

Materiality and Immateriality: Exploring Material Culture in the Construction of Cultural Meanings

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Abstract: Material culture encompasses more than objects; it represents the dynamic interactions between people and artifacts, embedding cultural practices, values, and social structures within tangible forms. Rooted primarily in archaeology and anthropology, Material Culture is closely associated with technology, understood as the processes and systems underlying artifact creation and use. This relationship underscores technology's role as a cultural process, involving the organization of knowledge, practices, and social interactions.

While Material Culture focuses on artifacts as cultural symbols, technology explores their production processes. Holistic technologies, characterized by individual artisans' control over production, contrast with prescriptive technologies, which employ segmented labour, reflecting advancements in social and economic organization. The distinction highlights the interplay between technological practices and societal dynamics.

Anthropological studies demonstrate how cultural factors influence technological practices, including gendered roles in the creation of artifacts. Artifacts encode information, not only serving utilitarian purposes but also acting as media for memory, identity, and power relations. The meanings embedded in the objects often transcend their materiality, reflecting complex social and cultural ideologies.

By bridging the tangible and intangible, Material Culture provides a critical framework for understanding the relationship between culture, technology, and society. This perspective reveals how technological processes shape human experience and contribute to the materialization of cultural values and beliefs, offering valuable insights into the evolution of social systems and identities.

Keywords: Archaeology, Artifact, Immateriality, Materiality, Material Culture, Culture, Technology.

1. THE ARTIFACT AS A HUMAN PRODUCT

Archaeology is primarily concerned with the study of human cultures through material remains that have endured over time, serving as concrete evidence of human presence and activity in specific territories. Before addressing theoretical definitions related to Material Culture, it is essential to examine the concept of the artifact, as it constitutes the primary source of information for the archaeological discipline. Archaeology relies on the analysis of artifacts to understand past societies, particularly those that lacked written systems for transmitting knowledge and information. In the case of Prehistory, where no written records exist, the detailed study of material objects, such as tools or pottery, is crucial for reconstructing key aspects of the ways of life and cultural dynamics of these societies.

When studying artifacts, it is essential to recognize that they are not merely physical objects but carriers of encoded information (Miller, 2007) related to production processes, technology, and ways of life. An artifact does not solely reveal its direct function or

purpose; it also serves as a valuable source of knowledge, often referred to as "social information" by specialized authors (Coward, 2016). Artifacts can provide insights into the religiosity, beliefs, values, ideas, and even the social structure of the communities that produced them. For instance, the Maya civilization's jade ornaments offer a vivid case study. Jade pendants, often found in ceremonial or burial contexts, feature intricate carvings depicting deities or celestial events. These objects reflect the Maya's cosmological beliefs, social hierarchies, and trade networks, as jade was sourced from distant regions. Such artifacts encapsulate the dual roles of practical use and symbolic meaning, serving as tangible links to the cultural and spiritual values of their creators. As Beaudry *et al.* (1991, p. 150) state, "artifacts are tangible incarnations of social relationships embodying the attitudes and behaviours of the past." This definition highlights that artifacts, beyond their materiality, contain information about the cultural and social practices of the societies that created them. Rodríguez (2008, p. 479) emphasizes that, when studying objects in archaeology, it is crucial to be aware of our limitations and to formulate appropriate questions to guide our research. Focusing exclusively on the artifact producer, rather than the object itself as the primary source of study, can lead to misinterpretations and divert the focus of the research.

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When analysing artifacts within the framework of archaeological study, it is essential to remember that the artifacts unearthed from archaeological sites inherently carry social connotations. As Rodríguez (2008, p. 479) notes, each artifact has a producer behind it; with the object itself representing the modification of raw material through a social action aimed at a specific purpose, which in archaeology could manifest as a tool, ornament, or even a highly valued instrument (Brumfiel, 2003). Every created object serves a defined function; therefore, the fundamental question an archaeologist must pose when studying these artifacts is why and for what purpose a particular object was created. Behind each object lies its maker, and behind each maker exists an idea, a critical concept to consider in archaeological studies. Without the idea, the object would not exist.

