



MECHANICAL ENGINEERING IN ANCIENT EGYPT, PART 68: STATUES INSCRIPTIONS INDUSTRY

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ABSTRACT

The objective of this paper is to investigate the development of mechanical engineering in ancient Egypt through the study of statues inscriptions during a time span from the Middle Kingdom to the Late Periods. This study covers the different types of statues produced during this period and how the ancient Egyptians registered their information on objects sustained for thousands of years. The material, period, height, inscription type and present location are all outlined.

KEYWORDS: Mechanical engineering history, ancient Egypt, statues inscriptions, Middle Kingdom to Late Period.

INTRODUCTION

This is the 68th part in a series aiming at investigating the mechanical engineering technology in ancient Egypt. It focuses on the production and use of statues specially the inscriptions on them and how the ancient Egyptians used statues to record documentation. Inscriptions appear on statues produced from different materials such as stone, wood, faience and terracotta.

Watts, 1998 in his book about the art of ancient Egypt presented a statue for Yuny and his wife Renenutet with a scene on the back of the statue with hieroglyphic script text written in vertical 15 bounded columns.^[1] Davies, 2008 in his paper about Tombos and the viceroy Inebny displayed the lower part of the statue of Inebny in display in the British Museum showing a hieroglyphic text written in horizontal lines on the statue and in seven vertical

lines on its base. He also presented a block statue for Inebny with hieroglyphic text covering the whole front surface in 12 horizontal lines.^[2] Hawass, Manuelian and Hussein, 2010 presented a statue in the Egyptian Museum at Cairo with hieroglyphic text written in two vertical bounded columns, a statue from the Kunsthistorisches Museum at Vienna with hieroglyphic text on its base, as statue from Fitzwilliam museum with hieroglyphic text on its base in three locations, a statue from the Museum of Fine Arts of Boston with hieroglyphic inscriptions on its base.^[3] Common Wikimedia, 2014 wrote an article about the block statue of the Egyptian Pe-Kher-Kons in display in the Walters Art Museum at Baltimore from the Third Intermediate Period with hieroglyphic inscription written in 10 horizontal lines.^[4]

Simmanee, 2014 in his Master of Research Thesis about the self presentation of Amenhotep son of Hapu through statues and the texts presented on his statues produced during the 18th Dynasty. He translated the texts on the statues and showed how they were related to historical aspects.^[5] Hassaan, 2016 investigated the evolution of Mechanical Engineering in ancient Egypt through studying the stone stues industry during the 11th to 17th Dynasties. He presented the statue of Sehetepibreank from the 12th Dynasty with a hieroglyphic text written in two vertical columns on the chair, a statue for King Senusret III from the 12th Dynasty with hieroglyphic text written in two vertical bounded columns on his seat, a block statue for Senusret-Senebefny from the 12th Dynasty, a statue for King Neferhotep I from the 13th Dynasty with hieroglyphic text written in two vertical columns on his seat, a statue for King Sobekhotep IV from the 13th Dynasty with hieroglyphic text written in two bounded bands of an L-shape on his seat. He also presented a statue for Siamun from the 17th Dynasty with an inscription on the seat with (probably) a foreign language.^[6]

Hassaan, 2017 in his study of the ancient Egyptians human stone statues during the Third Intermediate to Late Periods presented a block statue for Sau-Hor from the 21st Dynasty with hieroglyphic text written in two vertical columns above his legs on his dress, a block statue for Nes-Ba-Neb-Dedet from the 22nd Dynasty with hieroglyphic text written in five bounded rows on his dress and one horizontal line on the base. He presented also a block statue for Prince Nimlot from the 22nd Dynasty with hieroglyphic text written in eight horizontal bounded rows on his dress, a block statue for Hor from the 25th Dynasty with hieroglyphic text written in six horizontal bounded rows on his dress, a block statue for Padimahes from the 25th-26th Dynasties with a hieroglyphic text written on his dress in six bounded rows, a block statue for Pa-Di-Chahdedet from the 26th Dynasty with hieroglyphic text written in six

horizontal bounded rows on his dress and a block statue of Ankh-Pekhred from the 30th Dynasty with hieroglyphic text written in seven bounded horizontal rows and one row on the statue base.^[7] Wikimedia, 2018 wrote an article about the block statue of Sr-Dhwty from the 26th Dynasty in display in the Los Angeles Country Museum of Art. The presented image depicted a hieroglyphic text written in 15 horizontal rows on the dress and one horizontal row on the statue base.^[8]

