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Module 2: Introduction to African Archaeology: Methods
Introduction to African Archaeology

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FIRST A LITTLE THEORY

Archeology is the social science that studies the development of human societies and their causes through the traces and materials produced by their activities.

It is a theoretical and practical activity. As in most human activities we apply work (time and energy) on an object (an object of study) to obtain a product (an object of knowledge).

It's a science. Like all sciences, it uses the *scientific method* to achieve a rational and verifiable explanation for the changes observed in its object of study (the archaeological evidence) in order to achieve a better understanding of its object of knowledge (the history of societies).

THE OBJECT OF KNOWLEDGE

Archeology is the broadest Social Science. It aims to explain how human society has evolved from a previous species of primate and how societies have developed to the current ones.

It studies the conditions in which social life occurs and the relationships established between men and women to survive and to ensure the reproduction and continuity of society.

THE OBJECT OF STUDY

Our object of study on which we work directly in practice is the archaeological evidence: these are the objects -including human remains themselves-, the by-products and alterations of the environment that past societies have produced and that we can find on the earth's surface or buried.

As we work on material evidence, in addition to knowing the instruments and methods of the social sciences, we must also know about the techniques and methods used by the Sciences of Materials: from its maximum dimension: Earth sciences (Geography, Geology, Environmental Sciences, Climatology, Biology, Palaeontology...) up to the minimum dimension (Subatomic Chemistry).

THE METHODOLOGY

We apply a series of techniques and instruments with a certain methodology to study the objects and traces of alterations on the environment -produced by societies- that we obtained from archaeological sites and palaeoenvironmental records. The aim is to obtain knowledge and scientific

explanation of the changes in past societies. The scientific method requires the following of an order and certain principles.

Following the scientific method always begins by asking a question. To which an attempt is made to respond with different explanatory hypotheses – among which the simplest is preferably chosen – which must be subjected to verification. In the event that the necessary conditions of the hypothesis are meet with the new data that have been collected, an explanatory theory is reached. This is always provisional, waiting to be re-verified, refined or refuted.

THE GENERAL PRINCIPLES.

All sciences operate based on a series of general theories and principles and others that depend on their own object of study and knowledge.

As in any human activity, all Sciences, and Archeology among them, are subject to the historical conditions in which they are developed and these conditions set the main research priorities, the questions, the principles and axioms and the available technology on which knowledge is built.

Archeology first developed as a search for ancient exotic objects, later it has been influenced by idealistic, colonialist, and even supremacist National Socialist currents of thought. At the end of the 20th century an explicitly scientific positivist modern archeology develops. This was criticized from the Postmodern Archaeologies and a Marxist Archeology that revealed the inescapable subjectivity of research and the need for self-reflection and a positioned Archeology. Finally, Feminist Archeology reveals the androcentric bias and proposes equalizing alternatives.

LEVELS OF EXPLANATION IN ARCHEOLOGY.

We can consider that there are three levels in archaeological explanation and theory:

SUBSTANTIVE THEORY or high-level theory explains: How are human societies. Why the social events have occurred. Why societies have changed.

Human beings are essentially a species of social primate that needs a group for its survival. We do not have a genetically inherited instinctive behaviour (like turtles or some fishes) but we acquire our form of behaviour transmitted through integration in a group. Through education (by imitation and oral or symbolic communication) we acquire knowledge of practices and the social norms that regulate them. In human activity, even if it is that of a single person, the behaviour of the group with which it is historically and socially associated is reproduced.

The causes of behaviour for the survival and reproduction of human beings lie in the specificity of their social behaviour. Therefore, social reproduction is the fundamental requirement for the very survival and existence of the individuals and of the species. The effects of social behaviour vary according to the type and level of the relationships established between the historically conditioned social agents and the environment in which they act.

That is why the traces or material consequences of the activity vary according to the social group or population that generates them according to their historical condition, their norms and the knowledge they receive and rework. To the extent that all social (as well as any biological or any other type) of activity affects the material conditions of its performance, it is possible to scientifically establish the specific nature of the effects caused by the various agents. Thus, by an inverse process, we can know those social relations and their changes studying the modifications produced in objects (and in human beings themselves).

But we cannot jump directly from an archaeological object to a social explanation: "a pyramid does not make an empire." Scientific rigour imposes a series of intermediate steps. To reach the final objective – the explanation of social changes – there are a series of intermediate questions that must be answered.

THEORY OF OBSERVATION: explains how are objects related to social facts sustaining the practice

THE LOW-LEVEL OR OBJECT THEORY explains what are those objects.

THE MIDDLE RANGE THEORY explains how have the social events taken place. It relates the statics of objects with the dynamics that have produced them. This means getting to know the organization of practices and activities. That is the organization (among the different members of societies, between men and women) of work, distribution and consumption, in time and space.

According to the substantive theory, archaeological "objects" and traces have a triple dimension: a material-spatial dimension (objects come from or are marked in the geological and biological environment and they have been deposited or re-deposited distributed in a given spaceenvironment), a social dimension: they have undergone an anthropic modification (some changes in their location, formal characters, chemical composition...), a temporal dimension - chronology- (they have been transformed in a specific historical moment and later they have been abandoned and transformed by natural agents: abiotic (climate, geomorphology) and biologic (biologic organisms).