Clearly, for an idea to arise, there must first be a need. Consider, for example, the case of pottery. The shift from a nomadic, hunter-gatherer lifestyle to a sedentary, agricultural one created a new need to store goods. This transition drove the development of pottery, providing a means to maintain ideal temperature and humidity levels for agricultural products over extended periods, essentially for storage. Unlike previous eras, when immediate consumption was necessary, this shift required the preservation of food, leading to the innovation of pottery. In essence, without need, there is no idea; without an idea, there is no object. Therefore, by asking the right questions, we obtain meaningful answers. Renfrew and Bahn (1991, p. 41) address the social aspect of the term by defining an artifact as “humanly made or modified portable objects,” introducing the specific notion of the “human.” This definition, as explained by Holt (1996, p. 5), incorporates three essential concepts: first, it distinguishes artifacts from other material objects by emphasizing that the final product results from human action. Second, it specifies that artifacts are transportable, thus excluding immovable objects, such as structures, from the definition. Third, artifacts are understood as tangible, physically present products of human activity (Beaudry et al., 1991, p. 150), in contrast to intangible human constructs, such as social institutions or states.

It is therefore evident that artifacts are human products, created or modified, and possessing a tangible, physical presence (McDonnell, 2023). However, we must also consider a fundamental aspect related to the functionality of artifacts. For what purpose were these objects made? Why is a particular

artifact created in one form and not another? Addressing these questions, Shanks and Tilley (1994, pp. 130-131) provide an insightful definition of the concept: “inert matter is transformed by social practices or productive labour into a cultural object, be it a product for immediate consumption, a tool, or a work of art.” This definition is particularly compelling as it not only captures the concept of the artifact but also introduces the term “cultural object,” suggesting the idea of artifacts as cultural objects or products of a specific culture.

A relevant case study illustrating these concepts is the production of Terracotta Army figures in the Qin Dynasty of China. These life-sized sculptures, created to accompany Emperor Qin Shi Huang in the afterlife, demonstrate the transformation of raw materials—clay—through intricate technological and artistic processes into cultural objects of profound symbolic meaning. The figures were not only functional in their ritual purpose, signifying protection for the emperor in the spiritual realm, but also embodied the sociopolitical organization of the time. The serial production of these artifacts, achieved through labour-intensive methods and division of labour, aligns with Shanks and Tilley’s concept of “objectification” as the serial transformation of matter into cultural objects.

In other words, artifacts represent the “materialization of culture,” a process realized through technology (Miller, 2007, p. 7). This transformative process, referred to as “objectification” by Shanks and Tilley (1994, pp. 130-131), is described as “the serial transformation of matter into a cultural object” and is “the inevitable consequence attached to and flowing from labour.” The Terracotta Army thus exemplifies how artifacts, as products of technology and social practices, materialize the culture and values of their time.

The idea that artifacts carry meaning and result from social action is a concept supported by sociologist Max Weber, who emphasized the social significance of action. As products of such action, human-made objects are not exempt from his analysis; instead they artifacts are open to interpretation. For Weber (1991, p. 10), “every artifact has a meaning which can be interpreted and understood purely by virtue of its having been produced by human beings and used in human activities (possibly for very different purposes); and unless this meaning is considered, the use of the artifact remains totally unintelligible. It is intelligible therefore by virtue of its relationship with human action,

either to some end or as an end itself, which a certain agent or agents had in mind and toward which action was directed." According to Weber, artifacts, inherently possess meaning and functionality, crafted for specific purposes. The study of these artifacts should extend beyond mere description; and aim to understand their purpose, that is, why they were created. Ignoring an artifact's functionality undermines the analysis as each object was designed to fulfil a specific need.

Ultimately, artifacts do more than fulfil practical needs. As Daniel Miller (1993, p. 397) suggests, artifacts "are a means by which we give form to, and come to an understanding of, ourselves, others, or abstractions such as the nation or the modern." This view aligns closely with the definition previously cited from Renfrew and Bahn, as analysed by Holt. While Renfrew and Bahn emphasize artifacts as physical, material products, Miller posits that artifacts also give rise to immaterial forms, such as nations or institutional systems, which, like artifacts, serve as human constructs designed to meet social needs.