Statues Inscriptions in the Middle Kingdom

The Middle Kingdom comprises the 11th and 12th Dynasties over a time span from 2050 to 1800 BC.^[9] We have four example from both Dynasties of the Middle Kingdom depicting how the ancient Egyptians used their statues for the writing purposes:

- The first example is a 2.13 m height sandstone statue for King Mentuhotep III from the 11th Dynasty (2010-1998 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.1.^[10] The inscriptions were carved on the stone front side of the statue in a single vertical column text using the hieroglyphic script as clear in the zoomed image of Fig.1.
- The second example is a 730 mm height granite block statue for Hotep from the 12th Dynasty (1991-1802 BC) in display in the Egyptian Museum at Cairo and shown in Fig.2.^[11] The statue was inscribed by a hieroglyphic script for a text written in three vertical columns and one horizontal row on the base.
- The third example is a 362 mm height painted wood shabti of Senebimi from the 12th Dynasty (1981-1802 BC) in display in the Metropolitan Museum of Art and shown in Fig.3.^[12] The inscriptions were written on the dress of the statue using a hieroglyphic script of a one vertical column colored text.



Fig. 1: Sandstone statue from the 11th Dynasty.^[10] Fig. 2: Block statue from the 12th Dynasty.^[11]



Fig. 3: Wooden shabti from the 12th Dynasty.^[12]

Fig. 4: Limestone shabti from the 12th Dynasty.^[13]

- The fourth example is a 202 mm height limestone shabti of Redyentah from the 12th Dynasty (1900 BC) in display in the Kunsthistorisches Museum at Vienna, Austria and shown in Fig.4.^[13] The statue was inscribed using a colored hieroglyphic script written in a single bounded vertical column on the owner dress.

Statues Inscriptions in the Second Intermediate Period

The Second Intermediate Period comprised the 13th to the 17th Dynasties over a time span from 1802 to 1550 BC.^{[56][14]} The evolution of the writing technology during the Second Intermediate Period is investigated through the following four examples:

- The first example is a 178 mm height diorite block statue of Minhotep from the 12th-13th Dynasties (1850-1640 BC) in display in the Metropolitan Museum of Art at NY and shown in Fig.5.^[15] The statue was inscribed using a hieroglyphic text written in single bounded vertical column carved on the owner dress.
- The second example is a statuette of Shesmu-hotep from the 13th-14th Dynasties (1780-1700 BC) in display in the Manchester Museum and shown in Fig.6.^[16] The material (stone) type nor the height are not assigned. It seems that the inscription was carved on the bottom of his dress in a single bounded horizontal line.



Fig. 5: Diorite block statue from the 12th -13th Dynasties.^[15]



Fig.6 Statuette from the 13th -14th Dynasties.^[16]

- The third example is a 210 mm height wooden shabti with gold leaf of Prince Wahneferhotep from the 13th Dynasty (1750 BC) in display in the Metropolitan Museum of Art and shown in Fig.7.^[17] The hieroglyphic inscription was written in vertical bounded columns. The text was written using a black ink while the boundary lines were drawn using a red ink.
- The fourth example is a 147 mm height wooden shabti of Ipu from the 17th Dynasty (1600 BC) in display in the Pelizaeus at Hildesheim, Germany and shown in Fig.8.^[18] The text was written using a hieroglyphic script in one unbounded vertical column on the dress of the shabti owner.



Fig. 7: Wooden shabti from the 13th Dynasty.^[17]



Fig. 8: Wooden shabti from the 17th Dynasty.^[18]

Statues Inscriptions in the New Kingdom

The new Kingdom comprised the 18th, 19th and 20th Dynasties over a time period from 1570 to 1069 BC.^[19] The methodology of using statues as a writing media is expected to continue through the most wealthy period in the ancient Egypt history as will be depicted from the following presentations:

- The first example is a 300 mm height limestone kneeling statue of Sa-Iset from the 18th Dynasty (1550-1292 BC) in display in the Egyptian Museum at Berlin and shown in Fig.9.^[20] The designer assigned his palette by the scorpion set at about one-fourth of the palette length. The designer showed Sa-Iset sitting on an L-shaped stela which was a typical design of the stelae produced in ancient Egypt as one of the documentation means.^[21] The inscriptions were carved using the hieroglyphic script in eight banded horizontal rows.
- The second example is a 250 mm height limestone kneeling statue of Nebiri from the 18th Dynasty (1543-1292 BC) in display in the British Museum at London and shown in Fig.10.^[22] This unique design is similar to that of Fig.9 except the position of Nebiri hands.



