

Research on the Art of Bronze Cutting Knives and the Material Culture of China's Pre-Qin Period

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Abstract: *As a manifestation and catalyst for increased productivity during the pre-Qin era, bronze tools have garnered growing interest within the academic community due to their conceptual origins, aesthetic concepts, and craftsmanship techniques. Nevertheless, the exploration of bronze tools has predominantly centered on archaeological perspectives, prompting the necessity for a more thorough examination from the standpoint of material culture. This paper seeks to delve into the "materiality" of bronze cutting knives, aiming to scrutinize the interplay between aesthetics, design, and craftsmanship within the material realm of the pre-Qin dynasty. Additionally, it endeavors to explore the pivotal role played by bronze tools in shaping the development of material culture. By doing so, this study not only enriches our comprehension of the material culture during that period but also offers insights into the daily life and societal conditions associated with these artifacts.*

Keywords: *Artefacts; Bronze Cutting Knife; Material Culture; Pre-Qin Period*

1. Introduction

"Objects" stand out as the most compelling evidence of the historical development and shifts within human society^[1]. Material culture, in itself, is marked by subtle, dual, and even multiple meanings. Fernand Braudel argues for the importance of incorporating everyday life into the realm of history, asserting that "everyday life, seemingly trivial and inconsequential in the grand scope of space and time, gains significance when observed within the narrow confines of material existence"^[2]. Jean Baudrillard contends that, "In all past civilizations, what endures across generations are the objects, tools, or structures that withstand the test of time"^[3]. Baudrillard's characterization of the "age of things" emphasizes that the matter of material culture is fundamentally a question of the dynamic relationship between things and individuals.

Presently, the examination of material culture has transcended disciplinary boundaries, encompassing fields such as anthropology, archaeology, ethnology, and art, evolving into an increasingly interdisciplinary pursuit. In archaeological studies, material culture typically denotes the collective of various artifacts associated with natural elements^[4]. Classical anthropology's scrutiny of objects revolves around their utility for classification, role as markers of social progress, tools for tracing cultural transmission paths, and their interconnection with technology, environment, and societal advancement^[5]. Sidney W. Mintz's "Sweetness and Power" serves as a paradigm, illustrating how the study of objects interlinks environmental, class, political, economic, and historical-social synthesis through the examination of sugar's transformation from a luxury item to an everyday consumable^[6]. Ethnographers contend that the significance often lies in the relationships people establish with objects, namely the social connections regulated by material possessions^[7]. In the realm of art history, the study of material culture strives to unearth the "materiality" of artworks by scrutinizing their conditions and transformations in specific temporal and spatial contexts. This approach aims to relate these artworks to human ideas, concepts, culture, society, and other influential factors^[8]. The evolution of early Chinese bronze art unfolded across the Xia and Shang periods, reaching a pinnacle during the Western Zhou era when bronze ceremonial art firmly established itself as a predominant artistic expression. During this epoch, bronze primarily served two non-productive purposes: ritualistic practices and warfare. As the social economy advanced, the demand for bronze tools also expanded to support agricultural and craft production.

As the Bronze Age attained its zenith, a defining characteristic was the "utilization of metal tools in agriculture and strenuous manual labor"^[9]. However, current research in China has paid limited attention to the bronze tools integral to daily life production. In contrast, international perspectives often perceive

the production of working tools as both a driving force and manifestation of increased productivity. Presently, the majority of bronze tool studies center on archaeology, employing principles of typology to categorize them, analyze their evolution, distribution, and developmental patterns. The crucial role of bronze tools in shaping the material culture of the pre-Qin dynasty and their contributions to social production and daily life are seldom explored from a material culture standpoint. This paper seeks to scrutinize the nexus between aesthetics, design, and craftsmanship in the material realm by examining various remnants of bronze cutting knives in archaeological contexts. It aims to explore diverse facets of social life during the pre-Qin period, including technology, economy, and living habits. The study of bronze cutting knives not only provides insights into the zeitgeist of the era but also unveils cultural convergences and commonalities between the Middle Kingdom and its surrounding communities.