2. TOWARD A DEFINITION OF MATERIAL CULTURE: CULTURE AND MATERIALITY

Today, discussions of Material Culture are inevitably associated with the human sciences, specifically archaeology as a primary field and anthropology as a secondary focus, with historical studies often taking a lesser role, as noted by Sarmiento (2006, p. 286). This hierarchy is understandable; the study of material culture has traditionally focused on examining human-made objects, which serve as the primary source of archaeological inquiry. Archaeologists and prehistorians have long sought to establish connections between action, tool, and labour. Often, they employ complementary disciplines such as Experimental Archaeology and Ethnoarchaeology, to seek ethnographic analogies to elucidate the functionality of artifacts. In other instances, interpretations of artifact functionality emerge from scholars' intellectual frameworks, aiming for a more objective understanding of the unearthed objects (Lemonnier, 1986, p. 147).

The controlled search for analogies with contemporary societies has led some researchers to explore aspects of material culture within living societies, focusing on the relationship between technology and society. These inquiries have prompted ethnologists to develop new approaches in fieldwork and theoretical perspectives on material culture, which in turn has influenced archaeologists to reconsider various aspects of material culture and human

production. Ethnoarchaeology has spurred these reflections, although, as Gardin (cited in Lemonnier, 1986, p. 147) remarked, archaeology is inherently ethnology.

To understand the object, we must first define the concept of Material Culture. Heather Miller (2007, p. 6) provides a straightforward definition, describing material culture as the interaction between people and objects, which are generally considered finished products. Furthermore, the term "Material Culture" should encompass not only the ways people perceive and respond to culturally prescribed meanings associated with these objects, but also the ways that people derive meaning from the objects themselves.

Miller's definition emphasizes that objects are not merely physical items but are deeply interconnected with human activity, carrying social, cultural, and symbolic meanings. Objects are considered "finished products" in the sense that they, complete a life cycle from creation to use and must be understood within the cultural and social processes shaping their production and consumption. The interaction between people and objects is not only functional; it also involves responses to the culturally ascribed meanings attached to these objects, giving them layers of symbolism that go beyond their utilitarian purposes. Moreover, objects generate meaning independently; with their significance often evolving through personal and collective experiences, shaped by the contexts in which they are found. Thus, material culture is not just about the physical objects themselves, but about how these objects are embedded in a web of social, cultural, and symbolic relations that affect both their creation and their use within society.

A more complex definition is provided by E.B. Tylor (1977, p. 1), who views material culture as the "tangible expression of changes brought about by humans in adapting to the bi-social environment and exercising control over it." If human existence were limited to mere survival and the fulfilment of basic biological needs, material culture might consist solely of essential tools and equipment for subsistence, along with defensive and offensive weapons for personal security. However, human needs are multifaceted and complex, and even the material culture of the simplest human society reflects broader interests and aspirations. Any representative manifestation of culture includes artistic works, ornaments, musical instruments, ritual objects, coins or barter items, as well as housing, clothing, and means of food production and transportation.

For Tylor, material culture embodies the complexity of social beings, representing human thought through objects. This view includes artifacts such as art, clothing, and ornaments as essential elements of material culture, as it is not limited to objects solely necessary for survival but captures the expression of human ideas through material form.

The definitions of Material Culture offered by Miller and Tylor present complementary perspectives, emphasizing different facets of the human relationship with objects. Miller's approach centres on interaction and meaning, framing material culture as the dynamic interplay between people and objects, which are viewed as "finished products". This definition emphasizes the cultural and symbolic dimensions of material artifacts, suggesting that objects are not merely functional but deeply embedded with culturally prescribed meanings. Moreover, it highlights the active role of individuals in deriving personal and collective meanings from these objects, underscoring their significance within a sociocultural context.