Fig. 9: Limestone statue from the 18th Dynasty.^[21]



Fig. 10: Limestone statue from the 18th Dynasty.^[22]

- The third example is a 410 mm height grey granite kneeling statue of Amenemheb from the 18th Dynasty (1543-1292 BC) in display in the British Museum at London and shown in Fig.11.^[23] The mechanical designer showed Amenemheb sitting on a base and holding

a stele before him. The stele and the base were inscribed with a hieroglyphic text written in in the front face of the stele and on three sides of the base engraved within bounded rows. Carving of granite is difficult because of the the high hardness of granite (6-7 on Moh's scale), but nothing difficult for the ancient Egyptians.

- The fourth example is a 545 mm height granite kneeling statue of Khaemwaset from the 18th Dynasty (1543-1292 BC) in display in British Museum at London and shown in Fig.12.^[24] The designer shoed the owner holding a stele smaller than that shown in Figs.10 and 11 and set on his thighs. The stele was carved by a scene and a hieroglyphic text in three bounded horizontal rows under the scene.
- The fifth example is a 177.8 mm height limestone block statue from the 18th Dynasty (1543-1292 BC) was in display by Sadigh Gallery for sale for 2,200 US\$ and shown in Fig.13.^[25] The designer used the front surface of the statue dress to carve a hieroglyphic text in three bounded horizontal rows and one vertical column.
- The sixth example is a 540 mm height quartzite block statue of Senenmut, architect and government official during the joint reign of Pharaohs Thutmose III and Hatshepsut of the 18th Dynasty (1485 BC) in display in the British Museum and shown in Fig.14.^[26] Even though the quartzite is one of the hardest stones, the ancient Egyptian carver could inscribe it with nine bounded rows on the dress of the architect and one bounded row on the base with a hieroglyphic text.



Fig. 11: Granite statue from the 18th Dynasty.^[23]



Fig. 12: Limestone statue from the 18th Dynasty.^[24]



Fig. 13: Limestone block statue from the 18th Dynasty.^[25]



Fig. 14: Quartzite block statue from the 18th Dynasty.^[26]

- The seventh example is 235 mm height schist block statue of Min, Overseer of the Weavers from the 18th Dynasty (1479-1425 BC) in display in the Brooklyn Museum and shown in Fig.15.^[27] The designer used one bounded column in the middle of the owner dress to carve a hieroglyphic inscription.
- The eighth example is a 560 mm height quartzite kneeling statue of Amenwahu during the reign of Pharaoh Thutmose III (1479-1425 BC) of the 18th Dynasty in display in the Louvre Museum at Paris and shown in Fig.16.^[28] This statue was from the same design school of the statue of Nebiri shown in Fig.10. The designer presented the hieroglyphic inscriptions in five bounded horizontal rows as clear from the zoomed image of Fig.14.



Fig. 15: Schist block statue from the 18th Dynasty.^[27]



Fig. 16: Quartzite statue from the 18th Dynasty.^[28]

- The ninth example is a 600 mm height quartzite block statue of Teti , Viceroy of Kush during the reign of Pharaoh Thutmose III (1475 BC) in display in the British Museum and shown in Fig.17.^[29] The designer inscribed his hands by symbols and inscribed the front of his dress by a hieroglyphic text carved inside bounded horizontal rows.
- The tenth example is a 889 mm height sandstone block statue of Sitepehu, the Overseer of Priests during the reign of Pharaoh Hatshepsut of the 18th Dynasty (1479-1458 BC) in display in the Penn Museum at the University of Pennsylvania, USA and shown in Fig.18.^[30] The designer used a hieroglyphic text carved on the front surface of the owner dress within 13 bounded horizontal rows. The designer could use pigments on the headdress of the overseer and in the writing area on his dress of the sandstone statue that sustained the environmental effects for more than 3400 years!



