

Mechanical Engineering in Ancient Egypt, Part 113: Nets Industry and Applications**Galal Ali Hassaan^{1*}**¹*Emeritus Professor, Department of Mechanical Design and Production, Cairo University, Giza, Egypt.****Corresponding Author:** galalhassaan@gmail.comDoi: <https://doi.org/10.26524/ijdst.2.9>**Abstract**

This paper is the 113th in a series of research papers studying mechanical engineering in ancient Egypt. It examines the production of nets and their known applications within ancient Egyptian society during the dynastic era, spanning from the Old Kingdom to the Late Period. By compiling evidence supported by relevant references, detailed descriptions, and current artefact locations, this study highlights approximately nine distinct net applications and six specialized net-based fishing techniques.

Keywords: *Mechanical Engineering in Ancient Egypt, Nets Industry, Nets Applications, Egyptian Dynastic Periods.*

1. Introduction

The ancient Egyptians established great civilian and military industries that helped build a great civilization that extended over thousands of years. I have explored this fact through the publication of 113 research papers covering various industries from the Predynastic and Dynastic eras. Here, I present the 113th paper, which focuses on the net-making industry and some of its important applications in ancient Egyptian society. I will start by presenting the efforts made by research scientists handling this topic since 2005.

Veldmeijer (2005) presented various types 'knotless netting' from Berenike on the Red Sea coast of Egypt and Qasr Ibrim in Lower Nubia of Egypt during the 25th Dynasty. He outlined that knotless netting from Qasr Ibrim was produced using a half-hitch net technique and grass, doum palm leaf material. He presented a photo for a half-hitch net from Qasr Ibrim [1]. Ferguson (2012) in her Master of Arts thesis investigated the iconographic and compositional developments of the fishing and fowling scenes in Egyptian private tombs through the Old, Middle and New Kingdoms. She presented a colored scene for fishing and fowling in the tomb of Mekhu and Sabni from the 6th Dynasty of ancient Egypt. She presented also a colored scene from the tomb of Nakht from the 18th Dynasty depicting a trapezoidal-net for birds fowling [2]. Pieke (2016) outlined that Djehutyhotep's tomb decoration displayed new features with creative reinterpretations of traditional images demonstrating the

processes of innovation, change and reinterpretation in ancient Egyptian art. He presented a line diagram for extensive scenes from the tomb's chapel including a net-decoration band and a drag net for birds fowling [3]. Slingenberg (2016) in her master thesis presented a fowling scene from an ancient Egyptian Old Kingdom elite tomb using a trapezoidal drag net. She presented also a fowling net with an oval-shape and nets with a vegetation surrounding the net [4]. Keith (2017) in his Ph. D. thesis examined fish and fishing scenes within the art of the Old Kingdom elite tombs. He outlined that the 5th Dynasty tomb of Niankhkhnum and Khnumhotep contained the first known occurrence of the V-frame lade fishing net, while the Y-structure of the lade nets was depicted in the tombs of Ibi, Djau and Pepyankh from the 6th Dynasty. He presented funnel traps first appeared during the mid-5th Dynasty in the tombs of Niankhkhnum and Ty in Saqqara. He presented also scenes from the tomb of Hesi about funnel traps nets for fishing, scene from mastaba of Vizier Kagemni from the 6th Dynasty and mastaba of Royal Servants Niankhkhnum and Khnumhotep of King Nyuserre Ini of the 5th Dynasty [5].

Torres (2020) outlined that 'the 4th and 5th ancient Egyptian bead-dress stands out as unique, mysterious and marvelous in antiquity'. She presented a bead-net dress in display in the Museum of Fine Arts at Boston from the 4th Dynasty of ancient Egypt and another bead-net dress in display in the Petrie Museum at London from the 5th

Dynasty of ancient Egypt [6]. Soleman (2020) in her study of the role of white linen in ancient Egypt women's dresses presented some scenes from ancient Egyptian tombs with some information about net's applications. She presented a colored scene from the tomb of the Scribe and Astronomer Nakht who served during Pharaoh Thutmose IV of the 18th Dynasty depicting 2 men carrying a large net-basket. She presented also a beaded-net dress from the time of King Khufu of the 4th Dynasty [7].

