

Ancient Iraq's Pottery and Ceramics Techniques

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Abstract

The art of pottery is one of the ancient arts with a high and precise technique that has undergone evolutionary processes and additions with the development of the components of civil societies throughout ancient eras. Initially, it was limited to its utilitarian aspect, serving social purposes that contribute to fulfilling the individual's practical and functional needs, such as storing oils, perfumes, food, and various liquids (6). However, later on, the aesthetic aspect was introduced, utilizing the surfaces of pottery as a means to depict the artist's ideas, memories, observations, and beliefs. The wheel of progress and practical and technical growth did not limit itself to following traditional methods inherited from previous generations, but they exerted efforts in the pursuit of developing this specialization not only in the pure technical aspect, but also beyond that, reaching the simulation of different aspects of life, which gave this art the characteristic of artistic creativity. Therefore, this research focuses on uncovering the new techniques that have emerged with blogging, and knowing the innovative technologies and methods of applying them in pottery and ceramics.

Keywords: Ancient Iraq, pottery, ceramics techniques.

Introduction

The civilization of Iraq is considered one of the earliest civilizations that has preserved its artistic existence despite the various circumstances that have led to the loss of many archaeological sites, especially since this civilization was characterized by extensive use of clay, which resulted in unique forms, with the north being known for its abundance of stone artifacts and the south being distinguished by its remarkable clay artifacts with multiple features.

As a result of the basic connection between pottery and human life, it became a characteristic of the modern Stone Age. In ancient times, ancient humans used stone or wooden containers to preserve food. Clay was used for the first time to make baskets that do not let water pass through after noticing footprints on the clay drying, which encouraged primitive humans to use clay as lining for baskets to make them solid and suitable for holding water. This helped in creating pottery models without using baskets, so pottery became an important necessity and a product of urgent need in human life (11).

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Research problem:

The archaeological findings discovered in settlements and hills witnessed quantitative and qualitative diversity in the ancient arts of Iraq, especially in dealing with materials and their requirements, along with the tools that showcased techniques and surface treatments. This led to the emergence of a variety of artistic and technical skills that the ancient artist needed to employ in their daily work and achievements. Undoubtedly, these skills provided practical benefits in daily use.

The shapes executed on the surfaces of pottery vessels, for example, were symbols despite representing an extension of realistic shapes and vibrant, colorful scenes on the surfaces. These symbols showcased a collection of artistic scenes, which were few in number, as well as the addition of earth-toned colors. The cylindrical shapes of figures and seals were adapted from Sumerian innovations, and this led to a shift in the use of pottery vessels to immortalize these artifacts. Clay was an easily printable material, and the clay surfaces were modified to accommodate the diverse intertwined ornamentation with writing during various periods, from the Sumerians to modern Babylon. This gradually led to multiple innovations, including the invention and development of the pottery wheel, which evolved from a simple disc shape to the foot-operated wheel. This greatly aided in increasing production density, quality, and speed.

In addition to the invention of the regular glazing technique during the literary periods by the Babylonians, who transformed pottery into what experts and researchers call "ceramic", the researcher raised a question about the technological uniqueness of pottery and ceramic in ancient Iraq during the periods of documentation and what innovations came out of it?

The general framework of the research:

The similar to written era (3500 - 2800 BCE) is considered a transitional phase between prehistoric and historical eras. Some refer to it as the similar to written era, while others refer to it as the similar to historical era. It was named based on the invention of writing, which is considered one of the most important and greatest inventions in the civilization of Mesopotamia. It began with simple pictorial representations of material things and temple matters, and gradually developed into a method of abstract representation, which led to its pictorial nature. Later, it was used to record events, dates, and important she used to write on soft clay tablets, and later it evolved and gradually moved away from images, so she used a set of symbols to express meanings (3). The most important topics of writing during this period were temple accounts, indicating the connection between economic aspects and the development of writing, which later helped highlight political and social aspects (17).