Fig. 17: Quartzite block statue from the 18th Dynasty.^[29]



Fig. 18: Sandstone block statue from the 18th Dynasty.^[30]

- The eleventh example is a 248 mm height wooden shabti of Rehu probably during the joint reign of Pharaohs Thutmose III and Hatshepsut of the 18th Dynasty (1479-1458 BC) sold by Sothebys for 37,500 US\$ and shown in Fig.19.^[31] The wood was painted and inscribed between the knee and elbow by a hieroglyphic text written in six bounded horizontal rows as depicted clearly in the zoomed image in Fig.19. It seems that the script was carved in a painted gesso layer on the wood.
- The twelfth example is a 410 mm schist kneeling statue of Senenmut, Architect and Chief

Steward of Pharaoh Hatshepsut of the 18th Dynasty (1473-1458 BC) in display in the Kimbell Art Museum at Texas and shown in Fig.20.^[32] The designer inscribed the statue with a hieroglyphic text written within a single bounded horizontal row on the base and in a vertical unbounded column on the back-pillar.

- The thirteenth example is 737 mm height granodiorite block statue of Amenhotep from the 18th Dynasty (1425-1398 BC) in display in the British Museum and shown in Fig.21.^[33] The designer used the front surface the statue owner to register a hieroglyphic text carved in 11 bounded horizontal rows as clear in the zoomed image of Fig.19.
- The fourteenth example is a 404 mm height limestone pair seated-stature of Scribe Nebsen and his wife Nebet-ta, the Singer in Isis Temple from the 18th Dynasty (1400-1352 BC) in display in the Brooklyn Museum at NY and shown in Fig.22.^[34] The designer presented five columns of a hieroglyphic text: one on Nebsen dress, one on Nebet-ta dress and three on their seat.



Fig. 19: Wooden shabti from the 18th Dynasty.^[31]



Fig. 20: Schist statue from the 18th Dynasty.^[32]



Fig. 21: Granodiorite statue from the 18th Dynasty.^[33]



Fig. 22: Limestone statue from the 18th Dynasty.^[34]

- The fifteenth example is a 190 mm white faience shabti of Repet from the 18th Dynasty (1400 BC) in display in the Musee des Monnaies, France and shown in Fig.23.^[35] This was a wonderful colored faience piece reflecting high profession and fine quality. The nicely produced hieroglyphic script was written within seven round bounded bands on the lower half of Repet dress.
- The sixteenth example is a granite seated-stature of Pharaoh Thutmose IV and his mother from the 18th Dynasty (1398-1388 BC) in display the Egyptian Museum at Cairo and shown in Fig.24.^[36] The designer selected the far ends of the common seat of the Pharaoh and his mother as a panel for a hieroglyphic text carved in two vertical unbounded columns (one of them is zoomed in Fig.24).



Fig. 23: Faience shabti from 18th Dynasty.^[35]



Fig. 24: Granite statue from 18th Dynasty.^[36]

- The seventeenth example is 450 mm height granodiorite kneeling-stature of Minemheb from the 18th Dynasty, reign of Amenhotep III (1391-1353 BC) in display in the Cleveland Museum of Art at Cleveland, Ohio and shown in Fig.25.^[37] The designer used the back of the statue base and pillar as panels for a hieroglyphic text carved in two bounded columns on the pillar and two bounded rows on the base.
- The eighteenth example is a 270 mm height wooden shabti of Yuya, Courtier during the 18th Dynasty (1390 BC) and father of Queen Tiye, Great Royal Wife of Pharaoh Amenhotep III shown in Fig.26.^[38] The shabti was nicely inscribed using a hieroglyphic text carved in gesso layer above the wood in seven round horizontal bands on the Queen dress as depicted in the zoomed image of Fig.26.
- The nineteenth example is a standing-stature of Anen, Priest during the reign of Amenhotep III (1388-1350 BC) and son of Yuya and Tjuya in display in the Egyptian Museum at Turin and shown in Fig.27.^[39] The dimensions nor the stone of the statue were not assigned. The designer inscribed the statue using the hieroglyphic text carved in a single bounded column on the front of the Priest dress with details depicted in the zoomed image of Fig.27.
- The twentieth example is a 450 mm height granodiorite kneeling statue of Minemheb with a baboon before him from the 18th Dynasty (1391-1353 BC) during the reign of Pharaoh Amenhotep III in display in the Cleveland Museum of Art at Cleveland and shown in Fig.28.^[40] The designed used a hieroglyphic inscription carved in two vertical bounded columns on the baboon stand and a one bounded row on the owner stand.