In contrast, Tylor's definition situates Material Culture as the "tangible expression" of humanity's adaptation to and control over the bi-social environment. He extends the concept beyond mere functionality to encompass the aspirations and complexities of human existence. For Tylor, material artifacts are not just tools of survival but also reflect the broader spectrum of cultural expression, including art, rituals and social structures. His view underscores the dual nature of material objects as both practical tools and carriers of human thought, embodying the intricate relationships between utility, creativity, and cultural identity.

These definitions highlight the dual nature of Material Culture as a system of meaningful interactions (Miller) and as a manifestation of human adaptation and aspirations (Tylor). Integrating these views provides a holistic understanding of material culture, recognizing it as both a process of interaction and a product of human ingenuity, deeply rooted in cultural and symbolic significance.

On the other hand, Sarmiento (2004, p. 279) differentiates between Material Culture and Spiritual Culture. He defines Material Culture as the manifestation of "the external cultural traits that shape economic and technological life," comprising not only material values but also productive forces and the social bonds formed through production relationships, which in turn influence both economic and social

dynamics. In contrast, Spiritual Culture encompasses the array of achievements in science, technology, art, and literature, along with philosophical, moral, political, and religious concepts. Sarmiento emphasizes that this distinction is never absolute, as the creation of objects or tools of any kind necessarily involves intellectual engagement.

The definitions of Sarmiento and Taylor reveal nuanced perspectives on Material Culture, highlighting both shared and distinct emphases. Sarmiento situates Material Culture within the realm of economic and technological life, including productive forces and the social bonds emerging from production relationships. He views it as inherently linked to intellectual engagement, bridging the physical and the conceptual. By contrast, Spiritual Culture encompasses intellectual and artistic achievements, such as science, art, philosophy, and moral or religious ideas, yet remains intertwined with material processes.

Tylor, on the other hand, takes a broader view, defining Material Culture as the tangible outcomes of human adaptation to and control over their bi-social environment. His perspective reflects an evolutionary and integrative framework, emphasizing how material culture not only meets basic survival needs but also embodies the complexities of human aspirations and societal development. Tylor incorporates artistic, symbolic and utilitarian aspects-ornaments, musical instruments, and ritual objects-demonstrating that even the simplest societies produce material culture that reflects a range of human interests beyond immediate practicality.

The key nuance lies in Sarmiento's analytical division between Material and Spiritual Culture, which he argues are interconnected yet distinct, versus Tylor's holistic approach, which integrates all expressions of human adaptation and creativity under the umbrella of material culture. Both perspectives underscore the complexity of human cultural expression but frame its scope and categorization in divergent ways.

It is clear, then, that one of the primary objectives in studying material culture is to understand the beliefs and values embedded within artifacts. By uncovering the meaning or symbolism of these objects, we gain insight into the culture that created them. Material culture, therefore, focuses on the symbols or signs that are apparent in objects. However, Prown (1982, p. 2) suggests that the term "Material Culture" may be

conceptually unsatisfactory, as it holds an inherent contradiction: "material" implies something pragmatic and physical, tangible, as Tylor noted, while "culture" suggests something intellectual or abstract, in other words, immaterial.

From a terminological standpoint, this concept aligns with the philosophical precept of Dualism, particularly in the sense of distinguishing between material and immaterial aspects of culture (Popper, 1994, p. 24; Rodríguez, 2012). This dualistic view posits the existence of two fundamental opposing principles that shape the evolution of the world—often manifesting in contrasts like good versus evil or material versus immaterial. In this sense, material culture is positioned between tangible artifacts and intangible values, beliefs, or ideologies, a distinction rooted deeply in humanity's perception of a universe divided between realms such as heaven and earth.

The relationship between ethnocentrism and philosophical dualism in the context of Material Culture can be examined by exploring how cultural biases and binary thinking influence the interpretation and valuation of material artifacts. Ethnocentrism, the tendency to view one's own culture as central and superior, often frames material culture in ways that prioritize the perspectives, aesthetics, and technological advancements of dominant cultures. This bias marginalizes or devalues the material contributions of other societies, particularly those categorized as "traditional" or "primitive". Philosophical dualism, which separates concepts such as mind and body, material and spiritual, or nature and culture, compounds this issue by creating rigid categories that limit holistic understanding.