The pottery of this historical stage was distinguished by the use of the potter's wheel, which went through stages before this era. In the first stage of its use, the potter used a wooden disc-shaped support on which he placed a clay mass to create the vessel. Typically, this support was placed on the ground and moved in all directions by hand. This stage is close to manual work and does not have much effect on the nature of the pottery vessel, as it is a facilitation for the potter himself. In the second stage, the wooden support was fixed on an axis, which made it move faster and helped to center the clay piece into a vessel. The potter would then free both hands to work on the vessel. This device is called a slow rotating wheel or "tournette".

And it was the beginning of its use in the second half of the era of slavery, and in the third stage the development of the pottery wheel was completed and the potter became more liberated in using his hands fully, as he started to move the wheel with his foot instead of his hand, and it became known as the fast wheel or the fly wheel or the true potter's wheel, as the ancient Iraqi potters invented the pottery wheel and developed it in the second half of the era of slavery, and it integrated and appeared in its prime in the era

of the Orchid or the era similar to the script, and it had a great influence on the shape of pottery vessels produced in this era in all its forms (1).

And among the techniques used were techniques of coloring pottery with multiple colors. There were three types of pottery, including red pottery with its various shades, such as light red, brownish red, dark red, and orange-red. The second type is gray pottery, and in rare cases, this coating can be black due to high temperatures during firing. As for the third type, it is simple and plain without any coating or decorations after firing (19).

And also among the techniques demonstrated by pottery surfaces is the technique of its carbon firing effect. Also, the simple geometric shapes of the wide ribbons express their influence from previous slave pottery, which confirms the authenticity of the Iraqi civilization and the continuity of its influences throughout the ages (10).

The pottery and its techniques in the era of the dawn of civilizations (Sumerian Golden Age) 2800-2370 BC

Pottery works were characterized by values laden with meanings that emerged from social customs, mental relationships, and their general connection to the Sumerian level of awareness and perception (19). Sumerian pottery is considered one of the most abstract Sumerian art genres, due to its intellectual depth in revealing the truths of things and transforming the cognitive values it carries into abstract decorative forms in many contexts. The Sumerian artist embodied this through the surfaces of pottery works, which shifted towards abstraction, including geometric motifs such as triangles, lines, and zigzags. Natural motifs include wheat spikes, reeds, barley, and animal motifs such as bulls, calves, male goats, and birds (13).

Where Sumerian ceramics excelled as they were made using a potter's wheel, molded from pure and washed clay free of impurities, and coated with a reddish glaze as a surface for decorative engravings that cover the largest area of the vessel. The most commonly used colors were black and brown, red. Additionally, researchers attribute to this Sumerian period a type of pottery known as "Scarlet ware," which was primarily found in the Diyala region and coexisted with the pottery discovered in Nineveh (10).

The Sumerians invented a new and distinctive technique in decorating pottery, which is dividing the surface of the pictorial area into several asymmetrical vertical rectangles. This technique involves designing the triangles in a contrasting direction, coloring the neck and base in red to separate the depicted scenes and create a color balance for the illustrated scene. They separated the shoulder scenes from the body scenes with a broad red strip. Then, they divided the pictorial area of the shoulder into a number of triangles containing abstract shapes of the depicted scene, while the dominance of the main scene was represented by the body of the vessel, which was divided into rectangular areas containing shapes of that scene (10).



Figure 2

Figure 1

Pottery and its techniques in the Akkadian period: 2371-2230 BC:

All that was found about Akkadian pottery were pottery artifacts discovered in Akkadian residential layers in various sites in the Diyala region. A large dish with a cut rim and an outwardly inclined mouth appeared, as well as a large, thin-walled, elongated cup, in addition to small jars with circular bases and outwardly inclined mouths. At the end of the Akkadian period, the researcher found large jar shapes and techniques adorned with overlapping circular rings.