Fig. 25: Granodiorite statue from 18th Dynasty.^[37] Fig. 26: Wooden shabti from 18th Dynasty.^[38]



Fig. 27: Statue of Anen from 18th Dynasty.^[39] Fig. 28: Granodiorite statue from 18th Dynasty.^[40]

- The twenty first example is a 400 mm height limestone block statue of Scribe Amunwahsu from the 18th-19th Dynasty (1386-1278 BC) in display in the Mount Holyoke College Museum, Massachusetts, USA and shown in Fig.29.^[41] The designer inscribed the statue on the front face of his dress using a hieroglyphic script carved in four bounded horizontal rows.
- The twenty second example is a 230 mm length glazed composition shabti of Ay, Advisor and General of Pharaohs Amenhotep III, Amenhotep IV and Tutankhamun of the 18th Dynasty sold by Bonhams on July 2004 for 303,788 US\$ and shown in Fig.30.^[42] The designer inscribed the dress of Ay using hieroglyphic text written within eight bounded round bands using one color as depicted from the zoomed image in Fig.30.



Fig. 29: Limestone block statue from 18th-19th Dynasties.^[41]



Fig. 30: Glazed composition shabti from 18th Dynasty.^[42]

- The twenty third example is a 471 mm height limestone block statue of Ay, Priest of Goddess Mut during the reign of Pharaoh Tutankhamun of the 18th Dynasty (1336-1327 BC) in display in the Brooklyn museum at NY and shown in Fig.31.^[43] The designer inscribed the front surface of Ay's dress by a hieroglyphic text carved in eight bounded horizontal rows.
- The twenty fourth example is a 527 mm height wooden statue of Pharaoh Horemheb from the 18th Dynasty (1319-1292 BC) sold by eBay for 1526 US\$ in March 2006 and shown in Fig.32.^[44] The designer selected the tail of the Pharaoh belt to register a hieroglyphic text in single column as depicted in the zoomed image in Fig.32.



Fig. 31: Limestone block statue from 18th Dynasty.^[43]



Fig. 32: Wooden statue from 18th Dynasty.^[44]

- The twenty fifth example is a 281 mm height limestone kneeling statue of Bay during the reign of Pharaoh Seti I of the 19th Dynasty (1294-1250 BC) in display in the Metropolitan Museum of Art and shown in Fig.33.^[45] The designer showed Bay kneeling behind a rounded top stele with a scene in its domed area. Then came a hieroglyphic script text carved inside five bounded horizontal rows.
- The twenty sixth example is a kneeling statue of Penmerneb holding a ram-head on a stand from the 19th Dynasty (1292-1189 BC) in display in the Egyptian Museum of Turin, Italy and shown in Fig.34.^[46] The stone type of the statue and the dimensions were not quoted. The designer used the front face stand of the ram and the front face of the statue base to present a hieroglyphic inscription in seven bounded rows on the stand and one row on the base.
- The twenty seventh example is a 2.31 m height granite statue of Pharaoh Ramses II as a

child protected by Horus from the 19th Dynasty (1290-1224 BC) in display in the Egyptian Museum at Cairo and shown in Fig.35.^[47] The designer inscribed the statue on its base using a hieroglyphic text carved in one row on the base including the Cartouche of the Pharaoh.

- The twenty eighth example is a 730 mm height quartzite block statue of the Royal Scribe, Great Steward and Overseer of the Granary Nedjem during the reign of Pharaoh Ramses II of the 19th Dynasty (1279-1213 BC) in display by the Institute of Egyptian Art and Archaeology, University of Memphis, Tennis, USA and shown in Fig.36.^[48] The designer used the back pillar of the block statue to register a hieroglyphic inscription carved in two bounded vertical columns.



