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Isotope and Geochemical Evidence of an Early Neolithic Trade Route

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A not minor part of modern archaeological studies today address the question of what material were used for the production of various artefacts, and what the provenance area of these were. Such studies are generally very helpful when wishing to clarify the ways of cultural interaction and possible trade routes within ancient societies.

Petrographic, isotope geochemical and geochemical methods are here applied to amphibolitic flat-axes and adzes from central to south Germany. The artefacts dating from Early to Middle Neolithic times, and span the Linearbandkeramik to Großgartach and Rössen cultures (approximately 5.500 – 4.200 B.C.).

Within all the settlement areas a wide spectrum of employed raw materials, is recognized - which partly reflects the availability and variety of the surrounding geological outcrops. A major prevalence of a homogeneous actinolite-hornblende schist rock-type is, however, found within each examined area, which petrographic as well as geochemically is in strong contrast to other amphibolitic material found, and archaeologically show all signs of having been very valuable material. Older petrographic investigations from the Harzvorland have pointed to a Balkan source area for this material group (Schwarz-Mackensen & Schneider, 1983; 1986).

The actinolite-hornblende schist is petrographically consisting of characteristically needle-shaped actinolite interwoven with single larger grains of hornblende along with calcic plagioclase. A large amount of opaque phases (ilmenite) is another very characteristic feature. Geochemically the actinolite-hornblende schist show a large homogeneity and possesses an enriched basaltic precursor signature with high concentrations of particularly the LIL-elements. The isotopic and geochemical signatures are

relative rare and can not be matched in nearby geological outcrops. These results indicate that a major import path with an accompanying industry existed throughout the Early and Middle Neolithic cultures in the German region.

The chemical composition of the employed raw material have, for comparative purposes, been related to similar literature data of source rocks within archaeological possible trade regions, and has enabled an identification of the feasible geographical origin of the rock source used as raw material. Both outcrops within the previous assumed Balkan area as well as outcrops in the German Fichtelgebirge and the Czech Riesengebirge (Jistebsko) have been investigated. Based on both petrographic, isotopic and geochemical evidence, only an origin in either of the 2 latter regions can be considered. The provenance area of the Riesengebirge is strongly preferred, and can be coupled with archaeological evidence of pre-historic mining. Both the accessibility and the possibility of distribution along major river-systems must account for its observed prolonged and widespread use.