2. Technology, concepts and change

The subject of discussion in this paper is a specific type of bronze cutting knife employed in daily production and life during the pre-Qin period. Following an extensive period of development and evolution, it evolved into a distinctive object, embodying the characteristics of its time, particularly during the Spring and Autumn and Warring States periods (Figure 1). Examining the bronze cutting knife unearthed from the Pre-Qin period, traditional literature descriptions often prove inaccurately detailed, with some being overly subjective and somewhat ambiguous (Figure 2). Historically, the focus and debate surrounding these objects tended to center on their evolution, development, and practical applications, often overshadowing their role as a medium within the material culture of that society. This oversight may be linked to earlier studies of artifacts that showed less concern for material cultures, exemplified by works like "Gegu Yaolun", which prescribes: "Whenever you see an object, you must read the table, investigate its origin, its merits and demerits, and distinguish its right from wrong."

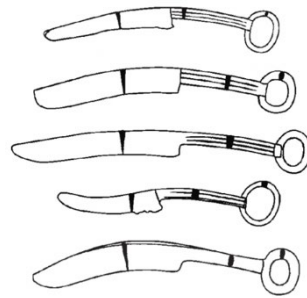


Figure 1: Late Spring and Autumn Period to Early Warring States Period bronze cutting knives from the Hulugou cemetery, Yanqing, Beijing.



Figure 2: Wang Qi and Wang Siyi compiled and edited "Sancai Tuhui", a record of bronze knives (originally published in the thirty-seventh year of the Ming Wanli period, 1609 AD).

The manufacturing technology of bronze cutting knives, as a ubiquitous tool, has a rich history tracing back to early human manufacturing activities. It evolved from bone and stone knives during the Stone Age, progressing to the use of bronze casting. According to historical literature, China commenced bronze casting around 5000 years ago. For instance, "Dong Ming Ji" recounts, "The Yellow Emperor mined copper from Mount Shoushan to start casting knives." Another source, "Shuo Yuan", narrates, "Yao abdicated the world, Shun accepted it, and the food utensils he made were all cut from trees on mountains. They were sawed into utensils, trimmed their traces, painted them with lacquer and ink, and

sent to the palace as food utensils."

Archaeological evidence aligns with the literature, revealing the emergence of bronze weapons in China during the Late Neolithic period. The earliest discovered bronze knife, unearthed at the Linjia Majiayao site in Dongxiang, Gansu, dates back to 2900 to 2740 B.C.^[10] This bronze knife, cast from a single model, measures approximately 12.5 cm in length and 2.4 cm in width. The blade's front part is curved, and the blade itself is slightly concave inward. The knife's edge underwent a process of light cold forging or bump grinding^[11]. This suggests that, during the Late Neolithic period, as labor efficiency improved, people placed higher demands on the hardness and sharpness of production tools. Bronze tools with superior performance enhanced productivity, contributing to the development of the social economy. Technological advancements continuously reshaped people's perspectives on material possessions.

The material life of the pre-Qin period unfolded gradually, building upon the original social structure and economic foundation to form a more advanced society. During the dynamic changes in society witnessed in the Spring and Autumn Period and the Warring States Period, bronze transitioned from primarily serving as ceremonial vessels to becoming everyday utensils for the emerging elite. The elevated elite status triggered a series of material reactions, impacting clothing, homes, dining, and entertainment, all of which became markers of status carefully observed and regulated^[12]. Tools like bronze cutting knives, while serving practical everyday functions, also functioned as symbols of social status for their owners. In essence, these everyday objects bore a profound connection with their owners, recording personal memories and experiences, and contributing value to the social standing of their possessors.

3. Artefacts, design and life

The term "artefact" encompasses apparatus, utensils, or tools, and in the context of ancient artifacts, they are often referred to as "sh ware." This designation primarily encompasses various production equipment or household utensils. The "Historical Records - Five Emperors Chronicle" makes a notation: "Sh ware, sh, number also. Covering the common use of people's tools is not one, so to ten for the number, as if the cloud today 'sh things' also." The significance of craftsmanship is evident in its societal nature, assessed by the extent to which objects were produced in abundance, encapsulating the essence of "sh." The large quantity of archaeological remnants underscores the relationship between the nature of bronze cutting knives and their "quantity." Craftsmanship, by its very nature, involves mass production, and the characteristic of producing the same objects in substantial quantities is intrinsic to craftsmanship^[13].