In material culture studies, ethnocentric perspectives can lead to the overemphasis of technological sophistication or economic utility, viewing artifacts from non-Western cultures merely as tools for survival, neglecting their roles as expressions of complex social, symbolic, or spiritual systems. For instance, an ethnocentric lens might interpret indigenous pottery solely in terms of its functional use, neglecting its role as a medium of artistic expression or as a carrier of cultural narratives.

Dualism further complicates this analysis by reinforcing the separation of material and spiritual aspects of culture, often aligning materiality with practicality and spirituality with abstraction. This binary overlooks the intertwined nature of these elements in

many societies, where material objects embody spiritual meanings and social relationships. For example, ceremonial objects in indigenous cultures often hold both practical and sacred significance, challenging the dualistic separation of function and meaning.

Combining these perspectives creates a framework that limits the appreciation of diverse material cultures and perpetuates a hierarchical view privileging certain forms of cultural expression over others. Overcoming this requires embracing a non-dualistic and intercultural approach, recognizing that material culture is deeply embedded in the social, symbolic, and spiritual fabric of human existence, regardless of the society it originates from.

Despite these limitations, Prown acknowledges that while the term may not be ideal, it has the advantage of being concise, precise, and widely adopted as a critical framework for studies in disciplines such as archaeology, anthropology, and history.

When discussing material objects, we refer specifically to products, artifacts, or objects crafted or altered by human hands. The primary criterion is, therefore, the involvement of humans in their creation process. Prown underscores this distinction between what is considered material and what is not. For instance, objects created by humans fall under the category of "material," while natural objects, such as trees or rocks, do not, unless there is evidence of human activity on them. For example, lithic tools, although initially natural elements (rocks), become artifacts, such as a biface, once they undergo human modification and acquire an intentional form to fulfil a specific purpose. Another example would be the obsidian knives used in rituals by Native Americans, which combine practical functions with symbolic, or sacred meanings.

This author further emphasizes that while natural objects are not inherently material in this context, certain arrangements can reflect human influence. Examples include trees organized in intentional patterns or animal bones collected in specific areas such as refuse sites. Though still natural, these objects attain the status of artifacts when they exhibit intentional human arrangement or cultural interest. He also classifies works of art as artifacts but within a distinct subcategory, recognizing that they often manifest aesthetic, ethical, or spiritual dimensions that reflect the beliefs and values of a particular culture.

The concept that natural objects, when intentionally arranged, become artifacts is supported by various archaeological examples. For instance, cairns (stone piles) and shell middens show how materials can acquire cultural significance when manipulated by humans. Cairns, commonly found in many indigenous cultures, are created by stacking stones, often to mark burial sites or ceremonial locations. While these materials are not inherently cultural, their placement in specific locations imbues them with meaning through human intention. Similarly, the practice of planting trees in specific patterns for ceremonial purposes, as seen among the Puebloan people in North America, elevates the trees from being mere natural elements to cultural objects. This intentional arrangement of trees reflects their symbolic and ritualistic importance. In a similar vein, the collection of animal bones at designated sites, such as the refuse areas or sacred locations in Chaco Canyon, is an example of how these bones, though natural, acquire cultural relevance through their intentional placement. The arrangement of these bones suggests purposeful action, whether for practical or symbolic reasons. Additionally, works of art like African masks, Mesoamerican stone carvings, and Australian Aboriginal rock art serve as examples of artifacts with deep cultural significance. These art forms serve as more than aesthetic objects; they are deeply embedded with cultural, spiritual, and social meanings. For example, masks in West Africa are not only artistic creations but also serve as symbols of ancestral spirits, used in religious rituals. Thus, these artistic creations are cultural artifacts that reflect the values, beliefs, and practices of the societies that produce them.