As the colored pottery disappeared during this period, the pottery with natural colors of fired clay emerged, especially those influenced by the gray color. It is decorated with patterns, grooves, finishes, and additional protrusions in the form of ropes or discs with geometric or animal shapes. Pitchers also disappeared during this period, and the jars with handles, which had been used for 600 years, were missed. The researcher noticed that the pottery of this period is free from any additions and engravings, and it is coated with a thin layer of the same clay. Another layer may be added by immersing it in a light clay bath. At the end of the Akkadian period, a type of pottery similar to small cylindrical pots appeared, with the mouth and base almost equal in size, colored black or dark gray, and adorned with white-coated drawings. This material may be added in the form of small consecutive dots above the grooved lines of the shapes, and this is an aesthetic technique (18).

Pottery and its techniques in the Sumerian-Akkadian era 2112_2004 BCE

During this period, Sumerian art became evident through the integration with Akkadian styles, as seen in some sculptural achievements that reveal the nature of this historical stage and its intellectual structure (19). On the other hand, this era witnessed political stability and cultural prosperity, which reflected on the arts in general, especially pottery. The technical styles continued with some changes in the forms of decorations and vessels with handles, as well as their techniques. These vessels were characterized by delicate walls and small sizes, made of pure clay refined from impurities and well-fired. Their forms varied, including spherical or oval jars, cups, and vessels shaped like small love monuments, in addition to bell-shaped vessels that were used to hold the bodies of the deceased and were used as coffins (16).

As the use of deep plates with wide engraved rims and narrow bases continued, a small dish with a wide rim appeared. During this period, the use of hollow pottery sculptures increased, which can be classified into two types. The first type consists of small statues made of pure clay, while the other type consists of pottery panels (9).

Regarding the pottery panels, the Sumerians produced numerous ones that embody what is known as deities, such as Enki, the god of water, and Nintu, the goddess of health, as well as characters from beliefs, ideas, and epic myths, such as Gilgamesh, Enkidu, and the demon Humbaba. These statues were small in size, not exceeding 15 to 20 cm, and were discovered in Ur. One of them represents Enkidu, the companion of Gilgamesh.

And the other is a mistress holding a jug from which water flows, but it has become rarer and more expensive, especially since some sculptures have become rare, like a statue of Kash, which depicts a devil with an animal head holding a bird in his hands, and the second depicts an elegant knight holding a cat in his left hand, as found in Tel Asmar, a unique statue of a naked woman (10). This indicates that the potter has made an effort to suit this expression by employing his techniques accurately .

As for the technique of making the pottery panel, it does not differ from the work of pottery vessels and clay figures. In all cases, the clay is prepared and purified from all impurities, including stones and bones, and sometimes ground straw is added to increase cohesion and hardness. Water is added and fermented to increase cohesion (2). After that, it becomes ready for use. Then the clay is kneaded well to remove internal air bubbles (20).

Pottery and its techniques in ancient Babylonian period 2017-1594 BC:

The term "ancient Babylonian period" refers to the time period between the Third Ur Dynasty (around 2004 BC) and the beginning of the Kassite occupation of Iraq. This period was characterized by the influx of a new wave of people who spoke a Semitic language into central and southern Iraq, known as the Amorites. They took control of the majority of the country and were influenced by its civilization. During this period, Iraq returned to being ruled by city-states until King Hammurabi of the First Babylonian Dynasty managed to unify the country (3).

This era's civilization was distinguished for being very sophisticated in many aspects, including social customs, religious rituals, age of laws and regulations, as well as artistic aspects such as industries and engravings. It was also famous for the abundance of writings left behind, such as the diverse and varied Babylonian pottery discovered which came in different shapes and sizes, without dyes. Among them were coarse-textured, thick-sided jars with a pointed end or a small flat base, as well as small delicate-sided plates and cups. There were also long oval-shaped jars with a small opening, a pointed base, and a small handle. In addition, wide-mouthed jars with protrusions near the neck and upper base were used as an alternative to handles and spouts, and they had a strainer-like pouring spout in the shape of a ram's head. As for the clay, it was pure and smooth, usually used in larger jars. In addition to drinking glasses, a new type has emerged in this period. It is cylindrical or slightly concave in shape, with a pale yellow or reddish color, and there is a black ring surrounding the nozzle (16).