Fig. 33: Limestone block statue from 19th Dynasty.^[45]



Fig. 34: Wooden statue from 18th Dynasty.^[46]



Fig. 35: Granite statue from 19th Dynasty.^[47]



Fig. 36: Quartzite statue from 19th Dynasty.^[48]

- The twenty ninth example is a 196 mm height faience shabti of Djehutymose from the 19th Dynasty, reign of Pharaoh Ramses II (1279-1213 BC) in display in the Cleveland Museum of Art at Cleveland and shown in Fig.37.^[49] The designer used the shabti dress as a panel to register a hieroglyphic inscription written within four bounded horizontal round bands.
- The thirtieth example is a 150 mm height shabti of Prince Khaemweset, son of Pharaoh Ramses II of the 19th Dynasty (1279-1213 BC) was in display for sale by US Expertissim for 4,451 US\$ and shown in Fig.38.^[50] Most probably this was a faience shabti inscribed by a hieroglyphic text written in a single vertical column on the front of the Prince dress and having a decreasing width from the top to down as depicted in the zoomed image of Fig.38.



Fig. 37: Faience shabti from 19th Dynasty.^[49]



Fig. 38: Faience shabti from 19th Dynasty.^[50]

- The thirty first example is a 140 mm height glazed composition shabti of Pharaoh Seti I from the 19th Dynasty (1279 BC) sold by Bonhams on October 2009 at London for 287,377 US\$ and shown in Fig.39.^[51] The designer inscribed the dress of the Pharaoh with a hieroglyphic text written in six bounded horizontal round rows.
- The thirty second example is a 270 mm height colored limestone shabti of Sennedjem, the artisan of Pharaoh Ramses II of the 19th Dynasty (1279-1213 BC) in display in the Metropolitan Museum of Art at NY and shown in Fig.40.^[52] This is a wonderful piece of artefacts carved, colored and inscribed using limestone. The inscriptions were really neat and produced with high profession using a hieroglyphic script carved in seven bounded round rows with red boundary line.

- The thirty third example is a 140 mm height faience shabti of Huy, the High Priest of Ptah during the reign of Pharaoh Ramses II of the 19th Dynasty (1240 BC) in display in the Louvre Museum and shown in Fig.41.^[53] The shabti dress was inscribed using a hieroglyphic script written in a single bounded vertical column on the shabti dress.
- The thirty fourth is a statue of Pharaoh Seti II of the 19th Dynasty (1203-1197 BC) in display in the Egyptian Museum at Turin, Italy and shown in Fig.42.^[54] The designer inscribed the staff in the left hand of the Pharaoh with a hieroglyphic text on the whole front surface. Stone type and dimensions are not available!



Fig. 39: Glazed composition shabti from 19th Dynasty.^[51]



Fig. 40: Limestone shabti from 19th Dynasty.^[52]



Fig. 41: Faience shabti from 19th Dynasty.^[53]



Fig. 42: Limestone statue from 19th Dynasty.^[54]

- The thirty fifth example is a terracotta shabti of Priest Bakenmut Wab from the 20th Dynasty (1185 BC) in display in the Archaeological Civic Museum at Bologna, Italy and shown in Fig.43.^[55] The designer inscribed the Priest shabti on its front decorated dress using a hieroglyphic text written in a single wide column bounded by red lines.
- The thirty sixth example is a 160 mm height faience shabti of Prince Ramsesmentukhepersef son of Pharaoh Ramses IX of the 20th Dynasty (1129-1111 BC) in display in the Egyptian Museum at Cairo and shown in Fig.44.^[56] The designer inscribed the Prince shabti on its front dress using a hieroglyphic text written in a single bounded column as depicted in the zoomed image of Fig.44.



Fig. 43: Terracotta shabti from 20th Dynasty.^[55]



Fig. 44: Faience shabti from 20th Dynasty.^[56]

Statues Inscriptions in the Third Intermediate Period

The Third Intermediate Period comprised the Dynasties from 21st to 25th over a time span from 1070 to 664 BC.^[57] The continuation of using statues inscriptions during the Third Intermediate Period is investigated through the following examples:

- The first example is a 248 mm height basalt block statue of Sau-Hor from the 21st Dynasty (1075-944 BC) sold by Sothebys for 74,500 US\$ and shown in Fig.45.^[58] The designer inscribed the basalt statue of Sau-Hor using a hieroglyphic script carved in two vertical bounded columns, one column in each leg.

- The second example is a stone block statue of Hor, Secretary of Rulers of the end of the 22nd and early 23rd Dynasties (828-803 BC) in display in the Egyptian Museum at Cairo and shown in Fig.46.^[59,60] The designer inscribed the statue on the whole body using a hieroglyphic text carved in horizontal bounded rows in the top and vertical bounded columns below the horizontal ones.



