LITHIC TECHNOLOGY AND ETHNOARCHAEOLOGY: A CRITICAL ANALYSIS OF THE INTERPRETATIVE POSSIBILITIES OF MATERIAL CULTURE

TECNOLOGIA LÍTICA E ETNOARQUEOLOGIA: UMA ANÁLISE CRÍTICA SOBRE AS POSSIBILIDADES INTERPRETATIVAS DA CULTURA MATERIAL

TECNOLOGÍA LÍTICA Y ETNOARQUEOLOGÍA: UN ANÁLISIS CRÍTICO DE LAS POSIBILIDADES INTERPRETATIVAS DE LA CULTURA MATERIAL

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ABSTRACT

The critical analysis presented here has as its analytical object the interpretative possibilities stemming from the Anthropology of Technique and Technology and its relationship with the foundations of Agency in material culture studies. To this end, we have posed the following question as a problem: which elements of material culture, especially of a lithic nature, make it possible to interpret aspects outside of material causality? From this perspective, as far as the theoretical apparatus is concerned, we took a processual approach, perceiving the technique as permeated by possible practices and logics of use. In addition, we engage in critical reflection in order to identify elements that help to overcome the methodological dichotomy of Man/Nature, so that the problem listed here can be resolved. In addition, we used ethnoarchaeological precepts in order to point out solutions for the realization of the analytical proposal demonstrated in this article.

Keywords: Anthropology of Technology; Agency; Ethnoarchaeology.

RESUMO

A análise crítica aqui apresentada possui como objeto analítico as possibilidades interpretativas oriundas da Antropologia da Técnica e da Tecnologia e sua relação com os fundamentos da Agência nos estudos da cultura material. Para tanto, elencamos como problemática o seguinte questionamento: quais os elementos da cultura material, em especial, de natureza lítica, possibilitam interpretações acerca de aspectos exteriores à

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causalidade material? Nessa perspectiva, no que concerne ao aparato teórico, nos balizamos numa abordagem processual, percebendo a técnica permeada por possiblidades de práticas e lógicas de uso. Ademais, nos ativemos a uma reflexão crítica com a finalidade de identificar elementos que auxiliem na superação metodológica da dicotomia Homem/Natureza, para que a resolução da problemática aqui elencada seja alcançada. Além disso, nos utilizamos de preceitos Etnoarqueológicos, na intenção de apontar soluções para a concretização da proposta analítica demonstrada no presente artigo.

Palavras-chave: Antropologia da Tecnologia; Agência; Etnoarqueologia.

RESUMEN

El análisis crítico que aquí se presenta tiene como objeto analítico las posibilidades interpretativas derivadas de la Antropología de la Técnica y la Tecnología y su relación con los fundamentos de la Agencia en los estudios de cultura material. Para ello, hemos planteado como problema la siguiente cuestión: ¿qué elementos de la cultura material, especialmente de naturaleza lítica, permiten interpretaciones sobre aspectos ajenos a la causalidad material? Desde esta perspectiva, en lo que al aparato teórico se refiere, adoptamos un enfoque procesual, percibiendo la técnica como permeada por posibles prácticas y lógicas de uso. Además, realizamos una reflexión crítica con el objetivo de identificar elementos que ayuden a superar metodológicamente la dicotomía Hombre/Naturaleza, de modo que puedan resolverse los problemas aquí enumerados. Además, utilizamos preceptos etnoarqueológicos con el fin de apuntar soluciones para la realización de la propuesta analítica demostrada en este artículo.

Palabras clave: Antropología de la tecnología; Agencia; Etnoarqueología.

INTRODUCTION

The studies undertaken on technique have as their central focus a principle of causality that establishes the relationship between man and matter as a productive action. However, the construction of something would connote a technical action, as well as the attribution of meaning to it.

In this understanding, the analysis of technical actions is carried out focusing on production systems and production processes, with the intention of identifying the articulation between physical and chemical principles to give life to objects. On the other hand, from the perspective of the human sciences, the relationship between cultural and social aspects and technical phenomena is examined.

In this regard, Mura (2011) states that the relationship described above is being established based on the perception of human activity understood as an act of production, directing the understanding of the materialization of techniques as material culture, in other words, a set of objects imbued with information that consist of characteristics external to the substances that make up the materiality of these objects.