Spizzichino (2022) analyzed examples of bead-nets from the Old Kingdom to the Ptolemaic Periods according to beads size, shape, material and color. She presented a line diagram for a bead-net dress covering a mummy from shoulders to ankles. She presented also a bead-net dress from the 5th Dynasty in display in the Petrie Museum, a bead-net dress from the 6th Dynasty in display in the Museum of Fine Arts, a bead-net robe from the tomb of Pharaoh Tutankhamun of the 18th Dynasty published by H. Carter in his notes and a bead-net cover of a mummy from the 25th Dynasty in display in the Ashmolean Museum [8].

Tawfek, Abo-Elmagd and Kamal (2025) identified various types of nets used as fishing and foiling tools. They investigated the net decoration in desert hunting, using nets as containers. Their work covered examples and net-types from Old, Middle and New Kingdoms. They presented 4 types of knots used in the production of fishing and container nets. As net examples, they presented scenes for drag nets from Djehutyhotep's tomb from the 12th Dynasty, drag net from Rekhmire's tomb from the 18th Dynasty, rounded-bag net from the Idut's tomb from the 6th Dynasty, a hand-net from the Senbi's tomb of the 12th Dynasty, weir trap from Ty's tomb from the 5th Dynasty, trapezoidal-net for birds foiling from Ptahhotep's tomb from the 5th Dynasty, trapezoidal-clap net from Amenemhat's tomb of the 12th Dynasty, clap-trapezoidal net for birds fowling from the tomb of Djehutyhotep's tomb of the 12th Dynasty and a clap net in the tomb of Haremhab of the 18th Dynasty. They presented also decorative nets on bearer's baskets in Pepyankh's tomb of the 6th Dynasty, porters decorated boxes with net decoration from the Rekhmire's tomb of the 18th Dynasty. They presented also a holding net scene around a large wine bar in Rekhmire's tomb [9]. El-Aboudy (2026) studied a lesser-known facet of ancient Egyptian fishing techniques depicted in Old Kingdom tombs. She presented a fishing scene from the Idut's tomb at Saqqara from the 5th Dynasty where a man was fishing using a hand net [10].

2. Net Design

The ancient Egyptians were pioneer mechanical designers. Some of their design features regarding nets-design and applications:

1. They designed nets with various types of knots (knotted nets), [11].
2. They designed nets without knots (knotless nets), [12].
3. They used nets in many domestic applications.
4. They used various local materials to manufacture nets.

3. Fishing Nets in Ancient Egypt

The ancient Egyptians used various design of fishing nets to suit different sources of fish in the River Nile, its channels, the marshes, the Red Sea and in the Mediterranean Sea. Here are some of the fishing net types designed and used by them.

3.1. Open-Fishing Nets

1. The open-fishing net was designed with open top and hold in position in Nile-channels and marshes using two parallel or face-to-face fishing boats.
2. The first example is a physical wooden-model of this fishing system found in the tomb of Governor and High Steward Meketre in Sheikh Abd el-Qurna, West Thebes who served during the reign of King Mentuhotep II down to King Amenemhat I of the 12th Dynasty, 2061-1962 BC. The colored model is now in display in the Egyptian Museum at Cairo and shown in (Figure 1) [13]. The open mouth of the net has an oval shape with strong structure to support the loaded-net which is carried by two ropes hold by the fishermen in the two boats. Sinking weights are secured to the net frame at its mouth to sink the net into the water.



Figure 1: Open Fishing Net from the Tomb of Meketre of the 12th Dynasty

- The second example is an open fishing net from the tomb of sculptor Ipuu located at Deir el-Medina of Thebes who served during the reign of Pharaoh Ramses II of the 19th Dynasty, 1279-1213 BC shown in (Figure 2) [14]. Two fishmen are using this fishing net every one of them is on fishing boat face-to face with sinking weights on the net frame.



Figure 2: Open Fishing Net from the Tomb of Ipuu of the 19th Dynasty

3.2. Drag Fishing-Net

- Drag fishing-nets were used by the ancient Egyptians for mass-fishing for large quantities fishing.
- The first example is a drag net fishing relief in display in the Metropolitan Museum of art at NY carved on a 345 mm height limestone fragment from the reign of King Khufu of the 4th Dynasty, 2619-2566 BC shown in (Figure 3) [15]. The net is operated by two rows of fishmen pulling the lifting cords of the net while a number of floaters are used to help keeping the net near the water surface not to sink deeply under its load.