Fig. 45: Basalt block statue from 21st Dynasty.^[58]



Fig. 46: Stone block statue from 22nd -23rd Dynasties.^[59,60]

- The third example is 267 mm height quartzite block statue of Djedptahiufankh from the 25th Dynasty (760-660 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.47.^[61] The designer inscribed the block statue of Djedptahiufankh using a hieroglyphic script carved in six bounded horizontal rows on his dress and one bounded horizontal row on the statue-base.
- The fourth example is a 460 mm height limestone block statue of Ankhwennefer from the 25th-26th Dynasties (690-650 BC) in display in the Metropolitan Museum of Art at NY and shown in Fig.48.^[62] The designer inscribed the this statue using a hieroglyphic script carved in nine bounded rows on the owner's dress and one bounded row on the statue-base.



Fig. 47: Quartzite block statue from 25th Dynasty.^[61]



Fig. 48: Limestone block statue from 25th-26th Dynasties^[62]

- The fifth example is a 250 mm height dolerite block statue of Tjaenwaset, the Scribe of the Divine Offerings from the 25th -26th Dynasties (690-610 BC) in display in the Metropolitan Museum at NY and shown in Fig.49.^[63] The designer inscribed the scribe statue using a hieroglyphic script carved in five unbounded columns, two long and three short on the dress of the scribe.
- The sixth example is a 342 mm height granite shabti of Pharaoh Taharqa from the 25th Dynasty (690-664 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.50.^[64] The designer inscribed the Pharaoh shabti using a hieroglyphic script carved in ten unbounded rows on the Pharaoh's dress.



Fig. 49: Dolerite block statue from 25th - 26th Dynasties.^[63]



Fig. 50: Granite shabti from 25th Dynasty.^[64]

Statues Inscriptions in the Late Period

The Late Period comprised the 26th to 30th Dynasties over a time span from 664 to 332 BC.^[65]

The continuation of statues inscription through the Late Period of the ancient Egypt history will be illustrated by the following examples:

- The first example is a 165 mm height faience shabti of Wahibre from the 26th Dynasty (664-525 BC) in display in the National Museums at Liverpool, UK and shown in Fig.51.^[66] The designer inscribed the shabty using a hieroglyphic script written inside a vertical rectangle on the front of the shabty as depicted in the zoomed image of Fig.51.
- The second example is a 660 mm height basalt block statue of Sr-Dhwty from the 26th Dynasty (664-525 BC) in display in the Los Angeles Country Museum of Art at Los Angeles, USA and shown in Fig.52.^[67] This wonderful block statue had no head!! This may be non-professional excavations by tomb robbery or because of any other reasons. Even though basalt is one of the hardest stones, the ancient Egyptian carver could register a hieroglyphic script text on the freont dress of the owner in 15 un-bounded horizontal rows with space between each row decreasing from top to bottom.



Fig. 51: Faience shabti from 26th Dynasty.^[66] Fig. 52: Basalt block statue from 26th Dynasty.^[67]

- The third and last example is a 355 mm granite block statue of Sheshonq, Priest of Amen-Re during the Late Period (664-332 BC or after) in display in the Walters Art Museum at Baltimore and shown in Fig.53.^[68] The designer inscribed the block statue of Sheshonq using a hieroglyphic script carved in seven bounded rows on his dress and one bounded row on the statue-base.
- The fourth example is a 186 mm height faience shabti from the Late Period (664-332 BC) in display in the Seward Kennedy's Cabinet at London and shown in Fig.54.^[69] The

designer inscribed the shabti on his dress using a hieroglyphic text carved inside eight bounded round bands on the bottom part of the owner dress.