Still in the scope of the analysis of technical phenomena, we have the constitution of the dichotomy between Man and Nature. From this perspective, the transformation of raw material into objective, that is, from the natural to the cultural, is commonly understood from different ontological perspectives. In this way, the fundamentals present in the natural environment are removed and perceived differently from the phenomena that control people's lives.

It should be noted that the dichotomous described above is denoted as an abstract totality, permeated by a notion of systems and collectivities. In this understanding, Man assumes the expression of the social, cultural, symbolic aspect and a mental representation and Nature presents itself as the relationship of ecological elements.

Thus, considering the various theoretical perspectives, the aspects listed above – the principle of causality of the "act of production", the Man/Nature dichotomy and the abstract notion of totality inherent to it – have distinct forms of relationship between these aspects. However, according to Mura (2011), in some way, the three aspects constitute an identity parameter between objects, or a set of objects, as well as a specific cultural and social organization.

To exemplify the statement described above, we can cite the findings brought in the research developed by Mura (2000; 2006; 2010) with the Guarani Kaiowa ethnic group, from Mato Grosso do Sul, where it was demonstrated that the indigenous group in question had a strong social cohesion, a conceived cosmological vision and a social organization of

work with distinct complexity. However, in the context of the production of objects (material culture), it presented itself with a high degree of poverty.

Thus, the use of theoretical currents based on the systemic perspective in order to explain the context of the production of objects by the Guarani Kaiowa, did little to help in achieving this objective. Thus, it was noticeable that it would be necessary to: consider the analysis of technical relations perceiving the logics of use, to the detriment of those of production; disregarding the distinction between the cultural and the natural; and, as a consequence of the previous consideration, the abandonment of the distinction between this dichotomy implies the questioning of the systemic view that directs the analyses to an epistemological perspective which conditions the cultural, social, semantic, symbolic system, etc., for a subsequent relationship with the totality of things, of the universe and, consequently, to signify it.

In this understanding, in order to be able to infer about the elements of material culture, especially of a lithic nature, which allow interpretations about aspects external to material causality, we are guided by a processual approach, perceiving the technique permeated by possibilities of practices and logics of use, as well as carrying out a critical reflection with the purpose of identifying elements that help in the methodological overcoming of the dichotomy Man/Nature, These aspects will be exposed below.

A CRITICAL REFLECTION ON THE APPROACHES OF TECHNIQUE AND TECHNOLOGY

During the 1940s, the publications of André Leroi-Gourhan (1993; 1994) presented conceptions oriented to the understanding of technical phenomena, as well as their evolution. Among such conceptions, we can mention: the technical tendency, the technical environment and the technical fact, which proposed the formulation of an analytical reference that still encourages modern reflections.

With regard to the technical tendency, this consists of an abstract concept oriented to the understanding of the causal implications of the individual's action on the matter, in terms of efficacy, also having predictability and constancy. Thus, the technical tendency has relative independence from social facts, and may indicate aspects of increased effectiveness of the aspired technical action, considering the acquisition of knowledge of nature (LEROI-GOURHAN, 1993).

Therefore, the author states that the acquisition of technical knowledge requires the existence of a favorable technical environment, whose components are determined by human and non-human actions, such as: the technical organization of the group under

examination, the ecological aspects where the activities are carried out, as well as the components from other social groups that maintain contact with the group analyzed.

In this understanding, the experiences in a given place, permeated by a materiality, combined with inventive aptitude, as well as the borrowings of technical procedures, would have as a consequence the possibility of a self-change at the technical level, in addition to conforming an intrinsic technical profile, a situation called by Leroi-Gourhan (1993), a technical fact. Thus, contrary to the technical trend, the technical fact is imponderable and inherent. In this way, the technical fact exposes its specificity based on social, historical and environmental conjunctures.

In this understanding, the driving force of the technical tendency is faced with an obstacle in the act of undertaking a succession of coincidences so that a functional progression can be executed. For this reason, the tendency consists of an abstraction and what, in fact, we observe in a concrete way, is the technical fact.

Thus, using the concepts described above as an analytical parameter, Leroi-Gourhan (1993) makes an understanding of technique in terms of the evolutionary process, with the intention of establishing classifications for the different societies. However, the subdivision into levels leads us to the realization that each type of society has a specific technical organization.

Furthermore, the author states that the relationships in history, for the most part, were effected between groups with similar levels. However, what would happen in a situation of interaction between social groups with distant levels? The answer given by the author is that the group that is in technical inferiority would not have the possibility of elaborating objects that were not within the scope of knowledge of their knowledge and techniques. In addition, for cases in which objects could not be elaborated, societies could obtain them through a relationship of symbiosis, permeated by instability and transience (LEROI-GOURHAN, 1993).

