

# Quern-Stones and Tuff as Indicators of Medieval European Trade Patterns

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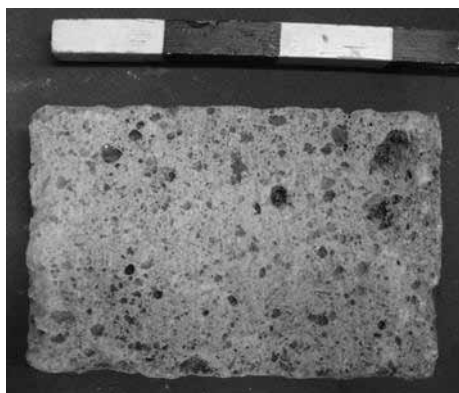
Among archaeological finds those originating from distant places, luxury items and precious metals often attract the most attention from scholars. As a consequence, research interests are often focussed on the long distance trade of luxury goods. Utilitarian goods, even though being subject to long distance trade, have been largely neglected. This applies also to the trade in stones.



**Figure 1.** Quern-stone made from Mayen lava.

Basalt lava and tuff from the area of Mayen in the Eifel region of Germany have been subject to long distance trade. Both types of rock are of volcanic origin, but they have quite different properties. The basalt lava from Mayen was very suitable for the manufacture of querns (see figure 1), as this lava's vesicular nature gave those querns good grinding properties and made it easy to redress the grinding surface. This stone was easy to extract and to work, reasonably durable, and the relatively low density made transport

easier. Since the cereals that formed the basis of the medieval European diet needed to be ground to make them digestible, querns were essential. Grindstones made of Mayen lava have been traded since the Neolithic, and querns and millstones have been involved in organized long distance trade since Antiquity (Mangartz 2008). The tuff from the Brohl Valley and the Krufter-Bach Valley (see figure 2) is easy to extract and to hew, and also very stable and resistant to weathering, making it an excellent building material. Since it was very light compared to other stones it was also well suited for transport. Tuff as a building material has been extracted, transported and used since Antiquity and again in the Middle Ages (Röder 1957 and 1959). While tuff of both provenances was used in Antiquity, only the tuff of the Krufter-Bach-valley was used again in the Middle Ages.

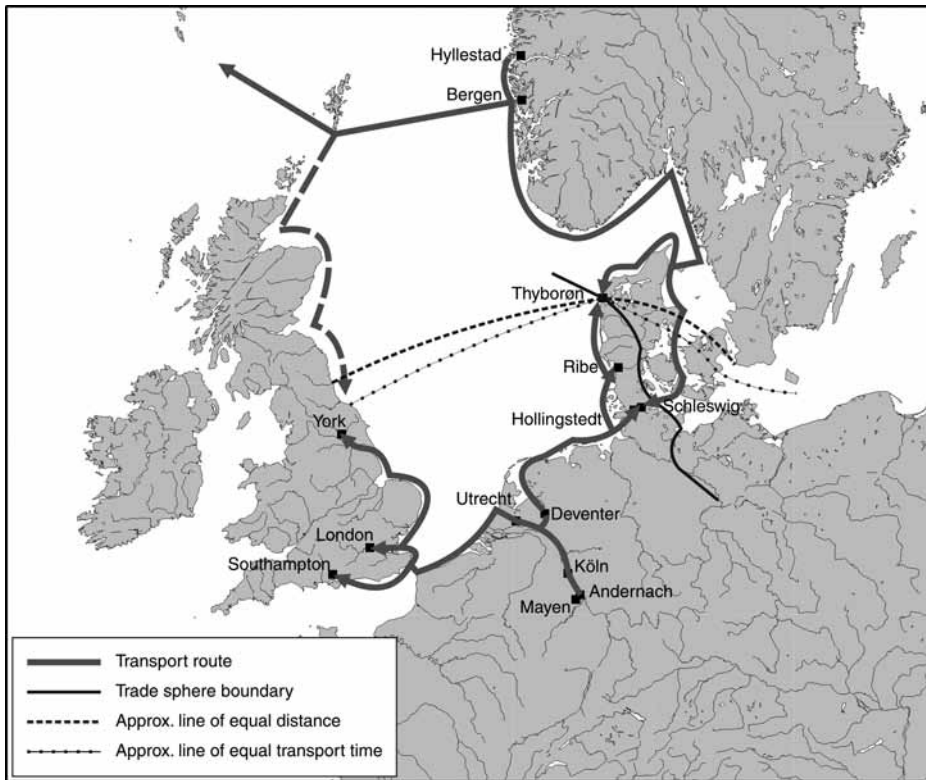


**Figure 2.** Tuff as used for building material.

The distribution of quern-stones made of Mayen lava reaches from the quarries, along the Rhine via the Netherlands to England in the west, and via Frisia up to northern Jutland in the east (Parkhouse 1997). The distribution is clearly connected to waterways (see figure 3). The Rhine played a vital role in transport from the quarries to the North Sea, which then again followed rivers. For the English Midlands roman roads might still have been important.

It was mostly blanks that were traded, to be finished in emporia before they were sold either locally or to surrounding areas. This theory is supported by the cargo of the wrecks discovered at Lüttingen and Salmorth in Germany and at Graveney in England, which contained only blanks (Ellmers 1972; Fenwick 1978). Debris derived from dressing and broken or half-finished querns have with one exception been found in emporia only, while the material in other findspots consists mostly of used querns. As drilling the hole in the middle of the quern posed a risk of breakage, transfer of this risk from the quarries to the emporia was maybe the reason for trading blanks (Mangartz 2008: 126).

