

Human Evolution and Advances in Hunting Technology

The human brain size has increased through human evolution, leading to the development of the cognitive ability and technology. However, because of the expansion of human brain size that demands higher energy budget, it would have been crucial for hominins to effectively obtain energy-rich diets, such as meat. Humans developed their hunting technology through time and innovated spearthrowers and bows-and-arrows that allow them to successfully hunt animal game at a secure long distance. As the production and use of spearthrowers and bows-and-arrows requires understanding of the highly complex sequential structure, spearthrowers and bows-and-arrows are called as complex projectile technology and its emergence is reflected by the substantial cognitive advances of humans. Thus, the appearance of the complex projectile technology represents one of the significant events in human evolution. However, spearthrowers and bows-and-arrows easily disappear as they are made of organic materials. Consequently, they have rarely been discovered from archaeological sites. Therefore, we are investigating stone-tipped weapons that were mounted on a projectile spear tip since stone artifacts are hardly weathered. Based on our projectile experiments, we confirmed a correlation between the impact velocities and impact trace patterns on stone-tipped weapons, which would allow us to detect the origin of the complex projectile technology. The presentation provides an overview of this study and its provisional results.

人類進化と狩猟技術の発達

人類は、その進化過程で脳容量が拡大し、それに伴って認知能力や技術が発達した。一方、エネルギー消費量の多い脳を発達させた人類は、肉のようなエネルギー源が豊富な食料の効率的確保が生業戦略上の重要課題となったと考えられる。人類は、進化過程で狩猟技術を発達させ、投槍器や弓矢のような、獲物から安全な距離を保ったまま効率良く狩猟する技術を開発した。投槍器や弓矢の開発には、複合的連鎖構造の理解が不可欠であり、その出現は人類が認知能力を高度に発達させた反映と捉えることができる。したがって、複合的投射技術の出現は、人類進化史の中でも重要な画期の一つといえる。しかし、投槍器や弓矢は有機質でできているために消失しやすく、現在まで残ることは稀である。そこで、風化しにくい石器に注目し、槍先につけて使われた石器の分析から、複合的投射技術の出現期を解明するプロジェクトを進めている。本プロジェクトで遂行した投射実験により、槍先石器に残された衝撃痕跡と衝撃速度との間に相関が認められることが確認できた。本研究会では、投射実験を通じて複合的投射技術の出現期の解明を試みる本プロジェクトの概要とこれまでの成果について紹介する。