington Rune Stone havet (the sea, the inland sea). This characteristic places the carver from East Götaland, the only place that which had both this form and an e-dialect.

4. Knew the Matins of the St. Brigitta Valstena Cloister located in East Götaland who used the phrase “Ave Maria Save from Evil.”

5. Could have been familiar with the Elder West Götalandic Law’s writing of <p> for [d] as in pagh (day) and pep (death).

6. Used an e-dialect, which was common to Gotland and East Götaland.

**Appendix**

A word by word discussion of the Kensington Rune Stone inscription is provided in the appendix.
Henrik Williams is a Runologist and Professor of Scandinavian Language in Uppsala. Richard Nielsen is an offshore oil and gas engineer and amateur historian in Houston, Texas.

The cooperation between them has fused new life into the research around the Kensington Stone.

Danish American Richard Nielsen has spent 20 years on the runes of the stone. He has paid for the geological research on the Kensington stone in the USA.

Without Richard Nielsen the research would have been stone dead, said Henrik Williams.

If the stone is false or genuine it is still important, he says. It is now the truth he is striving for. But in any case he sees the stone as clearly authentic; it is interesting if it is from the 1362, which date stands on the stone, or if made in the 1800s.

Since its discovery close to 100 years ago it has lived a fantastic life in the debate and is charged up from all opposition and from all passion it has let loose.

Henrik Williams and Richard Nielsen speak during the day and the night about the runes and the language on the stone. The multitude of the deviations from what is known from research is enormous, he says.

He took some examples: the verbs on the stone stand consistently in singular. They stand \textit{vi hade, vi var, vi kom} and \textit{fan} instead of \textit{hafidom, varom, komom} and \textit{sannom}. There is not a single Scandinavian document from the Middle Ages that shows the same pattern. And mainly has the language on the stone been seen as completely modern, he says. At it passes in on the 1800s more than the Middle Ages have the experts said for 100 years now.

It has been the main reason that one has looked on the Kensington stone as a forgery, done by some rune clever and language gifted Swedish American. Henrik Williams holds thereby with:

But it is not so simple.

The researchers have known too little, the stone has never been investigated seriously. Many oddities that are found on the stone are found in fact in medieval documents and sources. Richard Nielsen has sluiced medieval documents in search of parallels to the language on the stone.

Henrik Williams himself retains fundamental doubts on the stone, but has been more and more open to all possibilities. Since the find of the Larsson papers he has been persuaded to be convinced that the inscription could have been conceived in the 19th century.
Special Word Gets New Interpretation. The word *opdagelsefærd* on the stone perhaps does not mean *uptaekssfaerd* as one thought. And the expression *uptaekssfaerd* is hardly found in the middle Ages.

But perhaps *uptakilsefaerd* stands there, therefore *resa för att ta upp, odla upp, nytt land* (journey to take up idle and new land).

For Henrik Williams the stone becomes more and more an adventure. Each day a new e-mail from Richard Nielsen, with new possibilities of interpretation. It is a game with nuances of language and writings that hardly can be described, he says. The stone was carved in some type of Scandinavian mixture of language, no matter if from either the 1300s or the 1800s. If it is genuine, therefore 14th century, it can have been a Scandinavian monk. If carved of a farmer in 19th century Minnesota it must have been a farmer with special knowledge in runology and medieval theology.

He must have had knowledge for the use of pentadic numbers; therefore the special numbers, which are found in the 1300s, as, has been proved. They are found on the stone. But they are used in a modern style, from the decimal system; for example in the year 1362.

Runic numbers with decimal system in the 1300s is a tough nut to crack for those who believe in the genuineness of the stone.

But Richard Nielsen has cracked runic nuts on the Kensington stone before.

Medieval or 19th century, perhaps the geologists at the Bureau of Antiquities now decide the matter, says Henrik Williams.

The Inscription

Interpretation of the Kensington inscription is by Nielsen-Williams together. There is both a face inscription and a side inscription.

The Face:

1. \[8: \text{göter} : \text{ok} : 22: \text{normen} : \text{po}:
Åtta göter and tjugotvå norrmän på
Eight Götlanders and 22 Norwegians on

2. \[8: \text{opdagelsefarb} : \text{fro}:
(denna?) upptagelsefärd (= uppodlings- eller plundringsresa) från
(this?) reclaiming journey from

3. Vinland: of: vest: vi:
Vinland i? väst. Vi
Vinland in? west. We

4. hahe: læger: veip: 2: skar: en:
hade läger vid eva...??/en
had a camp by two...one

5. ðXψλ: ṭhø: ðe: ðø: ðø: ðø: ðø:
bags: rise: norr: fro: þeno: sten:
dagsresa norrut från denna sten.
day's journey from this stone.

