**PRODUCTION AND USE OF SPHEROIDS IN THE LOWER PALAEOLITHIC IN EUROPE AND AFRICA: COMPARATIVE AND INTEGRATIVE APPROACH TO ENIGMATIC AND EMBLEMATIC OBJECTS**

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Polyhedrons, spheroids and bolas are enigmatic cubic to rounded stone objects present in lithic series since the Lower Pleistocene. These objects are considered both as final phase nuclei or firing pins and many other more or less fanciful hypotheses have been proposed in the past. Most of these attributions have never been demonstrated. These objects are frequent in Africa and present in Asia since the Acheulean but are much rarer in Europe. Artifacts with same shape are also known in recent archaeological and ethnographic contexts in America.

The aim of the project is to identify the characteristics that make it possible to determine the methods of manufacture and use of these objects. The question will be addressed by mobilizing a broad comparative approach, including recent archaeological, ethnographic and experimental data through 1) the realization of an ethnoarchaeological synthesis, 2) a reconstitution, through experimental archaeology and wear analysis, of the mode of manufacture and possible forms of use, 3) an analysis of archaeological material from the Lower Palaeolithic in Europe and Africa.

The results of the archaeological, experimental, wear analysis and ethnographic study of polyhedrons, spheroids and bolas will make it possible to propose new hypotheses on the role and the method of manufacture of these enigmatic objects abandoned in prehistoric sites. It will also fuel debates on the presence of apparently identical objects in archaeological records that are distant in time and space and discuss the question of objects from independent local histories made by different hominids or objects migrating with populations and adapting to the new needs of these populations. These lithic objects can indeed be considered as "trace elements" that can help to identify the possible dispersion of human groups and/or traditions in Eurasia. They can also be vectors for identifying the modes of adaptation of populations to varied (mineral and vegetal) or new environments, inducing the loss of certain elements of the "toolbox" or a reorientation of manufacturing methods according to needs and available materials.