3. THE TECHNOLOGICAL DEVELOPMENT AS AN EXPRESSION OF MATERIAL CULTURE

In contemporary Anglophone literature, Material Culture has also become closely associated with the concept of Technology. According to Letchman and Merrill (1977), culture is fundamentally defined by the style, organization, and dynamics of technology itself. Consequently, the concept of culture has been one of the most intensely debated topics among anthropologists (Miller, 2007, p. 6). In contrast, the concept of technology is often comparatively easier to define. This distinction has at times led to the term Material Culture being treated as an equation that somewhat neglects the relationship between culture and objects, a relationship that has been a longstanding focus of archaeological inquiry.

Letchman and Merrill argue that material culture is deeply influenced by the style and dynamics of technology. Archaeological evidence supports this by demonstrating how technology shapes and influences cultural development. For instance, the study of ancient toolkits and their evolution, such as the Acheulean hand axes, shows how early human technology not only served practical purposes but also reflected changes in social organization and technological sophistication over time. These artifacts, found across regions like Africa and Europe, demonstrate the dynamic relationship between technology and culture, as the style of these tools offers insight into both the cognitive capabilities and social dynamics of early humans.

In relation to the long-standing archaeological inquiry into the relationship between culture and material artifacts, studies of burial practices in different ancient cultures, such as the graves of the ancient Egyptians or the elaborate burial sites of the Mound Builders in North America, provide examples where material culture (e.g., grave goods, pottery, and tools) serves as a direct reflection of cultural beliefs, social structures, and even technological innovations. These archaeological sites illustrate how objects are more than passive tools; they actively embody the cultural values and technological advancements of the societies that produced them.

Thus, these archaeological examples align with the arguments of Letchman and Merrill, as well as Miller, showing how material culture is shaped by and reflective of technology and culture, and how objects are integral to understanding the complexities of human societies through both their practical and symbolic roles.

To clarify this discourse, it is crucial to highlight that material culture is not synonymous with the object itself; rather, as previously discussed, material culture pertains more to the interactions between people and objects, emphasizing the cultural meanings embedded within artifacts and how they are interpreted by individuals. This perspective aligns well with views that define culture as information learned and transmitted, both consciously and unconsciously. Since the transmission of information is fundamental to many definitions of culture, the information preserved in written documents and artifacts, which has significantly contributed to human memory transmission, must also be considered part of culture. As Franklin (1992, p. 15)

aply states, culture “is a set of socially accepted practices and values.”

Culture is intrinsically linked to technology, as cultural expression occurs through artifacts, as we will explore below. Indeed, the relationship between culture and technology, as observed by Franklin (1992), is embodied in the use of tools. The use of specific types of tools often reveals gendered associations with specific tools, where specific tools are frequently employed by one gender, thus connecting culture and gender through the practice of specific technologies. Culture can also confer a “right” on practitioners to exclusive use of certain technologies. In this way, professions emerge, each reserving the right to its own specialized tools and practices.

For example, traditional studies in prehistoric ceramics often ascribe pottery production to men, assuming it as a masculine task. Yet, anthropology has challenged such assumptions by demonstrating the nuances in gendered production roles. González Ruibal’s (2005) ethnoarchaeological work on Ethiopian ceramic production reveals that women carry out most ceramic work, from sourcing raw materials to production and distribution. However, one exception exists: men exclusively produce *jebena*, the special coffee pots, which hold higher social and economic value than other ceramic items like kitchen or storage vessels. This supports Franklin’s concept of culture as a set of socially accepted and sanctioned practices.

From an anthropological perspective, Miller (2007, p. 7) posits that all artifacts contain encoded information, and much like written texts, this encoded information can be stored in human memory. From this standpoint, material culture can be understood as the encoded information expressed by humans using objects. Whether the meaning received by others aligns with the original intention of the creator or user is, of course, an inherent challenge, but this inherent challenge is present in all forms of communication.

