

MAGNETOSTRATIGRAPHIC DATING OF THE GESHER BENOT YA'AQOV SITE, ISRAEL, AND ITS IMPLICATIONS FOR HOMINID EVOLUTION

1VEROSUB, KENNETH L., 2GOREN-INBAR, NAAMA , 3FEIBEL, CRAIG S., 2SARAGUSTI, IDIT, 1LIGHT, JEFF1Univ. of Calif., Davis; 2Hebrew Univ., 3Rutgers Univ.

The Middle Acheulian archaeological site of Gesher Benot Ya'aqov in Israel possesses a lithic assemblage that is similar to assemblages found at sites in Africa. A magnetostratigraphic study of sediments exposed in trenches at the archaeological site showed that the upper two-thirds of the sedimentary sequence has normal polarity while the lower one-third has reversed polarity. The simplest interpretation of these data is that the change in polarity represents to the Matuyama/Brunhes boundary, dated at 780,000 years. This result provides a chronostratigraphic context for a complementary study of the relationship between basaltic artifacts found at the archaeological site and natural materials from the surrounding region. That study compared the geochemical signatures of flakes, bifaces and giant corestones with those of volcanic rocks in the surrounding region. The results of that study suggest that the corestones are the source of the flakes and were collected from nearby locations while the raw material for the bifacial artifacts was collected from more distant locations. Thus there was conscious selection of raw material for biface production. These findings imply that the hominids at the Gesher Benot Ya'aqov site had extensive knowledge of their surrounding environment, were capable of making acute observations, could make subtle distinctions between materials with similar appearances, had considerable mobility in the region around the site, were physically capable of carrying large objects, and made plans and stockpiled raw material. All of these cognitive mental abilities contributed to hominid behavior over 750,000 years ago.