

**Stony Brook University  
The Graduate School**

**Doctoral Defense Announcement**

**Abstract**

**Ecogeographic variation in Neandertal dietary habits:  
evidence from microwear texture analysis**

**By**

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For over 100,000 years, Neandertals inhabited a variety of ecological zones across western Eurasia, between glacial and interglacial conditions. To elucidate the still poorly understood effects of climatic change and variability, and possible competition on the Neandertal subsistence patterns, this study employed dental microwear texture analysis to reconstruct the dietary habits of 54 Neandertal, Pre-Neandertal, and early Upper Paleolithic (EUP) modern human specimens from 28 sites in western Eurasia. Microwear signatures of seven modern hunter-gatherer groups (n = 155) of known and diverse diets were analyzed for comparative purposes.

Microwear signatures of Neandertals and Pre-Neandertals are correlated with variation in vegetation-cover, such that individuals from cold-steppe/tundra vegetation had less complex microwear surfaces than those from forested environments. The microwear pattern of the EUP fossils did not differ significantly from those of the Pre-Neandertal groups and northern and central European Neandertals, which suggests that the former had a more varied diet. However, significant differences in microwear signatures were found between the southern European Neandertals and the EUP fossils. In accord with the stable isotope results, microwear analysis classifies Neandertals as top-level carnivores. However, dental microwear analysis detected some subtle dietary differences. Thus, the microwear signatures of Neandertals and Pre-Neandertals from steppe/tundra vegetation are similar to meat-eating Fuegians from comparable habitats, whereas those of Neandertals and pre-Neandertals from forested environments resemble the Chumash, who inhabited a Mediterranean-like environment. Neandertals from the deciduous forests of southern Europe have a microwear signature that falls within the ranges of Australian and African aborigines with mixed diets. EUP fossils have microwear signatures that resemble those of both the modern Chumash and Fuegians.

**Date:** May, 11, 2007

**Time:** 10 AM

**Place:** SBS, N-503

**Program:** Anthropological Sciences

**Dissertation Advisor:** Frederick Grine