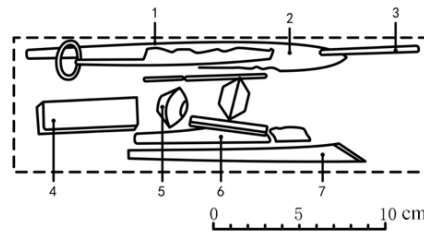
The aesthetics and design of an object are intricately tied to technology. To comprehend the design and utility of copper cutlery holistically, it is imperative to first grasp the societal impetus behind its inception. In the Ming Dynasty, Wen Zhenheng's "Zhangwuzhi" asserts, "The ancients crafted utensils, emphasizing practicality and sparing no expense, resulting in a comprehensive array of utensils, unlike those of subsequent generations"^[14]. Xunzi maintained that the casting of bronze required precision, purity, meticulousness, precise temperature, and composition.

As a common tool in production and daily life, the design of the bronze cutting knife mirrors pragmatic characteristics. Its form and crafting process established a standardized design paradigm for copper artifacts during the Spring and Autumn and Warring States periods, known as the "Zhushi" bronze cutting knife. The "Kao Gong Ji" notes: "Zhushi crafts bronze cutting knives, each measuring one chi (approximately 23.1 cm) in length and one cun (approximately 2.31 cm) in breadth. Six knives can be combined to form a circle." Unearthed pre-Qin tomb bronze cutting knives with ring heads and curved knife system styles maintain the standard features inherited since the Shang and Zhou Dynasties. As common production tools and household utensils, their practical design and simple form facilitate broad societal acceptance and dissemination. Regarding the circular shape, Elie Faure posits that "the spherical wholeness of the undulating form reflects the ancient soul of the Chinese and is the image of the essence of the Chinese people"^[15].

Functioning as a versatile tool, the inward bend of the bronze cutting edge enhances its efficiency in cutting objects, particularly for tasks such as scraping documents, working on bones, and cutting soft materials like cloth and silk. Wu Qichang contends that "the use of knives extends beyond warfare, punishment, and animal slaughter, evolving into knife coins and further into trimming and processing bamboo slips... The shape of the knife, encompassing the edge, back, handle body, and handle end, varies and improves in different directions, primarily dictated by its intended use"^[16]. The multitude of bronze cutting knives unearthed at craft workshop sites, with their diverse styles and quantities, attests to the

depth of societal craftsmanship and its pivotal role in production life during that era.

Excavations of stationery sets highlight the crucial role of bronze cutting knives in cultural transmission. For instance, a lacquer box discovered in Warring States Tomb No. 306 in Shaoxing contained various paperwork tools, including bronze cutting knives, whetstones, and ceramic wire hammers (Figure 3) [17]. The "Han Shu" notes: "Cutting is cutting, pen is pen." Yan Shigu explains that 'cutting' refers to the process of modifying an article or book. In instances where parts needed deletion, a knife would be used to scrape off characters on bamboo slips or wooden tablets. Before the advent of paper, ancient individuals wrote on bamboo and silk, and a cutting knife was an essential writing tool employed to correct errors in the text. This elucidates why Sima Qian mentioned, "When Confucius edited the Spring and Autumn Annals, he used a pen to record certain events and a knife to erase others" [18].



Distribution of stationery within the lacquer box (M306:34)

1.2.3. Bronze knives 4. Tonto 5. Pottery wire hammer
6. bronze cutting knives 7. Bronze carving knife

Figure 3: Lacquer box excavated from Warring States Tomb No. 306 in Shaoxing (Reproduced from the illustration of "Briefing on the Excavation of the Warring States Tomb No. 306 in Shaoxing")

From this standpoint, the design of bronze cutting knives was primarily driven by practical considerations for daily life and work. However, during the Han Dynasty, this type of book-knife, initially carried by officials and scribes, gradually transformed into an object of daily use for a diverse range of people owing to its exquisite craftsmanship. It even became a fashionable ornament for women. In the tomb of Dou Wan, the wife of King Jing of Zhongshan, a total of 49 book knives were unearthed. Some were gilded or plated, and a few even had ivory sheaths. The abundance and craftsmanship of these knives suggest that they were predominantly worn as collectibles or decorative items during their owners' lifetimes.