As societies are made up of men and women who act according to their context and their social norms, the remains and traces show significant associations on these three dimensions. They are not distributed randomly but are initially structured and respond to that social organization of activities.

Based on this triple nature of the archaeological object, the relationships that exist between the objects must be established: their synchrony, the significant (recurring) associations of elements (for example, the establishment of significant associations of combustion elements) and activity units (for production, ceremonial, living...), the functional concatenation and their spatial location.

The analysis of the materiality and characters of the objects must allow: 1) the identification of the function and therefore of the social causality – the necessity – that originated the activity in question; 2) the reconstruction of work processes and all the factors involved; 3) the identification of the normative ideological aspects of the community as expressed in those formal characters that do not respond to conditions derived from the function or the work process. This analysis has to make

possible the knowledge of the function and the social conditions in which the objects were made. And the association of characters allows the construction of Typologies.

Stratigraphic superposition (a lower primary location corresponds to an earlier time) allows to establish the sequence of objects. The regularity, frequency and spatial-temporal dispersion of the same phenomena allow us to understand what they represented in the society and their resilience. That is to build a RELATIVE CHRONOLOGY.

But these elements, when abandoned, are subjected to a series of forces and subsequent changes that modify the nature of the object and generate a different order from the original anthropic.

Some post-depositional modifications have an almost regular or controllable rhythm of change or decomposition -like the radioactive isotopes- that allows to calculate the time lapse, that is THE ABSOLUTE CHRONOLOGY, since a biological element has died or a mineral was transformed or buried.

The analysis of post-depositional transformations also allows to filter the anthropic and natural agents that have changed the objects and disrupted the order of the original deposition. This is the object of the archaeotaphonomic analysis that must be carried out prior to the study of the significant associations of elements (archaeological objects and traces).

After the archaeotaphonomic analysis and once the original organization of the significant associations of elements is known through the medium-range theory (generated through experimentation and experimental Ethnoarcheology), we would know the structuring of the production activity units (daily life, workshops, fields...) and of social reproduction (cemeteries, places of government, ceremonies, of transmission of knowledge, gathering, recreation places...) and we will be able to induce the functioning of the society.

NOW THE PRAXIS

Based on the principles and levels of the theory, the practical archaeological work is ordered according to a methodology. Methodology requires a constant dialectic between theories and the practice on the object of knowledge (archaeological evidence). The recovered archeological record is understood thanks to the morphological and structural examination of the material remains through surveys, excavations and analysis. For this we will use specific techniques of Archeology or techniques from other Sciences developed expressly for Archaeology that will be developed in following chapters of this MOOC.

The process includes:

1) Finding the deposit: Archaeological survey: analysis of geography and geomorphology (Cartography, Remote sensing..)
2) Site excavation: excavation systems, sampling, positioning, mapping, photographic restitution,...
3) Establishing the site formation process (Stratigraphy, Sedimentology, Soil Micro-morphology, Soil Archaeochemistry, Archaeobotany and Archaeozoology, sampling for absolute dating: luminescence, paleomagnetism, radiocarbon and other radiometric techniques).

4) Analysing the human footprint on the environment. Working in the site and in its surroundings: Palaeo-climatic and paleoenvironmental analysis, analysis of changes in geomorphology (paleolandscape), analysis of the source areas and the catchment areas of abiotic -mineral- and biotic resources – fauna and flora -

5) Analysis of productive activities: technological, morphological and functional analysis of artefacts (from the catchment of resources to the production of goods), spatial analysis of the distribution, consumption and disposal of production remains and consumption waste.
6) Analysis of the macro-spatial organization of human activities in relation to the environment and other communities (Landscape Archeology and Spatial Archeology)
7) Analysis of the workforce: analysis of human remains (Palaeoanthropology, Anthropobiology involving forensic archeology, determination of sex, age, Palaeopathology, analysis of efforts, diet, isotopes...-) and Palaeodemography.
8) Throughout this entire process, -Archaeo-taphonomy- the analysis of non-anthropic and postdeposition modifications has to be taken into account: study of decomposition, alteration, burial and until the bias produced by contemporary recovery.
9) In the interpretation and verification of hypotheses: Ethnoarchaeology and Experimental archeology and qualitative and quantitative analyses of databases, mathematical and statistical analyses intervene.
10) Finally, in the analysis of social dynamics, simulations using Agent Systems and Artificial Intelligence can be used.

THE UTILITY OF ARCHEOLOGY

The knowledge acquired about the properties, the links and the causal laws that govern changes in human societies contributes to a consistent knowledge of the alternatives for social change, the understanding of how current societies have been gestated and consequently to a taking of position regarding the historical needs of transformation of the time in which we have to live.

By working on a materiality we also generate a secondary product, in our case the archaeological material heritage that will be inherited and enjoyed by future generations as another means of approaching that past and that awareness.