Figure 3: Relief of Drag Fishing Net from the 4th Dynasty

- The second example is a line diagram for a drag fishing net scene in the tomb of Vizier Antefoker who served during the reign of King Amenemhat I and King Senusret I of the 12th Dynasty, 1991-1926 BC shown in (Figure 4) [16]. It depicts the same fishing technique of the 4th dynasty shown in (Figure 3).

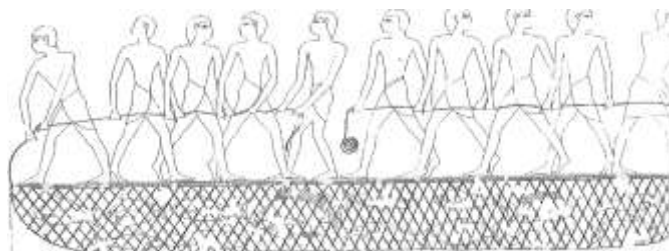


Figure 4: Line Diagram of Drag Fishing Net from the 12th Dynasty

- The third example is a line diagram scene for a drag fishing net in the tomb of Vizier Rekhmire at Thebes who served Pharaohs Thutmose III and Amenhotep II of the 18th Dynasty of ancient Egypt, 1479-1398 BC shown in (Figure 5) [17].

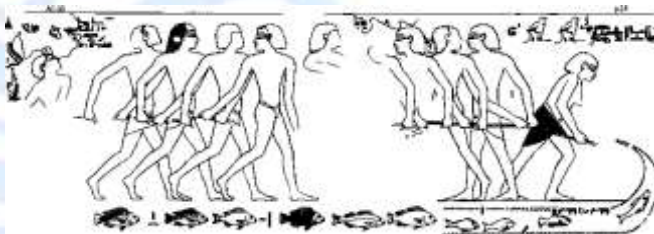


Figure 5: Line Diagram of Drag Fishing Net from the 18th Dynasty

3.3. Hand Fishing-Net

- The hand fishing net was designed for personal use by one fisherman in shallow water. It appeared in ancient Egypt after 2160 BC.
- The first example is a colored scene from the tomb of Governor Anchtifi served during the First Intermediate Period, 2160-2055 BC and shown in (Figure 6) [18]. It is used by one fisherman, used in shallow water such as in marshes, has a conical shape with opening at the near end to the fisherman and used by a one fisherman.



Figure 6: Scene of Hand Fishing Net from the 1st Intermediate Period

3. The second example is a line diagram for a hand fishing net for shallow water sources depicted in the tomb of Governor Senbi who served during the reign of King Amenemhat I founder of the 12th Dynasty, 1991-1962 BC shown in (Figure 7) [19]. It has a conical shape with opening at the far end from the fisherman and used by only one fisherman.

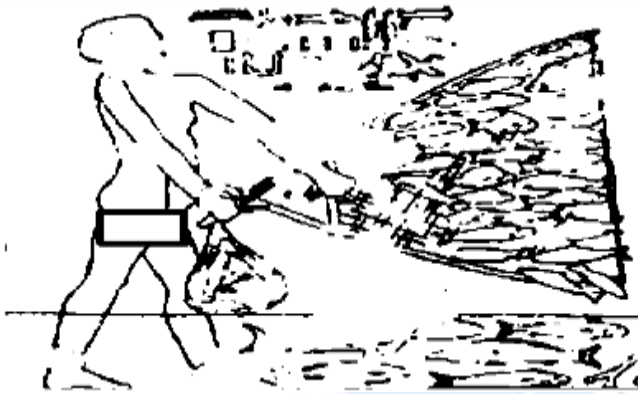


Figure 7: Scene of Hand Fishing Net from the 12th Dynasty

3.4. Fishing Funnel Trap

1. A Fishing funnel trap appeared in ancient Egypt during the era of the Old Kingdom.
2. The first example is a line diagram of a fishing funnel trap from the mastaba of the two High-Ranking Royal Servants Niankhkhnum and Khnumhotep at Saqqara who served during the reign of King Nyuserre of the 5th Dynasty, 2445-2421 BC shown in (Figure 8). The image depicts four funnel traps: three small traps having straight centerline and bigger trap having curved centerline used by fishermen on the top of fishing boats in series fishermen are not shown.

