CHAPTER

Cognitive archeology, body cognition, and hand–tool interaction

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Abstract

Body cognition and lateralization can be investigated in fossils by integrating anatomical and functional aspects. Paleoneurology cannot provide strong evidence in this sense, because hemispheric asymmetries are shared in all extinct human species, and motor cortical areas are difficult to delineate in endocranial casts. However, paleoneurological analyses also suggest that modern humans and Neanderthals underwent an expansion of parietal regions crucial for visuospatial integration and eye–hand–tool management. Because of our technological specialization, haptic cognition can be particularly targeted by evolutionary processes. Hand–tool relationships can be investigated through physical and physiological correlates. In terms of metrics, size is the main factor of hand morphological variation among adult humans, followed by the ratio between thumb length and palmar size. In modern humans, emotional changes during hand–tool contact can be measured by electrodermal activity. During tool manipulation, electrodermal response, which is a physiological correlate of emotional engagement, shows differences between males and females, and it is different for distinct Paleolithic technologies. Emotional engagement, hand management, and haptic cognition are part of a specialized prosthetic technological capacity of modern humans and can provide indirect evidence of cognitive discontinuities in the archeological record.

Keywords

Endocranial asymmetry, Paleoneurology, Parietal cortex, Visuospatial integration, Hand morphology, Haptic cognition, Electrodermal activity

Progress in Brain Research, Volume 238, ISSN 0079-6123, https://doi.org/10.1016/bs.pbr.2018.06.013

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