As many terracotta objects appeared, they were used as containers or poorly fired terracotta pipes. In addition, non-colored decorated terracotta appeared through incisions or by pressing the clay, as well as white chalky pigments were used to display geometric patterns (18).

The pottery and its techniques in the Middle Babylonian period 1595-1162 BCE:

This period witnessed the migration of people from the Zagros Mountains known as the Kassites towards Babylon, and they established their control over it with the help of the Hittite king who invaded Babylon, resulting in a joint campaign against Babylon (13).

The Kassites did not have a significant influence on the art of pottery. They integrated with the ancient Babylonian pottery with a slight evolution in the shape of the jars, which became elongated and spindle-shaped, with the disappearance of prominent shoulders. Long, medium, and cylindrical necks appeared, along with small flat bases and protruding spouts (25). The addition of small flat bases to the long oval-shaped jars with wide openings, and cups similar to them, as well as small vessels with a single handle and a small solid base, and small plates with small round bases (16).

The potter emphasized the human and animal form and displayed it in a realistic appearance, in addition to using dyes that are more vibrant and stable than previous periods, showing the dense face coating (4). A colored clay head was found, almost half the size of its natural size, with some sculptural features, where the potter gave the work a spiritual and expressive power through the use of black and red colors (7). Another form represents a lioness made of dyed clay, in a natural size, demonstrating the precision of color techniques in highlighting the detailed anatomy, features, and expressive characteristics (4).



Figure (3): A three-dimensional pottery sculpture representing a lioness.



Figure (4): Details of the face of a lioness made of pottery

As for the techniques of painting on pottery, they were done using brush strokes and the technique of removal after painting, in order to reveal the glazed surface which represents the color of the decoration. These are the most common techniques used in glazing and painting ancient Iraqi ceramic pieces, in addition to the dipping and pouring techniques. As for the decorative designs that covered the surfaces of the pottery, they consisted of curved band designs. The colors used in Kashan pottery are black, red, white, and blue, with the emergence of yellow and cream color (14).

Pottery, ceramics, and their techniques in the Assyrian era (911-614 BC):

Assyrian pottery did not have a single characteristic or fixed features because it closely resembled ancient Babylonian pottery. They used to import Kashi and Nuzi pottery from the south and Khabor pottery from the north and west. All these types of pottery were present in Iraq from the beginning of the 2nd millennium BC until its end. Additionally, they used to make regular pottery vessels of various types and shapes, mostly jars, bowls, and pots, which were used for various daily purposes. This type of pottery was made for the poor class to use for their daily needs, and it was cheap and crude. After the development of the Assyrian state at the beginning of the 9th century BC, the development of art in all its forms became apparent, and Assyrian pottery acquired certain characteristics known as modern Assyrian pottery, which was the most widespread. It was made of yellow clay due to firing and had a dough containing impurities, non-purified, mixed with some straw. Its traces are still visible after firing. There is another type of modern Assyrian pottery that is characterized by being finely crafted from purer dough than the previous type, leaning towards redness, with thin sides. This includes cups, goblets, and sealed pitchers with inscriptions. Towards the end of this period, pottery with decorative patterns covered by a layer of colored powder appeared. The Assyrians achieved high levels of techniques in the art of pottery and ceramics as a result of development. They produced various forms of pottery, including cups, vessels, bottles, and vases, as well as meticulously executed ceramic murals (16).

Assyrian pottery was distinguished by its variety of types and shapes, depending on its purpose. It included pottery vessels, sacrificial holders, pottery cups, small pottery houses, pottery flasks, and pottery sculptures of human and animal forms, as well as flat pottery seals (13). These pottery works had motivations and influences that affected the structure of Assyrian thinking, starting from the temple and the king, who were considered active influences in their artistic and technical achievements (15).