Vi var: ok: fiske: en: þagh æptir:
Vi var och (för att) fiska en dag. Efter (att)
We were fishing one day. After

7. ψi: ṭø: ṭø: ψXr: ðø: ψXr: ðø:
vi: kom: hem: fan: 10: man: røpe:
vi kom hem fann av tio man röda
we came home we found 10 men red

8. ψXr: ðø: ðø: ðø: ðø: AVM
af: blop: og: þep: AVM:
av blood och död. Ave Maria.
From blood and death. Ave Maria

9. fræelse: af: illü:
Fräls ifran ondo.
Save from evil.

The Side:
   hær: 10: mans: ve: havet: at: se:
   (det) är tio man vid havet för att se
   There are 10 men by the sea to look

11. XBTIR : YHR : HIB : RF : *XYH : R†H :
    æptir: vore: skip: 14: þag: rise:
    efter våra skepp fjorton dag(ars) resa
    after our ships fourteen days journey

12. PRAY : +IH : Ø+ : XR : RFF :
    from: þeno: øh: ahr: 1362:
    från denna ö. År 1362.
    From this island. Year 1362.
The Kensington Rune Stone: Compelling New Evidence

Later that day I went back to my flat to prepare for the debate which was to be held the next day. This was the first official event sponsored by the museum where Dick and I would defend the Stone, and linguist Helmer Gustafsson and archaeologist Mats Larsson would argue against it. Professor Henrik Williams was set as the moderator and this would be my first opportunity to meet him. Since the debate was primarily a discussion of the language and runes, I asked to present my opening statement first. I wanted to talk about the improper investigation methods used by linguists and other researchers in the past, with the message that if they wanted to call themselves scientists, then they needed to adhere to the scientific method. I also wanted to recite the words N.H. Winchell had written at the end of George Flom's 1910 paper. Winchell certainly understood the methodological problems of Flom and many other investigators, who had begun with a conclusion, then went looking for evidence to support it. Whether they realized it or not, their “scientific approach” was nothing more a self-determined results. My goal was to point out the mistakes of the past and hopefully, keep Helmer and Mats focused on the facts, instead of their opinions.

It was an unusually warm February morning on February 5, 2004, when I got up and caught the 8:57 a.m. train to Uppsala. When I arrived at 11:00 a.m., Dick Nielsen, who I hadn’t seen since Stockholm in October, was there to greet me. It was great to see him again. The two of us caught a cab to the University and made our way to Henrik’s office, where I found him every bit the gentleman that Dick had described, and I liked him immediately. We visited for half an hour or so then decided to grab some lunch. As the three of us walked to the restaurant, Henrik pointed out the on-campus cemetery and gave us a personal tour of the Domkyrkan Church. Henrik shared tidbits about the history of this incredible building that was over a thousand years old, and pointed out parts of two rune stones that had been laid into the floor.

What was once the top part of a Viking Age rune stone is now part of the floor in the Domkyrkan Church in the city of Uppsala, Sweden. (Photo by Scott Wolter)
I responded to Henrik from a different angle. I reminded him of the dilemma he was in due to the geologic work of both Winchell and me. I wrote that since the weathering of the inscription was very old, it stood like the “Rock of Gibraltar” in the way of his 19th century theory. “One of us is wrong,” I said.

Henrik stood by his report at first, saying from a linguistic standpoint the Larsson rune rows fit a 19th century explanation very nicely, but he acknowledged that Dick had made some good points as well. Dick’s first observation was that Mr. Larsson had made some obvious errors, indicating he had copied the rune rows from some unknown earlier document. The age of the earlier document is unknown, and further, that document could have been copied from an even earlier document. The point was that these rune rows could well be centuries old.

Dick’s second point was that some of the runes were the same ones linguistic experts said for over a century didn’t exist; they insisted that Ohman had invented them. If these papers were indeed authentic, then they proved that these “invented” runes existed after all, and that the experts were wrong about this point. Dick also said, “If the experts didn’t know about this rune row until now, what else don’t they know about?,” and offered the conclusion that these “sensational” papers actually helped prove that Olof Ohman couldn’t have carved the Stone. Henrik agreed that Dick’s points had merit and that it was too early to draw any conclusions about the documents until they had been thoroughly studied. Over the course of several emails back and forth, Henrik’s hurried tone subsided, and a calm discussion ensued.