Additionally, it is essential to recognize that objects not only convey but also store and express information, a key issue within the literature on Material Culture. The broader debate on defining culture involves its existence and expression in two forms: first, as a mental or unmanifested form that records information at an individual level, and second, as an expressed form via objects, behaviours, and discourse at both individual and group levels. The materialization of culture occurs through technology-specifically, the

creation of material objects from this mental or unexpressed cultural form. This form of culture, expressed through technology, is an understood form of information that parallels expression through speech and behaviour.

From an anthropological perspective, some scholars have sparked an interesting debate on the relationship between material culture and technology. As previously discussed, culture is manifested in objects through technological processes. However, does material culture equal technology? Studies in Material Culture often focus on the interactions between people and finished objects, while technology typically emphasizes human practices, and the processes associated with object production. The distinction between these two concepts can become unclear, particularly when researchers analyse both processes and completed objects, especially in tracing the history of these items.

Franklin (1992, pp. 17-18) identifies two primary aspects associated with the development of technology: one concerns labour, and the second, more critical aspect, concerns control. The aim of technology is not just to create an object, but to exercise control over its function and operation. Given this, if technology is linked to control and material culture manifests through objects produced by technological means, material culture may also exert control. Alarcón and Sánchez (2010, p. 271) aptly describe this dynamic: “(...) we believe that socioeconomic or ecological mechanisms can determine which elements related to food, space, practices, and material culture serve as a network of social relations where power and support combine, thereby fostering the construction of social identities.”

Franklin emphasizes that technology is not just about creating objects, but about exercising control over their function and operation. This idea can be supported by archaeological examples of ancient tools and production methods that demonstrate how societies harnessed technology to exert control over their environment and resources. For instance, the development of irrigation systems in ancient Mesopotamia, evidenced by remains of canals, dams, and water storage facilities, illustrates how technology enabled control over agricultural production, which in turn led to the growth of cities and the concentration of power. Control over water, a critical resource, directly influenced social hierarchies and the distribution of

wealth, demonstrating how technology, through control, affected societal organization.

Alarcón and Sánchez expand on this idea by explaining that material culture, through food, space, practices, and objects, serves as a network of social relations where power dynamics are expressed. Archaeological evidence from the ancient Maya civilization provides a compelling example of this dynamic. In Maya cities, monumental architecture such as palaces, temples, and ball courts was not only technological achievements but also expressions of political control and social identity. These structures helped reinforce power, as they were often located in ceremonial spaces that symbolized the divine authority of rulers. The objects found in these spaces, such as jade artifacts, pottery, and obsidian tools, were not just items of daily use but also symbols of wealth, power, and control, reinforcing the rulers' dominance over both material and social resources.

Moreover, the archaeological record of the Inca Empire provides further evidence of the role of material culture in expressing power and social identity. The extensive road networks, advanced agricultural terraces, and the building of administrative centres like Machu Picchu reflect not only technological innovation but also the exercise of control over vast territories. The Inca used these technological advancements to control resources, manage labour, and enforce social structures, all of which were central to their imperial power.

These archaeological examples provide strong evidence for the claims made by Franklin and Alarcón and Sánchez, showing how the development of technology and material culture is deeply intertwined with the exercise of control and the construction of social identities. Objects, spaces, and technologies produced by these societies were not only functional but were also key tools in the expression and consolidation of power, marking material culture as a means of social organization and control.

Before discussing what is meant by Technology and its relationship with Material Culture, it is essential to consider the ongoing debate surrounding the very definition of the term "Technology." This debate arises from differing disciplinary perspectives and objectives. For archaeologists, technology is understood as the process of manufacturing or producing a material object, while for historians and philosophers, the term is more closely associated with design. This definitional

issue stems from traditional distinctions within different academic disciplines, which involve differing sources of data. Archaeologists focus on human-made artifacts—the material objects themselves—while historians and philosophers analyse written texts, dealing with the dichotomy of objects versus written documents, encompassing variations, encompassing variations in scales of production, distribution, and historical context (Prehistory versus History).

But what, then, do we mean by technology? Hodges (1989) defines technology in terms of the stylistic study of artifacts, implying that technology centres on the production process itself rather than on the final artifact. More simply, technology can be understood as "ways of doing something" (Boulding, 1969).