Some gaps are left by the author in the interpretations demonstrated above, such as the explanation of how symbiosis occurs. However, the negative value attributed to this condition is evident, as if it had no relevance in the understanding of the technical phenomenon. From this perspective, questions about the negative perception that the acquisition of one object qualitatively better than another and the abandonment of knowledge that becomes outdated is evidenced as an explanation to be sought, because, as demonstrated by Mura (2000; 2006; 2010), one situation does not imply the other.

Thus, it is essential to overcome theoretical perspectives that imprint a material determinism on social groups, considering that the social universe of groups is permeated

by aspects that cannot be stiffened, starting from purely technical parameters. What is also evident is a propensity to establish a relationship between the act of producing and a specific ethnic group, as well as the elaboration of identity principles with the intention of associating the materiality produced with the society that produced them, determining their sociotechnical profile.

In the second half of the twentieth century, some theorists maintained the same reasoning described above, among which we can mention Godelier (1978; 1985) who was based on a Marxist perspective to explain social relations from the perspective of power relations and modes of production, as well as Cresswell (1976; 1994), through the study that the author called cultural technology, where the focus was on the dialectical relationship between the social and material dimensions, where this dialectic would be determined throughout the course of the process.

Considering the productions of the authors of Symbolic Anthropology, these, in turn, criticize the paradigm brought by Leroi-Gourhan. In this regard, we can cite the ideas of Lemonier (1993) with the questioning presented about the applicability of the concept of technical tendency, perceiving it as the manifestation of a material determinism. For the author, the problem of applicability mentioned above lies in the fact that the technical properties of specific instruments and objects conceive limitations with the ability to condition technical choices. Thus, for Lemonier (1993) the emphasis in the analysis of techniques is centered on social representations, where the mental process that marks our actions in the material world is permeated by the symbolic system.

Material culture brings with it social representations through the technical system of a society, thus understanding that the production process of objects also corresponds to a network of meanings (LEMONIER, 1986; 1992). Lemonnier also emphasizes that technology is a social construction inserted in webs of meaning created and recreated by a society in the process of cultural dynamics (LEMONIER, 1986; 1992). For this reason, this author points out that techniques must be understood from a systemic perspective based on three premises: the techniques themselves; the set of techniques; and of the technical system in comparison with other cultural systems. In addition, techniques have five elements that support them: matter, energy, objects, gestures and knowledge (LEMONIER, 1986; 1992).

From this perspective, Descola (2002) considers that the entire relationship between man and living and non-living matter must be objectified. Thus, for the author, objectifying a technique consists of the assumption that the primary relationship instituted by it between man and matter is subject to a representation beginning in the pre-existing accumulation of

relations coherently taken within the scope of the sociocultural totality initially taken as an analytical object. Thus, Descola (2002) proposes the concept of objectification of technique as a way of criticizing and overcoming the approaches to technique and technology of Leroi-Gourhan and Cresswell, thus promoting a proposal of understanding about the reasons that determine the choice and use of a technique.

In this regard, after studies carried out with the indigenous groups of the lowlands of South America, Descola (1992, 2002) states that these groups, at the time of the arrival of the European colonizers, the Brazilian indigenous groups had the same technical level as the groups that inhabited the region of New Guinea. Thus, after making a comparison on the issue of the domestication of animals for food consumption, the author concludes that, unlike the groups of New Guinea, the Amerindians did not practice eating acts with domesticated animals, considering that such an act would remove the condition of people attributed to animals, making them objects, a condition present in the ontology of these groups.

The proposal of objectification of Descola explained above does not respond to other psychic relations that are present in Amerindian groups. Otherwise, ecological and historical issues could be considered in the author's analyses to try to fill gaps, seeking not to be characterized as a kind of cultural determinism.

Summing up, all the approaches to technique and technology presented so far, which considered material, symbolic and social aspects, are inserted in the systemic perspective. Thus, in an attempt to understand issues of totality and the technical coherence of the aspects that make up it, we believe that the definitions brought by Ingold (1986, p. 43, emphasis added) about Technology are relevant. For the author "the totality of conceptions and their interrelations, located in the minds of men, constitute a technology. [...] Technology consists, first of all, of a *corpus of knowledge* that they individually carry in their heads, and transmit formally and symbolically coded instructions."