The properties of Mayen lava made those quern-stones almost unrivalled throughout North-Western Europe. Especially in the regions without rock resources along the Rhine, the querns from Mayen are the majority of those found. This applies also to the



**Figure 3.** Distribution routes and trade spheres.

Netherlands and the German North Sea coast. But even in England the Mayen querns dominate the material, at least around London (Parkhouse 1997). In western Denmark the Mayen querns have dominated the material found since the 8th century. From the 10th century on querns from Hyllestad in Norway made from garnet-muscovite-schist dominated in eastern Denmark and also the coast of the Baltic Sea to Bornholm in the east. Despite the intense trade contacts between Norway and England in the Viking Age, Hyllestad querns are absent from the material in England however.

When the distribution of these stones is examined, a boundary is found separating the trade spheres of Mayen and Hyllestad querns (Carelli and Cresten 1997). This line runs across the Cimbric Peninsula from the present day mouth of the Limfjord in north-western Denmark, to the Vejle Fjord and then south to the Bay of Lübeck and along the Elbe. Neither distance nor transport times are sufficient explanations for the constitution of these trade spheres. Transport expenditure, in this case transport time multiplied by required manpower, seems to be the most probable explanation. Long distance sea transport of the Hyllestad querns to the markets in Denmark would seem to have been far cheaper than transport over the comparably short distance from Mayen, which was made more expensive by numerous transshipments, and even short stages over land. (Pohl, in preparation).



**Figure 4.** The church at Hviding, Denmark, built with Rhenish tuff.

Until bricks were reintroduced to northern Europe in the late 12th century many churches on the Rhine, in the Netherlands and along the North Sea coast up to Denmark were built of Rhenish tuff (Haiduck 1992). Tuff was lighter and easier to hew than other building stones and was shipped to areas without natural rock resources. The distribution of the churches built of tuff (see figure 4) is also clearly connected to the trade routes of the querns, i.e. the waterways. As long as tuff was transported by ship it remained comparably cheap. However once it had to be transported via land it became too expensive, which explains why these churches were built only in places accessible by ship. Wealthy Schleswig is the only exception, which could apparently afford the overland transport of tuff. The tuff was mostly already hewn into the right shape, which made the transport cheaper again because as much debris as possible was left in the quarries. The distribution of the tuff churches not only follows the same trade routes, but is also restricted to the same distribution area as the Mayen quern-stones. Only in England are there no churches known which have been built of tuff, which is most probably because enough local stone was available there. In Denmark the distribution of tuff is not only limited by the same border as for Mayen lava, but the distribution area of the tuff is even smaller, even though it would have been possible to transport it further on waterways to areas where it would not have been rivalled by local stone. An explanation for this could be the ratio of price to transport costs. A quern was a relatively valuable commodity and its price included a comparably low percentage of transport expense, whereas the price of building stones included a higher percentage of transport expense. The boundary separating the distribution areas of Hyllestad and Mayen also applies for the distribution of other goods such as Baltic and Rhenish pottery, soapstone vessels and Rhenish tuff (Carelli and Cresten 1997). An indicator of the connected trade in these goods is the fact that the wrecks of ships that transported quern-stones have also been found to contain Rhenish pottery among their cargo. Since pottery is far

easier to transport than stones one might expect that pottery would be traded further than stones. But even though it was not as restricted to water transport, the distribution of Rhenish pottery followed the same distribution pattern as quern-stones and tuff. Since a merchant would more probably travel with a range of goods than just with a single one, his considerations in terms of transport expenditure would also affect the whole range. The combined transport expenditure of a range of goods could thus be the reason that several different goods deriving from the same area, despite having different properties, also shared the same area of distribution, limited by the same boundaries.

Soapstone vessels from Norway and Sweden from the 8th century that were found in the same area as the Baltic ware, and later on Hyllestad querns (Baug 2006), might indicate that those trade areas had already developed before the 9th century. Sindbaek (2005) explains this with routes and routinization of trade and exchange, an explanation that does not necessarily contradict the theory of transport expenditure as the reason for their determination. It is possible that transport expenditure was a constitutive factor for routes and routinization. But there is another possible scenario for the establishment of routes, routines and distribution areas. The distribution area of Rhenish quern-stones and tuff in Denmark lies outside that of deposits of rocks and boulders. The area holding the resources was self-sufficient in the production of querns and later on building material, but apparently did not supply the area that was without them. Lacking the resources for an essential commodity made imports necessary, a demand that was supplied by Rhenish quern-stones, followed by pottery. Trade routes and contacts were established, through which the tuff was also imported. In the other area Hyllestad quern-stones replaced those of local stone, following the trade routes of the soapstone vessels. The hitherto demand-shaped trade spheres were supported by transport expenditure.

Trade in utilitarian goods, in this case stones, can tell us more about medieval trade patterns than can trade in prestigious goods, because utilitarian goods were traded more frequently. Their lower value and the existence of competing products made a calculation of transport expenditure necessary, two factors which can be ruled out in the trade in luxury goods. For stone objects and pottery at least, the trade spheres in northwestern Europe were already developed in the early Middle Ages. It would be interesting to investigate whether this result is transferable to the trade in other goods.

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