Fig. 53: Granite block statue from Late Period.^[68] Fig. 54: Faience shabti from Late Period.^[69]

- The fifth example is a 184 mm faience shabti of Psammetichus from the 26th-30th Dynasties (664-343 BC) belonged to the Ancient and Byzantine Art, The Art Institute of Chicago, Chicago and shown in Fig.55.^[70] The designer inscribed the shabti using a hieroglyphic script carved in nine bounded horizontal round bands on the shabti-dress as depicted in the zoomed image of Fig.55.
- The sixth example is a block statue of Pa-Ankh-Ra, Ship Master during the 26th Dynasty (652-633 BC) in display in the Cabinet of Models (Museum), France and shown in Fig.56.^[71] The designer inscribed the block statue on its base only using a hieroglyphic script carved in two bounded rows going around the base. There were no inscriptions on the statue itself.
- The seventh example is a 184 mm height faience shabti of Neferibresaneith, Administrative of the Palace during the reign of Pharaoh Amasis of the 26th Dynasty (570-526 BC) sold by Sothebys in 2015 for 137,500 US\$ and shown in Fig.57.^[72] The designer inscribed the shabti of the high official using the hieroglyphic script with text carved in nine bounded round bands as depicted in the zoomed image of Fig.57.
- The eighth example is a 1.02 m height diorite block statue of Wahibre, the Governor of Upper Egypt during the End of the 26th Dynasty (550-525 BC) in display in the Louvre Museum and shown in Fig.58.^[73] The designer inscribed the Governor statue on the back of its pillar using a hieroglyphic script carved inside two bounded columns.



Fig. 55: Faience shabti from 26th-30th Dynasties.^[70]



Fig. 56: Stone block statue from 26th Dynasty.^[71]



Fig. 57: Faience shabti from 26th Dynasty.^[72]



Fig. 58: Diorite block statue from 26th Dynasty.^[73]

- The ninth example is a 192 mm height faience shabti of a Pharaoh from the 29th Dynasty (393-380 BC) in display in the Louvre Museum and shown in Fig.59.^[74] The designer inscribed the shabti using a hieroglyphic script carved inside eight bounded horizontal round bands on the shabti's dress as depicted in the zoomed image of Fig.59.
- The tenth example is a 272 mm height granodiorite block statue of Ankh-Pekhred from the 30th Dynasty (380-340 BC) in display in the Walters Art Museum at Baltimore, USA and shown in Fig.60.^[75] The designer inscribed the front dress of the block statue using the hieroglyphic scribe carved in seven bounded horizontal rows and the base in one bounded row as depicted in the zoomed image of Fig.60.



Fig. 59: Faience shabti from 29th Dynasty.^[74]



Fig. 60: Granodiorite block statue from 30th Dynasty.^[75]

- The eleventh example is a 310 mm height gabbro block statue of Neskhemenyu from the 30th Dynasty (380-343 BC) in display in the Metropolitan Museum of Art at NY, and shown in Fig.613.^[76] The designer inscribed the back-pillar of the block statue using the hieroglyphic scribe carved in three bounded columns and the base in one bounded row as depicted in the zoomed image of Fig.61.



Fig. 61: Gabbro block statue from 30th Dynasty.^[76]

CONCLUSION

- This paper investigated the evolution of mechanical engineering in ancient Egypt through the inscription of statues.
- The study covered a time span from the Middle Kingdom to the Late Periods.

- This registration technology started in the ancient Egyptian society (as documented) from the reign of King Mentuhotep III of the 11th Dynasty (more than 4000 years ago).
- The ancient Egyptians inscribed standing statues having height up to 2.13 m.
- They inscribed block statues having height between 235 mm and 1.02 m.
- They inscribed shabtis having height between 140 and 362 mm.
- They inscribed seated stone statues having height between 250 and 560 mm.
- They inscribed all types of statues and shabtis using the hieroglyphic script.
- I could not trace any statue or shabti in the era under investigation inscriber using the hieratic or demotic scripts.
- They inscribed the statues either on the statue itself or on its base.
- Most of the block statues were inscribed on its front panel on the owner's dress. Minor others were inscribed on both the dress and on the base while other minors were inscribed only on the base.
- Most of the shabtis were inscribed on the dress within round bounded horizontal bands while some others were inscribed in a single bounded vertical column.
- Kneeling or seated statues with a pillar supporting the statue were inscribed on the back surface of the pillar.
- Block statues were inscribed with text carved in either horizontal rows or vertical columns.
- Some block statues were inscribed on the whole surface of the dress.
- Minor statues were inscribed on the staff in the hand of the owner.
- Some kneeling statues were inscribed on the front surface of the stele in front of the owner while others were inscribed only on the base of the statue.
- Some statues were inscribed using a single bounded column on the front side of the dress, others were inscribed only on the seat and others were inscribed on the dress and on the chair seated on.

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