Pottery and ceramics and their techniques in the modern Babylonian era from 626-539 BC:

Despite the short duration of the modern Babylonian era in the life of the Mesopotamian civilization and its status as the last political era, the Babylonians left important traces in the course of general history. Alongside significant architectural remains, particularly the remains of the city of Babylon, this city became, during the reign of the famous king Nebuchadnezzar II, one of the largest cities of the ancient world and dazzled the ancient world. Historians and ancient writers considered it unmatched in greatness and size compared to any other city. The famous Greek historian Herodotus described it as such. This city became so famous that it became the symbol of the Mesopotamian civilization, and its hanging walls and gardens were counted among the Seven Wonders of the World. (13).

The widespread use of fused glass has greatly evolved from simple usage through the glass paste frit (5), which was used in the production of small jewelry. This paste was prepared by crushing sand with soda and white reed, then melting the mixture in a pot until it becomes smooth. It was then remelted after mixing it with water, resulting in a mixture of sodium silicate solution that is used as a blue glaze coating on pottery (8).

This mixture gave a transparent glaze, and when adding copper oxide CuO or any compound containing it, the resulting color is blue or turquoise. This was recorded on a clay tablet found in Babylon, describing a glazing recipe. It is a low-temperature glaze with a firing range between (850-1000), and its general composition consists of raw compounds and a pre-prepared powdered glass paste called "zuku". It is composed of two formulations, one containing an unknown amount of sand and the other containing sodium silicate "alhussu", which is responsible for preparing glazes with lower melting points (4). This mixture was made in three stages: glass preparation, sodium silicate preparation, and the third stage is the preparation of the complete composition (3). The Babylonian era was characterized by the use of molded and multi-colored glazed tiles decorated with patterns (4).

One of the important ceramic achievements of this era is called the Arch of Triumph, also known as the Ishtar Gate. It was adorned with engravings of symbolic animals of the gods Marduk and Adad, such as the legendary dragon and bull figures. These figures were distributed in rows on a blue background, overlaid with a thin layer of pinkish glaze that highlighted the light-colored animals. The dragon was colored light, with its horns, fangs, and split tongue dyed yellow. The honey-colored bulls had green horns and hooves, and a blue line was drawn around their backs and tails, indicating the harmony between the architecture and the decoration formed by this vast number of animal figures, which reached a total of 575 forms (7).



Figure (3): Ishtar Gate

The researcher adds that this ceramic achievement has symbolic connotations, as the ancient potter used blue glaze as a background for the drawings, which symbolizes a sacred symbol to ward off evil spirits and prevent them from entering the city.

Research Procedures/Sample Analysis:

Model (1):



Reference	return	Dimension	place	Time stage	Material	Subject
Mortcat Antoine art in ancient iraq, Figure (2), pg. 24	The Iraqi Museum 23478		Warka	The biblical era - 3500 2900BC	mural	Repeating geometric motifs

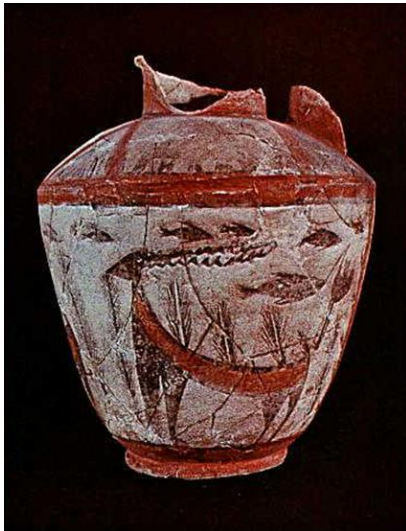
Description and analysis:

Archaeologists have discovered an architectural structure known as the Temple of Inanna in the ancient city of Uruk. The temple consists of a series of consecutive columns made of clay, which were treated with kneading and polishing to create smooth surfaces. The architect found a way to strengthen the clay by decorating and reinforcing it with embedded shapes resembling current nails. The proportion and ratio between the nail's head and its hammered length formed a specific.