From this perspective, technology presents itself as a *design* in the mind of the individual, having a dimension external to material causality. Thus, considering the etymology of the word technology and the notion of rationalization of the production process coined during the eighteenth, nineteenth and twentieth centuries in Europe, the mechanization of production provides us with an important reflective element.

In this regard, we take the design projection of the designer's mind and the characteristics of the machine. If we think of this relationship in a simplistic and mechanized way, it becomes evident as a coherent and closed system. But what about the interaction between different *designs* in different times and spaces?

In the technological perspective proposed by Ingold (1986; 1995), this way of analyzing based on the Man/Nature dichotomy, leads us to the distinction between humanity and animality, as well as the differentiation replicated in the academic sphere, that is: on the one hand, the Human Sciences, and on the other, the Natural Sciences.

In this understanding, Ingold (1995) relies on the analyses of the Ojibwa of subarctic Canada to demonstrate the different ways of perceiving and constructing the world. However, Descola (1992) objectively points out, through analyses of psychic relations, that the ontological universe of the Amerindians is not permeated in this model of parallel dichotomy. Thus, ontological relativism does not manifest an aspect that guarantees the conception of a safe alternative analytical method.

Still, in a use more focused on archaeological material culture (prehistoric), specifically for the study of lithic industries, Inizan (2017) focused what can be defined as a modernization for French archaeology on the technological approach of understanding and interpreting the lithic materials of past human groups. Therefore, the understandings of *methods* and *techniques were defined.*

For the group of researchers, technology refers to a systematic approach to material culture, so "technology encompasses the totality of the technical system that is at stake within culture" (INIZAN, 2017, p. 13). Furthermore, technology is also "dedicated to the study of the relationships between the technical system and socioeconomic phenomena" (INIZAN, 2017, p. 16). The approach of accessing the information of human groups of the past through the technological approach began to consider the observation of methods, defined as a "systematized sequential organization (in the repeated and non-random sense) and more or less rational, of a certain number of gestures, each executed according to one or more techniques" (INIZAN, 2017, p. 32), the techniques, as being every gesture or movement of the hand for the production of material culture, therefore, every action, which can be observed, experienced, described, mainly through archaeological experimentation.

Thus, the analytically proceeding described above about the psychic relation leads us to a perception of it as a mode of socialization of nature. However, what is the feasibility of socializing nature, considering that there is no differentiation between the natural and social, given that this distinction does not exist in the cosmos? What is evident to us, after the reflections undertaken here, is that this analytical position is an option permeated by ethnocentrism arising from systemic approaches, contributing to a low use of the potential of Amerindian knowledge that presents itself as fundamental for rethinking epistemologies.

AGENCY AND ETHNOARCHAEOLOGY: POSSIBILITIES AND ANALYTICAL PERSPECTIVES

After reflecting on the various scientific approaches that focus on the theme of technology, it was evidenced that the study of material culture and its production process is permeated by perspectives that consider purely technical, social, symbolic, ontological and mental factors.

However, all of them are inserted in a systemic perspective, a fact that disregards the importance of knowledge identified in the sociocultural and ontological universe of indigenous groups in the peripheral zones of the globe. Furthermore, when it comes to the production of material culture, the foundations of agency in the study of this can provide us with relevant analytical bases to expand our understanding of the production process of material culture to infer about the social phenomenon.

Thus, after the "material turn" and its influence on archaeological research, after the 2000s, several analytical perspectives emerged with the change in question. In this regard, we can mention the contributions of the *Praxis* Marxist, Geertz's Symbolic or Interpretative Anthropology, which encouraged the studies of meaning through materiality, the concept of *Habitus*, symbolic violence, social structuring and Bourdieu's Theory of Action, Giddens' Theory of Structuration that analyzes the reproduction of the social system by structure and agency. In Philosophy, we have the proposal of hybridization of the subject by Deleuze and Guattari, who influenced the perceptions of the whole from the notion that human actions constitute a rhizome. We also have the concept of actor-network and the mediating role of the object proposed by Latour, finally, we can mention the concept of mesh brought by Ingold.