A set of elegantly designed lacquered wooden dressing boxes (Figure 4) was excavated from a Warring States Period Chu tomb at Zaoyang, Hubei. Half of the inner walls feature grooves and grids that may have held cosmetics, while the other half contains bronze cutting knives and mirrors. The boxes measure 27.8 cm in length, 9.3 cm in width, and 3.4 cm in thickness [19]. It is believed to have served as a tool for applying makeup or cutting makeup products, showcasing the adaptability and evolving roles of bronze cutting knives in various aspects of daily life.

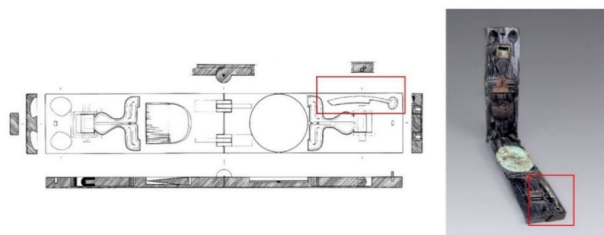


Figure 4: Bronze cutting knife in a lacquered wooden dressing box excavated from the Warring States Period Chu tomb at Julian Dun (Image source: "Brief Excavation Report of M1 at Julian Dun in Zaoyang, Hubei")

Indeed, when viewed through a material culture perspective, the uses of bronze cutting knives are not the sole determining factor in understanding their significance. Their meaning is intricately intertwined with the material world they inhabit. These knives exhibit diverse characteristics in terms of their nature, origin, and purpose, all of which are shaped by environmental and social contexts. The true understanding of their meaning can only be gleaned from the specific contexts in which they were utilized and the political and economic systems in which they were embedded. It is within these contextual frameworks

that the full richness of the cultural and historical significance of bronze cutting knives can be appreciated.

4. Craftsmen, institutions and society

The production of objects represents a complex social form and the transmission of knowledge, encompassing crucial aspects such as technical, institutional, and aesthetic knowledge. In the realm of production, objects are subject to the standardization of production processes. In the case of bronze cutting knives, the production processes were intricately woven with various technologies, forming highly standardized procedures. Even the mining and smelting sites were hubs where standardized technical production knowledge thrived.

During the pre-Qin period, the transmission of such knowledge typically followed a hereditary model. The standards set in place were often derived from the practices of more skilled craftsmen within the ruling class. These standards were then passed down through generations within the artisan community. As the "Kao Gong Ji" articulates, "wise individuals create artifacts, and skilled artisans adhere to their style, preserving the craft across generations—these people are known as craftsmen." A more detailed discussion of the hereditary system of craftsmen can be found in the "Guanzi", written around the Warring States period:

"The craftsmen must be gathered in one place to inspect good wood, to consider the four seasons of work, to distinguish between good and bad quality, and to arrange the various tools. When assessing the grades, specifications, and cuts, attention is paid to completeness and refinement. In this way, they talk to each other about their work, show the finished product, compete with each other, and improve their knowledge. They did this all day long to educate their children, who were used to it from childhood and were stable in their thinking and did not change their minds. Therefore, their fathers and brothers can teach them well without being strict, and their children can learn their skills without effort. That is why the sons of craftsmen often become craftsmen". This passage highlights the communal and generational nature of knowledge transfer within the artisan community, emphasizing continuous improvement and stability in skill acquisition from one generation to the next.

During the Xia, Shang, and Zhou dynasties, craftsmen typically belonged to hereditary professions, operating within a strict management system that regulated their identity, place of residence, and even the specific type of work they undertook. The "Record of Rites" specified that those performing skills to serve higher authorities should not take on a second job or switch between official positions. Even in the Han Dynasty, the concept of "no two tricks for craftsmen" persisted, as seen in works like "Huai Nan Zi", which noted that "If a craftsman has too many skills, he will fall into embarrassment."

This family-based production system and handicraft layout were primarily designed to better fulfill the ruler's ritual and personal consumption needs. "Yi Zhou Shu" stated, "If craftsmen do not reside together as an extended family, they would be unable to sufficiently meet the demands of the government." Archaeological evidence, such as the workshop area of the capital Erlitou, reveals a controlled and monopolized space near the palace, serving the upper ruling class in a governmental capacity^[20]. In essence, this system maintained class and political identity, with standardization, cooperation, and predictability being its fundamental characteristics^[21]. This production system can be characterized as 'monopoly production,' which limited the circulation of artifacts, except for instances in the Shang dynasty when such artifacts were exchanged as gifts, primarily serving as commemorative ritual objects. This practice continued into the Western Zhou period. In broader terms, the basic characteristics of material culture across the Xia, Shang, and Zhou dynasties remain consistent^[22].