The head that is implanted in the body of the clay column has been prepared before implanting it in a colored clay manner. Therefore, three color compounds have been prepared, which have the precision that gives these colors the red color. Iron oxide and black color are added, cobalt oxide and white color are added, calcium carbonate is added, and it has a white color. When analyzing the clay solution, a type of these colors was added to each of them, so the colored solution, after drying, gave three colors: red, black, and white.



This technology, which is an invention of the artist in this era and was not previously known, is still being used in our present time. The method of creating these colors manually is similar to nails or cones. It starts with a disc from the top that extends vertically to form its head and is fixed when it is embedded in the clay surface. Therefore, these colored shapes are formed by an organized geometric design. Each of these colors, after being fixed, takes the form of markers, as shown in the model. It is considered a type of triple innovation: firstly, for colored clay; secondly, for the conical shape; and thirdly, for the specific geometric design. This architectural composition indicates that it works on a mosaic wall system, which is one of the rare innovations that appeared in this place and has not been repeated afterwards.



Model (2)

References	Return	Dimension		time stage	Material	subject
Zuhair Sahib: The Sumerian Arts, p. 250	Iraqi museum	?	Tell Ajrib	Sumerian period Dawn era strains 2370-2800 BC. M	pottery	earthenware jar Colorful

Description and analysis:

This model was found in Tel Ajrab or Aqrab and it is a clay jar made with a fast-spinning potter's wheel. It has a flat circular base and the body widens from the bottom to the top, reaching the shoulder stage at an angle called the angular body Craniate shape according to archaeologists. It then ascends from the shoulder to the neck, which ends with an outwardly inclined medium-height spout. This can be seen through the end of the neck, which has remnants of a handle made in a compressed rectangular shape. The jar's

body is divided into two halves. The upper half consists of two triangles on each side of the vessel, while the lower body is framed by a red strip at the top and bottom. The middle of the vessel features a scene adorned with organic motifs such as animals and plants, colored in red and black on a brown background.

These vessels have been formed through a technical and artistic process, expressing the scene's elements and emphasizing the ability of the Sumerian potter to express vital elements and give them expressive value, creating a complete scene with a creative vision that symbolically represents the theme through the element of movement. This is achieved by using animal motifs that convey the ability to express the theme and the continuity of life through the power of The fertility symbolized by these terms, and the regularity of the pottery wheel used to create it, in addition to the delicacy of its sides and the harmony of the colors used, and the smoothness of the surface, indicate the technological advancement achieved by the Sumerian potter. The potter performed some technical treatments by drawing on a white lining, which is a layer of white clay applied to the ceramic piece in a thin layer while it is still wet. It is then colored with red iron oxide, where it appears predominantly as the shape of the surrounding dairy goat with wheat stalks. The goat is depicted with a long body shape in red iron oxide with a raised tail upward.

The results and the discussion:

1- One of the innovations employed by the artist during the Orchid period is the mosaic wall that was unique and unprecedented in the world at that time, and has not been repeated since, as in model (1).

2- Placing designs on Sumerian ceramic surfaces made the ceramic artist a painter, designer, and sculptor. He demonstrated his ability to color the surfaces with iron oxide on a thin white lining. He also utilized the integration of environments and the absence of shapes in sites characterized by their strangeness. The animal form, It is represented by dignity, dominating the scene, with a flock of fish flying above it, while the opposite is true. Therefore, the strangeness was in these two formations. The plant environment was also harmonized with the environment of the goat, as both were fixed at compatible heights with reality, despite the abstraction of this scene. What the potter intended was to occupy all the spaces of the body, and his design was not only for decoration but rather an expressive scene dedicated to simulating the potter's environment at that time, as in model (2).

Conclusion:

1- One of the reasons that led to the discontinuation of cone screws is the discovery of other methods to organize the wall, such as adobe and glazed wall molds, which were used to cover the external surfaces instead of screw shapes. Another reason is the invention of bricks, which replaced the columns.

2- Graphic designs on pottery surfaces were distinguished by being the oldest expressive painting with scenes inspired by the natural pottery environment, carrying symbolic connotations that express the ideas of society at that time.

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