Thus, together with the reflections on technology previously undertaken, material agency and its implications in Archaeology are based on the following foundations: 1 – Individuals manifest their social practices and their existential notion through everyday practices; 2 – Social practices are made possible by the material and material cultural conjuncture in an integrative and passive way; 3 – Social practices are carried out within historical contexts imbued with habits, traditions and memories, which influence the values and actions of social agents; 4 – During the actions of social agents, they reproduce their material conditions in order to reinterpret and redefine their meanings; 5 – In this context, material culture assumes a dynamic role in social relations, as well as in human and non-human relations, modifying all the agents integrated in social practice.

In this understanding, Ethnoarchaeology presents itself as a relevant tool for the purpose of verifying the analytical possibilities pointed out by the theoretical currents

oriented to the study of technology as a tool for understanding the social phenomenon. Thus, according to David and Kramer (2002), following a perspective aligned with the natural sciences, the authors explain social phenomena by recognizing a pattern permeating social relations, where events are seen as a conjuncture resulting from interactions of real things and dynamic structuring; the redescription of events in an interdisciplinary way; the construction of models based on mechanisms that have the capacity to produce the observed pattern through induction; the construction of testable models; and the construction of a theory.

Thus, the authors state that, considering social structures and their manifestation, only in open systems existing in specific historical contexts, testing a theory definitively becomes an impossible action to be carried out.

Furthermore, with regard to the styles of analysis and the procedural and contextual schools, we can point out some aspects that are evident as a point of divergence between them, which are:

> "a) the activities, economic, cognitive-symbolic or other, related to less or more open, simpler or more complex systems, in which they are more interested; b) their views of the real things that structure these activities; c) their understandings of what constitutes explanation and verification and; d) the corresponding naturalistic versus antinaturalist styles of his arguments." (DAVID; KRAMER, 2002).

Thus, considering the points described above, considering that the ethnoarchaeological procedures of analytical proposition of the social phenomenon are based on criteria of verification and explanation that depend on a contextualization of the cultural system with as much detail as possible, at times, the post-procedural approach resorts to procedural methods, especially with regard to verification.

In fact, analyzing the cultural domain requires an analytical corpus that can structure the cultural aspects so that they are available for methodological formulations that can be tested. Thus, especially in the context of systemic approaches, the production of valid generalizations remains an important objective in ethnoarchaeological analyses.

From this perspective, the practice of analogy presents itself as a driving force for ethnoarchaeology, considering that this discipline arose in the search to offer more efficient ethnographic analogies to assist in the interpretation of archaeological data. In this context, we can cite the general model and buckshot approaches and the looter and laboratory techniques (YELLEN, 1997 *apud* DAVID; KRAMER, 2002).

Thus, we can consider, based on the ideas of David and Kramer (2002), that culture, whether as an object or as a source, must have a degree of similarity with regard to the variables that could influence the materials, actions or processes after comparisons;

considering that cultures are, for the most part, conservative, if there is a historical descendant relationship between the source culture and the object culture, there will be a greater probability of similarities between them; the most varied analogues possible for the object data should be sought among the sources; The hypotheses arising from analogues must be tested in various ways. However, deductive certainty is compromised by subjectivity and inductive reasoning.

In this understanding, ethnoarchaeology is based on the perception that analogies are made effective from data collected on methodological procedures based on systemic, standardized aspects, subject to testing, explanation and verification.

FINAL CONSIDERATIONS

After analyzing the approaches that are limited to explaining technology to infer about the social phenomenon, we also discuss the material agency and the possibilities of contribution of the ethnoarchaeological discipline in the understanding of the phenomenon in question.

Thus, we refer to the initial question that guided the structuring of the reflections undertaken here: which elements of material culture, especially of a lithic nature, allow interpretations about aspects outside material causality?

In order to answer the above question, we return to the aspects listed by Ingold (1986, 1988, 1995) who points to design as an aspect to be considered in the understanding of the social phenomenon, through the technological aspects observed in the production processes of material culture, considering that this approach tries to overcome material determinism and not stick to, only, to the cultural aspects of materiality.

In this understanding, we have in the methodological proposals of ethnoarchaeology the possibilities of collecting data so that it is possible to perceive the mental aspects that permeate the process of construction of the objective, that is, of material culture. However, in view of the considerations of David and Kramer (2002), we must also consider paying attention to temporal, interpretative and symbolic issues in the application of the ethnoarchaeological analogy.

Therefore, the interpretative possibilities arising from the Anthropology of Technique and Technology and their relationship with the foundations of the Agency in the studies of material culture must consider ethnoarchaeological practices in order to compose more consistent data, especially with regard to mental and symbolic factors that permeate the constitution of the social phenomenon.

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