Several days after that first frantic day, Dick and I received email messages from friends in Sweden, concerned about a television program that focused on the impact that the Larsson papers had with regard to the Kensington Rune Stone. From the feedback we received, it sounded like it was one-sided against the Stone, with our friend Helmer Gustafsson reportedly betting a year’s salary that the inscription originated in the 19th century. Several experts from various disciplines offered opinions on the program, including
Westin, Janey (1957-Present): Stone Carver – Westin received her degree in Japanese in 1980 from the University of Minnesota. She is a professional stone carver and sculptor who specializes in letter carving and works out of a studio in Minneapolis called Paper & Stone.

Westin and her father, Bob Johnson, discovered the AVM Stone within a quarter mile of the discovery site of the Kensington Rune Stone. While the AVM Stone turned out to be a hoax carved in 1985, it became an important control sample for comparative study with the Kensington Rune Stone. These studies, which are ongoing, indicate the Kensington Rune Stone inscription predates Olof Ohman’s immigration to America. Westin also offered valuable input into the methods and techniques used to carve the Kensington Rune Stone and the Bourne Stone.

Westman, Lars (1934-Present): Journalist – Lars lives in Stockholm and is a senior writer for Vi magazine.

Lars has written several articles on the Kensington Rune Stone that challenged the traditional ideas about the Stone by having a tone toward the authenticity of the Stone. Due in large part to Lars’ efforts, the Stone traveled to Sweden for the first time in October 2003.

Affectionately holding his cat, Lars Westman poses in front of a “Stop Lars” sign given as a birthday present by his son, on October 24, 2003. (Photograph by Scott Wolter)

Williams, Henrik (1958-Present): Philologist/Runologist – Professor Williams was born in Kalmar, Sweden, and graduated from Utica High School in 1977. After completing graduate studies at University of Illinois at Urbana-Champaign in 1983-84, (graduate student and teaching assistant of Swedish), and Augustana College, Illinois, in the spring of 1988 (research), Henrik became a professor of Scandinavian languages at Uppsala University in 1990.

Henrik gave a lecture on the linguistic aspects of the Kensington Rune Stone at Thousand Oaks, California, in February of 2002, and has continued research on the inscription ever since. One of the key points of Henrik’ presentation was his pronouncement that Olof
The Kensington Rune Stone: Compelling New Evidence

Ohman could not have carved the inscription due to differences in dialect.

It has also been pointed out that some of the expressions would have been impossible in the Middle Ages, e.g. optagelseyfard which looks very much like the modern opdagelseyfard “journey of exploration” in Danish and Norwegian. But the fact is that a number of the apparently modern expressions can be demonstrated to have been in existence back in the Middle Ages. And optagelseyfard has now been interpreted as uptakilseyfard, which could mean “acquisition journey, journey to acquire new land”. Suddenly the critique has to start again from a new direction. (Williams, et al., 2003)

Winchell, Newton H. (1839-1914): Geologist – Graduated with a Masters degree in 1867 from the University of Michigan, where his brother Alexander was a professor of geology, he served as the state geologist of Minnesota from 1872 to 1900. In the summer of 1874 he accompanied General Custer’s expedition to the Black Hills and prepared the first report and geologic map of the interior of that unique region. Beginning in the spring of 1906, Winchell served as the head of the Department of Archaeology at the Minnesota Historical Society.

During the years 1909-10 he investigated the physical aspects of the Stone, and the topographical aspects where the Stone was found, as well as the character of the individuals involved with the discovery of the Kensington Rune Stone. He then authored a 76-page report which concluded that he was entirely confident that the Stone is a genuine artifact.

Geologist/archaeologist Newton H. Winchell about 1901.
(Photograph courtesy of the Minnesota Historical Society)

Wolter, Scott F. (1958-Present): Geologist – Born in Homestead, Florida, Scott is the oldest of Fred A. and Barbara M.’s three children. Graduated from the University of Minnesota Duluth in 1982 and worked as a field geologist in northern Minnesota with a mineral company in 1983. Twin City Testing Corporation in St. Paul, Minnesota, hired Wolter as a field construction inspector in 1985, and in 1986 he was asked to help develop and run the petrography department, which he did until 1989. In January of 1990 he started American Petrographic Services Inc., a materials forensics laboratory which specializes in concrete, aggregate, and rock. In September 2001, APS was hired to evaluate the structural concrete damaged by fire in the terrorist attack at the Pentagon on 9/11. Wolter has published two books about Lake Superior Agates (1986 and 2001), and