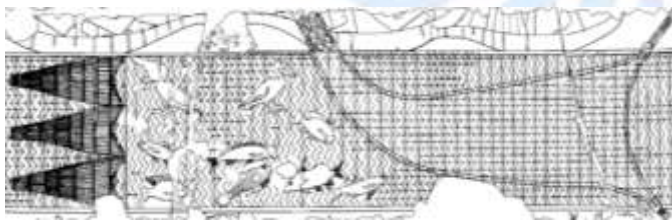


Figure 8: Scene of Fishing Funnel Traps from the 5th Dynasty, Mastaba of Niankhkhnum and Khnumhotep

3. The second example is a line diagram of a scene for a funnel trap from the mastaba of overseer of the works of the King Hesi at Saqqara who served during the reign of King Djedkare of the 5th Dynasty, 2414-2375 BC shown in (Figure9) [20]. Multi-fishing funnel traps are set in two parallel lines for mass-fishing and storage during the 5th Dynasty.

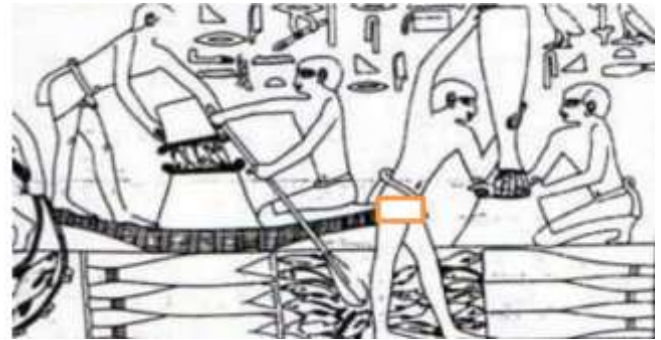


Figure 9: Scene of Fishing Funnel Traps from the 5th Dynasty, Mastaba of Hesi

4. The third example is relief of a fishing funnel trap from the mastaba of Princess Idut at Saqqara, daughter of King Unas, the last King of the 5th Dynasty, 2375-2345 BC shown in (Figure 10) [21].



Figure 10: Relief of a Fishing Funnel Trap from the 5th Dynasty, Mastaba of Idut

3.5. Fishing Weir Trap

1. The first example of the use of fishing weir traps in ancient Egypt is a line diagram for a relief for a fishing weir trap from the mastaba of 'Overseer of the Pyramids' Ty at Saqqara who served King Nyuserre of the 5th Dynasty, 2445-2421 BC and shown in (Figure 11) [22]. It is a modified version of the fishing funnel trap. Here the designer incorporated dynamic, cord-operated gates along the entire length of the weir. This allows fishermen in nearby boats to actively seal off specific chambers, trapping the fish and preventing any chance of escape.
2. The second example is a scene of a weir trap in the mastaba of Vizier Mereruka at Saqqara who served during the reign of King Teti, the founder of the 6th Dynasty, 2345-2333 BC shown in (Figure 12) [23].

Relief depicts one fishman controlling a cord-operated gate of the weir. The weir characteristics are not clear in this part of the image as was the case.



Figure 11: Scene of a Fishing Weir Trap from the 5th Dynasty, Mastaba of Ty



Figure 12: Relief of a Weir Fishing Trap from the 6th Dynasty, Mastaba of Mereruka

3.6. Fishing Cast Net

Cast nets were used in ancient Egypt for fishing during the dynastic periods with excavated physical models starting from the era of the Old Kingdom.

4. Birds Fowling Nets in Ancient Egypt

1. 'Birds fowling' means the activity of wild birds referring to the practice of pursuing, shooting or trapping [24].
2. Ancient Egyptians as a civilized nation practiced 'fowling' as a protein source in food preparation and for hunting by elite citizens and ruling staff.
3. 'Fowling' was authorized in ancient Egypt through tombs scenes and reliefs since the era of the Old Kingdom down to the era of the New Kingdoms as will be depicted by the following examples.
4. The first example is a colored scene of fowling using a hexagonal clap net in the Saqqara-mastaba of Royal Nefermaat Son of King Snefere, founder of the 4th

Dynasty, 2613-2589 BC shown in (Figure 13) [25]. The clap net is pulled using a rope secured to its front end by a number of fowling men.



Figure 13: Scene of a Fowling Clap Net from the 4th Dynasty, Mastaba of Nefermaat

5. The second example is a scene for a hexagonal clap fowling net from the mastaba of Vizier Kagemni at Saqqara who served during the reign of King Teti, Founder of the 6th Dynasty, 2345-2333 BC shown in (Figure 14) [26]. The fowling net was pulled by 4 fowling men.