During the Spring and Autumn Period and the Warring States Period, the widespread use of iron tools for weapons, agriculture, and production tools fueled the agricultural economy's prosperity. The frequent wars in the late Spring and Autumn Period spurred advancements in military technology and various crafts, altering the existing social relations. Rulers began to encourage trade in goods and recruit craftsmen from different regions, believing that "if the handicraftsman comes, there will be enough money" ("Zhong Yong"). Although certain crafts remained managed and controlled by the state, such as ceremonial weapons, arms, and chariots, private craftsmen were able to produce and sell some daily necessities. These craftsmen are known as "workshop people". As Mencius said:

"A person who trades grain for instruments does no harm to the potter and blacksmith; in the same way, how can potters and blacksmiths be said to be harming farmers by exchanging their instruments for grain? Moreover, why does Xu not act like the potter and the blacksmith, and supply himself with the

items he needs exclusively from his own workshop? Why does he trade and barter with the craftsmen? Why does he not spare himself so much trouble?" ("Mencius")

This passage from Mencius suggests that transactions between people and craftsmen were common during that time. A detailed examination of pre-Qin literature reveals numerous similar accounts, indicating that in this exchange process, people began to perceive traditional artifacts from a monetary perspective. The contradiction between monopolistic structures and individual needs became increasingly apparent as a variety of objects entered circulation. As different types of objects proliferated, the original hierarchy gradually shifted, and everyday items like bronze cutting knives emerged as significant expressions of material civilization and key contributors to commercial prosperity in an era marked by social mobility.

Bronze objects at various levels came to symbolize the history and culture of the pre-Qin period, reflecting the evolving landscape and cultural structure of the transitional social period. Copper mines and smelting workshops were widespread, such as those in Tonglv Mountain in Daye, Hubei, Tongling in Ruichang, Jiangxi, and Dagujing in Linxi, western Liaoning. These sites related to the bronze industry unveil the material culture associated with bronze production in different regions. During the Eastern Zhou period, vassal states vigorously developed their economies, and the bronze industry quickly became a crucial pillar industry alongside traditional agriculture. Extensive bronze mining and smelting operations led to increased social production and organizational capacity, resulting in a new social order. Additionally, the production and manufacture of bronze tools displayed evident regional characteristics. The "Kao Gong Ji" notes: "Zheng's knife, Song's jin, Lu's cutting knives, Wu and Yue's sword, moved to its place and cannot be good, the ground is also." The mention of "Lu's cutting knives" illustrates the process of material production and exchange based on environmental adaptation, providing a dimension for understanding the basic mode of interaction between various regional crafts in society at that time.

The production of bronze cutting knives also delves into technical challenges. The combination of the craftsman's knowledge of materials, skills acquired through repeated production, and tool development enabled the reduction of production costs. By the Warring States period, the stack casting method was widely employed for copper sharpening tool production. This method involves stacking model blocks to form a complete set, with a total gate enabling the production of dozens or even hundreds of castings. The stack casting method is highly efficient, conserves mold materials and metal fluid, reduces costs, and is suitable for mass production of small castings^[23]. For instance, the discovery of an iron blade sharpening tool at the Liangdai village site in Hancheng, Shaanxi Province, dating back to the early Spring and Autumn period, revealed a sophisticated process. The iron blade, made using block refining carburized steel forging, was inserted into a casting mold or pottery model, and copper liquid was poured to form a copper-iron composite ware^[24]. This advancement allowed for mass production of copper sharpeners, and the distribution and types of finds suggest that many were cast locally rather than obtained through exchange or foreign import. From a broader perspective, it is essential to recognize that all technology is a product of society, and the social relations shaped and maintained by technology are fundamentally interdependent.

5. Materiality, ordinary and luxury

The study of material culture centers on the relationship between objects and people, with 'materiality' serving as the key to understanding this connection. While bronze cutting knives may appear mundane, stripping away their instrumental aspect brings their materiality to the forefront. The production of bronze is not merely a technical process; it involves a fusion of technology and the cultural nuances of the society at that time. At times, it becomes necessary to interpret its connotations in terms of ideas, thoughts, and even implicit folklore.