Schiffer and Skibo (1987) and Lemonnier (1986, 1992) expand the concept of technology beyond a mere process, presenting it instead as a fundamentally social concept. For these authors, technology is not only about the knowledge or manipulation of objects but also encompasses shared human knowledge. Technology, in this view, involves the transmission of ideas, whether across generations or between cultures. Building on this social dynamic, Merrill (1977) argues that technology is not solely the act of production; it also involves social interactions. However, these interactions are not simply cultural exchanges; rather, technology carries significant social implications. For Merrill, technology refers to the cultural context surrounding the actions and activities that define methods and processes. In other words, technology involves not only the process itself but also the collaboration and organization of individuals working together to bring an idea or product to fruition.

Miller (2007) consolidates various definitions from these authors to propose her own, synthesizing the concepts of technology as a process and technology as social interaction. According to Miller, technology includes the network of relationships from production to the organization of production, covering the entire cultural system of processes and practices associated with production and consumption. Thus, technology is not only a manufacturing process with social implications but also a "cultural process." This perspective encourages viewing technology as a system that relies on multiple essential elements. Consequently, technology involves organization, procedures, symbols, equations, and, crucially, mental frameworks (Franklin, 1990, p. 12).

Franklin (1992, p. 18) further distinguishes two forms of technological development: holistic technologies and prescriptive technologies. The former is closely associated with what is traditionally viewed as craftsmanship. In holistic technologies, artisans, such as potters, control the entire production process from start to finish, deciding on aspects such as shape, thickness, and other factors informed by personal experience. Each piece is treated by its creator as unique, even if to the observer they appear similar. While workers may collaborate in holistic systems, everyone retains control over a distinct portion of the process.

In contrast, prescriptive technologies rely on a clear division of labour. In this model, production is segmented into multiple specialized tasks, each handled by workers familiar only with their specific phase. This segmented approach means that no single worker oversees the entire production process. Although this model is emblematic of the Industrial Revolution, segmented production processes can be traced back to Roman times, such as in the production of Terra Sigillata pottery, which was produced in stages with precise technological oversight (Franklin, 1992, p. 20). According to Franklin, segmented work demands greater control and knowledge since each stage must align precisely with the next to ensure a successful final product. This form of technology represents a significant evolution in social organization.

4. CONCLUSIONS

Material culture is more than the objects themselves; it encapsulates the information, values, and social practices embedded in those cultural objects. Artifacts thus serve as a medium through which human memory, culture, and social norms are communicated and preserved. The relationship between culture and technology is deeply intertwined. Technology is not only a means of production but also a cultural process that encodes social values and norms. Through technology, material culture gains a structure form, reflecting the beliefs and practices of a society.

Franklin's distinction between holistic and prescriptive technologies illustrates two models of production. Holistic technology is associated with craftsmanship and artisanal control over the entire process, while prescriptive technology divides labour, with specialized tasks managed separately. Each model has social implications, with prescriptive

technology aligning closely with industrialized labour divisions. Technology is not purely functional or mechanical; it involves social relations and shared knowledge. Scholars like Schiffer, Skibo and Lemmonier argue that technology embodies human knowledge and social interactions, emphasizing its role as a vehicle for transmitting cultural practices across generations.

Definitions of material culture and technology evolve across disciplines, highlighting different emphases, such as design versus production, while historians and philosophers may prioritize the design and conceptual framework, illustrating a disciplinary divide that shapes interpretations of technology and culture. Material culture and technology often reinforce social identities and structures of power. Certain technologies become culturally exclusive, defining professions and social roles through the specialized knowledge they require. This creates a network of social relationships that reflect and sustain group identities.

Material culture also conveys encoded cultural symbols and information that may differ from the original intent of the maker or user, much like other forms of communication. The value of material culture lies in its ability to carry, record, simultaneously express information, reinterpreted by successive generations. The development of technology is seen a pivotal factor in cultural evolution. Through the organized creation of artifacts, technology acts as both practical and symbolic means of expressing cultural ideas and social organization.

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