Figure 14: Scene of a Fowling Clap Net from the 6th Dynasty, Mastaba of Kagemni

6. The third example is a colored scene for a hexagonal clap fowling net from the tomb of Governor Khnumhotep II at Beni Hasan who served during the reign of King Amenemhat II and Senusret II of the 12th Dynasty, 1929-1878 BC shown in (Figure 15) [27]. The fowling net was rapped from one side around a tree to keep it in a fixed relative position to the tree.



Figure 15: Scene of a Fowling Clap Net from the 12th Dynasty, Tomb of Khnumhotep II

7. The fourth example is a scene for a hexagonal clap fowling net from the tomb of Governor Djehutihotep at Deir el-Bersha who served during the reign of King Senusret II and Senusret III of the 12th Dynasty, 1897-1839 BC shown in (Figure 16) [28].

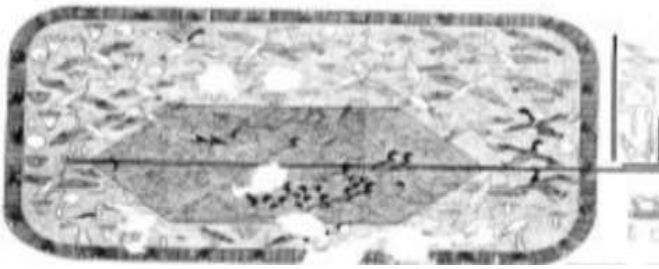


Figure 16: Scene of A Fowling Clap Net from the 12th Dynasty, Tomb of Djehutihotep

8. The fifth example is a colored scene for a hexagonal clap fowling net from the tomb of Overseer and Scribe Userhat at Thebes who served during the reign of Pharaoh Amenhotep II of the 18th Dynasty, 1425-1398 BC shown in (Figure 17) [29]. The net is pulled by three men.



Figure 17: Scene of a Fowling Clap Net from the 18th Dynasty, Tomb of User hat [29].

9. The sixth example is a colored scene for a hexagonal clap fowling net from the tomb of Overseer and Scribe Nakht at Thebes who served during the reign of Pharaoh Amenhotep III of the 18th Dynasty, 1398-1350 BC shown in (Figure 18) [30]. This is a unique design for the clap net. It has semi-hexagonal boundaries with rounded corners which is an outstanding design characteristic invented by the ancient mechanical designers.



Figure 18: Scene of a Fowling Clap Net from the 18th Dynasty, Tomb of Nakht

5. Jar-Carrying Nets

1. The ancient Egyptians were great producers of liquid

products such as wine [31], beer [32] and honey [33]. They had to store those liquids in large ceramic and pottery jars for purpose of transportation, offering and storage in temples and work locations. To ease the transportation process, they used a strong net around the jar as will be depicted in the following examples:

2. The first example is a colored scene for jar transportation in the mastaba of Vizier Kagemni at Saqqara who served during the reign of King Teti, Founder of the 6th Dynasty, 2345-2333 BC and shown in (Figure 19) [34]. The scene depicts two large jars about 1.5 m height set side-by-side on a sledge through a number of ropes rapped around the jars forming nets and tightened to rings on the sledge. The technology of using sledges in transporting very heavy structures and using lubrication technology to ease this process is ultimately an ancient Egyptian technology [35].



Figure 19: Scene of a Jar Transportation from the 6th Dynasty, Tomb of Kagemni

3. The second example is a line diagram scene for jar transportation in the tomb of Vizier Antefoker at Sheikh Abd el-Qurna, Theba who served during the reign of King Amenemhat I and Senusret I of the 12th Dynasty, 1991-1926 BC shown in (Figure 20) [36]. The jars are small carried by porters using a pole carrying two objects one per each side with the help of the nets.
4. The third example is a large ceramic storage jar carried by a knotless net shown in its location in Qurna burial discovered by Flinders Petrie in 1908 and shown in (Figure 21) [37]. It was used for the storage of water or food during the era of the 17th Dynasty of the Second Intermediate Period, 1580-1550 BC and it is now in display in the National Museums of Scotland [38].
5. The fourth example is a colored scene for a large jar covered by a carrying net carried by two bearers using a pole from the tomb of Vizier Rekhmire of the 18th Dynasty, 1479-1398 BC and shown in (Figure 22) [39]. The pole is loaded at its middle for equal loading on

on the bearers.

