Patination of Raw Lithic Materials for Analysis of Prehistoric Artifacts

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Experimentation with artificial patination can improve the accuracy of visually identifying prehistoric stone tool source material. Little work exists on identifying patina formation on specific lithic sources, leading to misidentification of stone tool acquisition strategies, migration, and trade routes. Known accurate methods for determining lithic tool sources severely damage artifacts. This project led to creation of references for assessing patination of lithic artifacts. This is beneficial for many fields including archaeology, geology, and geography. It can also validate oral and cultural history. Patinas were generated on over 300 lithic samples. Treatments included application of nitric, hydrochloric and carbonic acid to simulate effects of acidic soil, sodium bicarbonate and sodium hydroxide to simulate alkaline soil, heat treatment to mimic artifact placement in cooking fires or periodic forest fires, and lipid application to reflect exposure to animal remains. Following assessment using a Munsell Colour Chart, this experimentation generated three significant discoveries. First, “white taconite” is simply taconite exposed to acid. Second, artificial patination has proven non-viable as a reference for accurately identifying stone artifact source material. Finally, some patination methods make formerly distinct lithic materials appear identical, necessitating much archaeological and geochemical re-examination. These discoveries are highly relevant to prehistoric stone tool-using cultures worldwide. Human migration patterns are outlined by following artifact trails left behind by ancient peoples. Lack of knowledge regarding patinated lithics can cause misjudgement of artifact origins, and thus prevent accurate determination of migration patterns or trade routes.

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