
3D shape analysis and balance in Acheulean bifacial tools

James Kilpatrick*¹

¹Department of Anthropology [University of Toronto] (UofT) – University of Toronto Department of Anthropology 19 Russell Street, Toronto, ON, M5S 2S2, Canada, Canada

Résumé

Acheulean handaxes have received considerable scholarly attention over the last 200 years due to their abundance, longevity, and wide geographic distribution. They are known from sites throughout Africa, as well the Near East, Europe, and parts of Asia. They represent humans' longest lasting tool industry, appearing about 1.9 ma until roughly 200 ka. As the first tools made by form shaping, with some specimens achieving a high degree of symmetry, they are often argued to reflect the cognitive abilities of their makers. Although often associated with *Homo erectus*, they appear to have been the product of at least two or more species of early *Homo*. Most research to date has focussed on the role of symmetry in handaxe design, their potential utilitarian and non-utilitarian functions, and levels variability in the morphology between specimens within an assemblage or between group means of assemblages. Recent years have seen the application of three-dimensional (3D) digitisation of handaxe assemblages and related 3D analyses of their shape. The current proposal is based on doctoral research using 3D digitisation and 3D analyses of assemblages in order to study the internal mechanics of handaxes and its role in their design. Specifically, a protocol has been developed to analyse the role of balance in the design of Acheulean bifacial tools and treats balance as a quantifiable morphological variable. The proposed paper will focus on patterns that the new protocol has identified in the location of balance of Acheulean bifacial tools, how they relate to traditional handaxe typologies, and their importance in overall handaxe morphology and manufacture.

Mots-Clés: 3D Geometric morphometrics, 3D shape analysis, bifacial stone tools, handaxe, balance, acheulean, tool design

*Intervenant