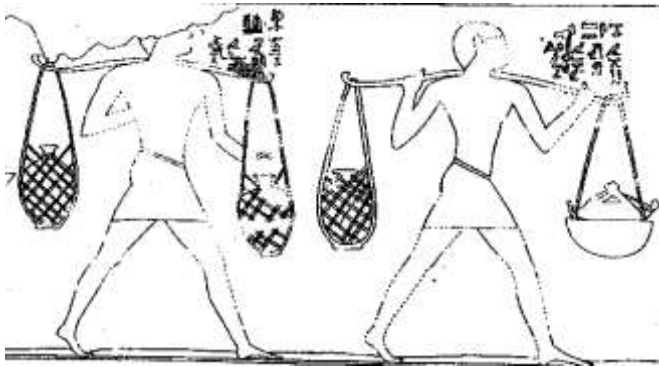


Figure 20: Scene of a Jar Transportation from the 12th Dynasty, Tomb of Antefoker



Figure 21: Storage Jar from the 17th Dynasty



Figure 22: Scene of a Jar Transportation from the 18th Dynasty, Tomb of Rekhmire

6. The fifth example is a pottery jar carried by a linen net from the tomb of Architect Kha who served during the reigns of Pharaohs Amenhotep II and Thutmose IV of the 18th Dynasty, 1425-1353 BC and shown in (Figure 23) [40]. It is now in display in the Turin Egyptian Museum, Italy



Figure 23: Pottery Jar from the 18th Dynasty, Tomb of Kha

6. Agricultural Net Basket

1. The ancient Egyptians established a sophisticated agricultural system essential to their daily survival. Efficiently managing this system required transporting harvested crops from the fields to processing sites for grain extraction, as well as moving livestock food to storage facilities. To facilitate this logistics network, they crafted large net baskets designed to optimize both bulk transportation and ventilation.
2. Here are some examples of agricultural net baskets from the era of the 18th Dynasty.
3. The first example is a net basket from the tomb of Overseer and Scribe of the Fields Menna at Sheikh Abd el-Qurna of Thebes who served Pharaoh Thutmose IV of the 18th Dynasty, 1420-1411 BC and shown in (Figure 24) [41]. The basket was carried by two men using a pole on their shoulders.



Figure 24: Net Basket from the 18th Dynasty, Tomb of Menna

4. The second example is net basket from the tomb of Overseer Nakht who served during the reign of Pharaohs Thutmose IV and Amenhotep III of the 18th Dynasty, 1398-1350 BC shown in (Figure 25) [30]. This net basket was full of harvested crops and carried by two men to the location of grain extraction.



