

Vikings may have navigated using polarised skylight

By [Lisa Grossman \(/search/author/Lisa+Grossman\)](#)
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The Vikings may have used the ancient equivalent of polarised glass to navigate in cloudy weather ([/tags/weather](#)), suggest new reports on a long hypothesised but never tested "sunstone compass". (#CommentList)

Archaeologists ([/tags/archaeology](#)) know Vikings used sundials to steer between Norway and Greenland, but this method could only have worked in sunshine. How Vikings found their way in clouds or fog remains a mystery.

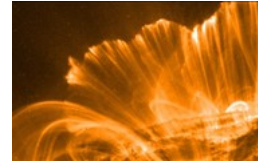
In the 1960s, Danish archaeologist Thorkild Ramskou suggested that the Vikings used a "sunstone" to filter sunlight so that it all had the same polarisation, or direction. Polarised sunglasses work in a similar way. The explanation was plausible, even elegant, but untested.

"This theory of polarimetric Viking navigation is accepted and frequently cited, in spite of a total lack of experimental evidence," wrote researchers led by optics expert Gábor Horváth of Hungary's Eötvös University in a paper published online January 31 in *Philosophical Transactions of the Royal Society B*. "Since these claims were never tested, we decided to investigate."

The idea of navigating by polarised skylight originated with a Viking saga, in which the Norse hero Sigurd "grabbed a sunstone, looked at the sky and saw from where the light came, from which he guessed the position of the invisible Sun ([/tags/sun](#))." The stone would like have been made of a so-called birefringent material, like calcite or certain plastics, that can split light into separate rays.

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The atmosphere similarly splits sunlight into a pattern of concentric rings. Looking through the crystal and rotating it would make the sky appear to brighten and fade, as certain directions of light were transmitted or blocked. When the light coming through the crystal was polarised the same way as through the atmosphere, the crystal would appear brightest and points toward the sun. By checking the polarisation at two different points in the sky, the navigators could determine the invisible sun's location, and hold a torch in that position to cast a shadow on the sundial.

Between 2001 and 2007, Horváth and colleagues ran five experiments to see if the proposed method worked. On expeditions to Tunisia, across the Arctic Ocean and at home in Hungary, the researchers used a device that measures polarisation to compute the difference between the angles of sunlight when it was cloudy, clear, foggy and completely overcast.

They found that the position of the sun in the sky could be calculated even in clouds and fog. When the sky was completely overcast, though, the sun was harder to find.

A number of questions remain, such as how accurately Vikings could have found north, or how well different candidate sunstones would have worked.

"Since the psychophysical experiments, outlined above, cannot be performed with Viking navigators, we plan to measure the error function by using male German, Hungarian and Swedish students," the authors conclude. "These measurements are in progress."

Source: [Wired.com](http://www.wired.com)
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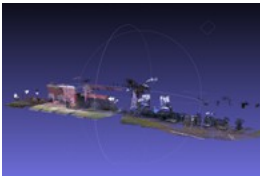
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