The concept of "hiding rituals in vessels" in pre-Qin design involves bringing the production of objects into the realm of ritual. The design is not solely focused on individual "objects" but also reflects the specific relationship between people and objects in the environment where these objects are used. The use of an object may be interconnected with additional objects, necessitating that the form, material, and decoration of the object align and harmonize with its usage environment. Even an ordinary bronze cutting knife is a composite of various factors.

In the "Spring and Autumn Annals of Yan Zi", there is an account recounting how Yan Zi was dispatched as an envoy to the State of Chu. During his visit, the King of Chu provided a cutting knife for slicing a tangerine. However, Yan Zi did not peel the tangerines and ate them with the skin on, citing a customary practice when receiving gifts from a sovereign. This scenario highlights the nuanced and

contingent nature of material symbols, showing that the use of objects and their meanings can be ambiguous, subject to interpretation in multiple ways, and influenced by the uncertainty of social contexts and the behavior of those who recognize them.

Rituals, inherently hierarchical, involve a structured separation between humans and gods, and among humans themselves. Individuals within the ritual system were both limited and enabled, influencing the design and production of artifacts. Rulers required objects that represented their status, serving as expressions of social stratification and symbols tying individuals to their status, occupation, ethnicity, and more. Ritual objects were crafted using the most advanced techniques of the time and from precious materials^[25]. For instance, bronze cutting knives excavated from the tomb of Zeng Houyi in the early Warring States period exemplify this. One of these knives features a jade head, a ringed bronze structure with a slightly curved blade, and intricate scrolling cloud patterns carved on both sides of the jade head, with a turquoise inlay at the handle's end. Another knife, also with a jade head, is adorned with translucent chi dragons on all four corners, emphasizing the intricate craftsmanship and symbolic significance of these ritual objects.

Zeng Houyi's jade-head bronze cutting knives can be viewed as both a luxury and a necessity, offering interpretations on multiple levels. Examining the blade's body allows us to gauge the level of bronze technology and understand the economic dynamics of production, distribution, consumption, and usage in the Zeng state during that period. The utilization of precious jade for the knife head indicates that its material attributes carried social significance. Moreover, the intricate decorations and carvings on the head unveil the user's totemic cult and spiritual beliefs, serving as symbols conveying a complex social message intricately tied to their status and aesthetic preferences.

The discovery of the bronze cutting knife suspended from the waist of its owner in the burial suggests its close association with the body, individuality, and personality of its possessor. For the nobility of the Middle Kingdom, these knives were often highly restricted, reserved for the elite by the dictates of ritual. As a necessity, they frequently served as expressions of political presence.

Contrastingly, neighboring ethnic minorities, such as the bronze cutting knives found in the cemetery of the Eastern Zhou Shanrong tribe in Jundu Mountain, were mainly positioned below the waist of the burial owner^[26]. This placement, along with the attire, suggests the significance of nomadic riding and archery in the social life of that era^[27]. At the time of burial, these bronze cutting knives held historical importance, likely rusting or corroding with the passage of time. However, these temporal traces would have added to their value. The abundance of exquisite bronzes from the tomb of Zeng Houyi implies that mastery of advanced bronze casting techniques remained a measure of the state's (family's) history, social status, and prestige. Bronze continued to be a key criterion of wealth from the Shang dynasty onwards.

6. Conclusions

The development of productivity during the pre-Qin period saw the emergence of ordinary bronze tools like bronze cutting knives. Unlike ceremonial or war-related tools that were exclusive to the early nobility, these everyday items offer insights into the concept of object-making and shed light on the daily life and social conditions associated with them. Both ordinary individuals and the nobility could possess identifiable bronze cutting knives, serving as symbols of their social status, wealth, and aesthetic preferences. Stripping away the utilitarian aspect of these objects brings their 'materiality' to the forefront. The considerable quantity of bronze cutting knives produced and utilized indicates the abundance of raw materials in China during the pre-Qin period, particularly in the central and northern regions with plentiful bronze ores. Technological advancements, evolving materials, and changing techniques, coupled with shifts in lifestyle, led to the popularity of new patterns. These changes in form not only influenced usage and perception but also contributed to alterations in the social structure of the original social classes.

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