Figure 25: Net Basket from the 18th Dynasty, Tomb of Nakht

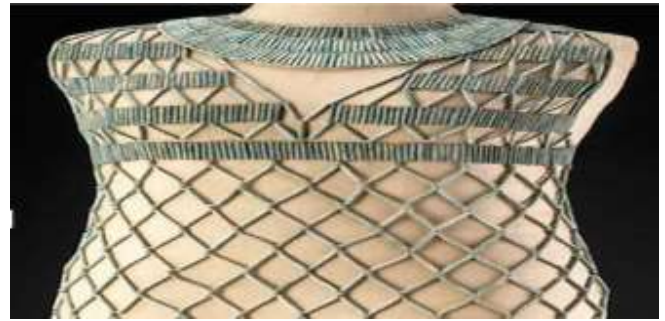


Figure 26: Net Dress from the 4th Dynasty, Mastaba of Princess Nefertiabet

7. Bead Net Dress and Mummy Shrouds

1. The capability of ancient Egyptians to manufacture entire garments from beads remains a profound revelation for contemporary scientists, given that beadwork was traditionally associated with jewelry rather than apparel. These intricate beads were crafted using up to three locally sourced materials. Remarkably, the sophisticated aesthetic of the bead patterns and the overall dress architecture evoke the ambiance of a modern, high-end Parisian fashion house rather than a civilization flourishing 4,600 years ago.
2. Here we present three examples of the bead net dress produced during the Old and Middle Kingdoms and two shrouds from the 25th and 26th Dynasties of ancient Egypt.
3. The first example is a bead net dress from the tomb of Princess Nefertiabe, 4th Dynasty, reign of King Khufu, 2551-2528 BC produced from faience and gold beads in display in the Museum of Fine Arts at Boston, USA and shown in (Figure 26) [42]. It is assembled from about 7000 beads covering the whole body except the hands and belongs to Princess Nefertiabet, Daughter of King Khufu of the 4th Dynasty [43]. The horizontal strips are composed of equal length-adjusted beads while the collar is composed of adjacent beads of different-gradually increasing or decreasing lengths.
4. The second example is a bead net dress of an elite noblewoman from the 5th Dynasty, reign of King Djedkare Isesi, 2414-2375 BC in display in the Petrie Museum of Egyptian Archaeology at London produced from faience beads and shown in (Figure 27) [42]. The top part of the bead dress of the 5th Dynasty is different in its top part from that of the 4th Dynasty. Here, it is composed of two bead-equal-strips with rectangular and circular decorations all made of cylindrical beads as the whole dress.



Figure 27: Net Dress from the 5th Dynasty

5. The third example is an offering bearer statue wearing a bead net dress from the tomb of Governor and High Steward Meketre in Sheikh Abd el-Qurna, West Thebes who served during the reign of Kings Mentuhotep II down to Amenemhat I of the 12th Dynasty, 2061-1962 BC. It is in display in the Egyptian Museum at Cairo shown in (Figure 28) [42]. The decorations are different than those in the models of Dynasties 4 and 5 with the addition of different colors in the dress and collar.



Figure 28: Net Dress from the 12th Dynasty

6. The fourth example is a bead net shroud from the tomb of the Mistress of the House Tabakenkhonsu during the reign of Pharaoh Taharqa from the latter half of the 25th Dynasty, 690-664 BC. It is in display in the Metropolitan Museum of Art at NY and shown in (Figure 29) [42]. It was constructed from faience beads with some decorations with height of 1.07 m.

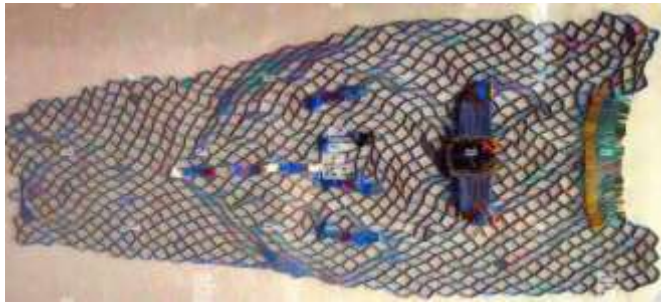


Figure 29: Net Shroud from the 25th Dynasty, Tomb of Tabakenkhonsu

7. The fifth example is a bead net shroud of an elite woman from the 26th Dynasty, 664-575 BC. It is in display in the Art Institution of Chicago, Chicago and shown in (Figure 30) [44]. It was decorated by a scrap and unique decorations on the disease's chest.



Figure 30: Net Shroud from the 26th Dynasty

8. Net Decoration

1. The ancient Egyptians used net bands to provide barrier surface, decorate scenes in tombs by net-bands, or decorate bearer's boxes in processions statues as depicted in the following three examples.
2. The first example is a line-diagram scene in the tomb of Vizier Antefoker at Sheikh Abd el-Qurna at Thebes, hunting in the desert using a net barrier in front of him to increase the efficiency of the hunting operation. He served during the reign of Pharaohs Amenemhat I and Senusret I of the 12th Dynasty, 1991-1626 BC and the net-decoration is shown in (Figure 31) [45].

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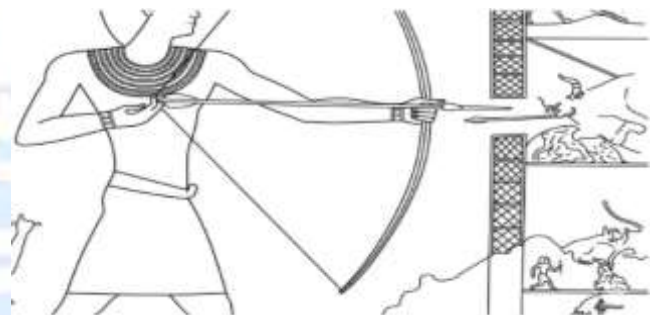


Figure 31: Net Barrier in a Hunting Scene from the Tomb of Antefoker, 12th Dynasty

5. The second example is a line diagram of a hunting scene in the desert in the tomb of Vizier Rekhmire at Sheikh Abd el-Qurna at Thebes, hunting in the desert using two net-bands as borders for the hunting area. Rekhmire served the Pharaohs Thutmose III and Amenhotep II of the 18th Dynasty, 1479-1350 BC and the scene is shown in (Figure 32) [46].



