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Bipolar Reduction and Lithic Miniaturization: Experimental Results and Archaeological Implications

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Abstract : Lithic miniaturization, the systematic production and use of small tools from small cores, was a consequential development in Pleistocene lithic technology. The bipolar reduction is an important, but often overlooked and misidentified, strategy for lithic miniaturization. This experiment addresses the role of axial bipolar reduction in processes of lithic miniaturization. The experiments answer two questions: what benefits does axial bipolar reduction provide, and can we distinguish axial bipolar reduction from freehand reduction? Our experiments demonstrate the numerous advantages of bipolar reduction in contexts of lithic miniaturization. Bipolar reduction produces more cutting edge per gram and is more economical than freehand reduction. Our cutting edge to mass values exceeds even those obtained with pressure blade production on high-quality obsidian. The experimental results show that bipolar reduction produces cutting edge quicker and is more efficient than freehand reduction. We show that bipolar reduction can be distinguished from freehand reduction with a high degree of confidence using the quantitative criteria in these experiments. These observations overturn long-held perceptions about bipolar reduction. We conclude by discussing the role of bipolar reduction in lithic miniaturization and Stone Age economics more broadly.

Keywords : lithic miniaturization, bipolar reduction, late Pleistocene, Southern Africa
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