Figure 32: Net Decoration of a Hunting Scene from the Tomb of Rekhmire, 18th Dynasty

6. The third example is a colored scene for a net decoration for a box carried by a bearer in a funerary procession in the tomb of Vizier Rekhmire of the 18th Dynasty and shown in (Figure 33) [46]. The box is

covered by a decorating net and supports another offering on its top part.



Figure 33: Net Decoration of an Offering Box from the Tomb of Rekhmire, 18th Dynasty

9. Beds and Chairs Accessories Nets

1. Did the ancient Egyptians elites and rulers used nets in producing some of their beds and chairs? Physical evidences let us say 'yes'. Here are some evidences from the Old and New Kingdoms of ancient Egypt.
2. The first example is a replica for the bed of Queen Hetepheres, wife of King Snefru (Founder of the 4th Dynasty, 2618-2589 BC) in display in the Museum of Fine Arts at Boston [47] and shown in Fig.34. The slats supporting the mattress is one piece of a strong plant-cords net to provide more comfort under the sleeper.



Figure 34: Bed Replica of Queen Hetepheres, 4th Dynasty

3. The second example is the bed of Architect Kha who served during the the reigns of Pharaohs Amenhotep II and Thutmose IV of the 18th Dynasty, 1425-1353 BC in display in the Turin Egyptian Museum at Italy and shown in Fig.35 [48]. The net-slat supporting the mattress has the same design of Queen Hetepheres of the 4th Dynasty. The same techniques is used for the furniture-piece as a table beside the bed.



Figure 35: Bed of Architect Kha, 18th Dynasty

4. The third example is the gilded bed of Tutankhamun, the 13th Pharaoh of the 18th Dynasty, 1332-1323 BC in display in the Grand Egyptian Museum at Giza and shown in (Figure 35) [48]. The net-slat supporting the bed-mattress has the same design of the 4th Dynasty.



Figure 36: Gilded Bed of Pharaoh Tutankhamun, 18th Dynasty

5. The fourth example is a replica for the thrown chair of Queen Hetepheres, wife of King Snefru (Founder of the 4th Dynasty, 2618-2589 BC) in display in the Harvard Museum of the Ancient Near East, Cambridge, Massachusetts and shown in (Figure 36) [49]. The slats supporting the mattress is one piece of a strong plant-cords net to provide more comfort.



Figure 37: Thrown Chair Replica of Queen Hetepheres, 4th Dynasty

10. Conclusion

This research presented a comprehensive overview of the structural characteristics and diverse applications of nets within ancient Egyptian society. The study identified and chronologically mapped six distinct types of fishing nets: drag nets (originating c. 2619 BC), funnel traps (c. 2445 BC), weir traps (c. 2445 BC), hand nets (c. 2160 BC), open nets (c. 2061 BC), and cast nets dating back to the Old Kingdom. In fowling, ancient Egyptians developed specialized bird-hunting technologies, utilizing standard hexagonal clap nets starting in 2613 BC, which later evolved into hexagonal clap nets with rounded corners by 1398 BC. For logistical and transport purposes, jar-carrying nets were engineered to move wine, beer, and honey; iconographic evidence in tomb scenes validates their use from 2345 BC down to 1425 BC. Agricultural net-baskets were introduced for the efficient transport of harvested crops and livestock feed, as heavily documented in tomb scenes from the 18th Dynasty. A highly sophisticated, unique application was discovered in the creation of bead-net dresses and mummy-shrouds using metallic and non-metallic beads (starting c. 2551 BC). The historical significance of these luxury textiles is preserved today in elite global collections, including the Museum of Fine Arts Boston, the Petrie Museum of Egyptian Archaeology London, the Metropolitan Museum of Art New York, and the Art Institute of Chicago. Netting principles were extensively applied to decorative and artistic schemes, including a 12th Dynasty animal-hunting net barrier, 18th Dynasty decorative bands, and colored net patterns adorning ritual offering boxes. Finally, netting was adapted to domestic luxury and ergonomics, where flexible net-slats were engineered for elite beds (4th and 18th Dynasties) and chairs (4th Dynasty) to enhance physical comfort.

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