

Mechanical Engineering in Ancient Egypt, Part XXXVII: Human Stone Statues Industry (Third Intermediate and Late Periods)

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Abstract:

The objective of this paper is to investigate the development of mechanical engineering in ancient Egypt through the production of human stone statues during the Third Intermediate and Late Periods. This study covers the design and production of stone statues from the 21st to the 31st Dynasties showing the type and characteristics of each statue. The decoration, inscriptions and beauty aspects of each statue were highlighted.

Keywords : *Mechanical engineering history, stone statues, Third Intermediate Period, Late Period.*

I. INTRODUCTION

Ancient Egyptians built a great stone industry for statues in all sizes and using various stones available naturally in Egypt. They master cutting and carving even very hard stones with hand tools and produced statues very fine in design and production. This is the last part in this aspect presenting the production of human stone statues in the 3rd Intermediate and Late Periods of the ancient Egyptian history.

Lutz (1930) presented 65 statues and statuettes from Old Kingdom to the Graeco-Roman Periods. His presentation included statues from Egyptian Late Period [1]. Teeter (2003) in her book about ancient Egypt presented some stone statues from the 3rd Intermediate Period including a statue for the Priest of Hathor from the 22nd / 23rd Dynasties. She presented also statues from the Late Period including a statue for Amun from the 26th Dynasty [2]. Bard (2007) in her book about the archaeology of ancient Egypt presented a number of statues from different historical periods including the 3rd Intermediate Period. She presented a stone statue for Pharaoh Taharqa, the 5th Pharaoh of the 25th Dynasty [3]. Colburn (2014) in his Ph.D. Thesis presented a number of stone statues from the Late Period of Egypt. She presented a greywacke statue for Horwedja (521-486 BC), a schist statue for Ptahhotep (500-475 BC) and a basalt statue for Udjahorresnet

(519-510 BC) [4].

Wikipedia (2016) wrote two articles about Pharaohs Shabata (721-707 BC) and Taharqa (690-664 BC) of the 25th Dynasty. They presented a stone head and a broken statue for Pharaoh Shabaka in display in the Louvre Museum at Paris. For Pharaoh Taharqa, they presented a granite sphinx from Kawa in Sudan, a kneeling statue offering jars to Falcon-God Hemen and a Shabti for him [5,6]. Hassaan (2016,2017) investigated the evolution of mechanical engineering in ancient Egypt through studying the industry of the human stone statues in periods extending from the Predynastic down to the 20th Dynasty. He presents too many examples of human stone statues from each period focusing on the mechanical characteristics of each statue [7-10].

II. THIRD INTERMEDIATE PERIOD

The Third Intermediate Period of ancient Egypt extends over the time period from 1070 to 664 BC and comprises the Dynasties from the 21st to the 25th [11]. We have examples of human stone statues during this period from the 21st, 22nd and 25th Dynasties presented as follows:

A. The 21st Dynasty:

The first example is a setting statue of Psusennes I, the 3rd Pharaoh of the 21st Dynasty (1047-1001BC) in display in the Egyptian Museum at Cairo and shown in Fig.1 [12]. Why two statues ?. Is he the Pharaoh and his wife ?. Is it a twin statue for the Pharaoh ? .. No one knows. If the figure in the left of the page is for the Pharaoh, then he is wearing a Nemes headdress and has a long beard as clear in the zoomed image of Fig.1.

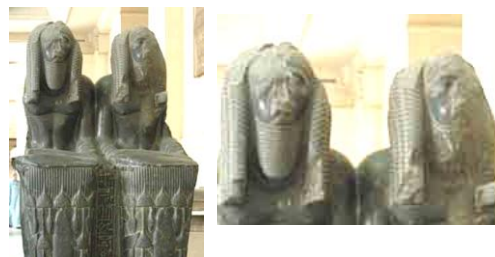


Fig.1 Setting Statue of Psusennes I [12].

The Pharaoh is wearing a long decorated Schenti and a Nemes headdress. Unfortunately, there is no label beside the statue saying anything !!. The details of the face are not clear.

The second example is a broken stone statue for Osarkon the Elder, the 5th Pharaoh (992-986 BC) in display in the Egyptian Museum at Cairo (?) and shown in Fig.2 [13]. The Pharaoh is wearing a decorated Nemes with Cobra on its front.



Fig.2 Statue of Osarkon the Elder [13].

The third example is a setting statue of Psusennes II, the 6th Pharaoh of the 21st Dynasty (967-943 BC) in display in the Egyptian Museum at Cairo and shown in Fig.3 [14]. The designer showed the Pharaoh wearing a decorated short Schenti, putting both hands on his chest and holding the Crook and Flail symbols in both palms.



Fig.3 Setting Statue of Psusennes II [14].

The last example from the 21st Dynasty is a basalt block statue for Sau-Hor from Tanis of ancient Egypt (1075-944 BC) shown in Fig.4 [15]. This is a continuation of the block statue appeared before in the 12th Dynasty [8]. The designer showed Sau-Hor

wearing a long Robe inscribed in two columns in the front just above each feet. He is wearing a decorated Khat headdress and there is a small figure between his feet.



Fig.4 Block statue of Sau-Hor [15].

B. The 22nd Dynasty:

The first example from the 22nd Dynasty of the Third Intermediate Period is a basalt block statue for Nes-Ba-Neb-Dedet (946-736 BC) in display in the Walters Art Museum at Baltimore, USA and shown in Fig.5 [16]. The designer showed the statue owner rapped in his robe and wearing a decorated Khat. The front of his Robe is fully inscribed. All the surfaces are filleted as great mechanical engineering tradition in ancient Egypt.



Fig.5 Block statue of Nes-Ba-Neb-Dedet [16].

The second example is sphinx statue Shoshenq I, the 1st Pharaoh of the 22nd Dynasty (943-922 BC) in display in the Louvre Museum of Paris and shown in Fig.6 [17]. The statue carries inscriptions for three Pharaohs from 12th, 19th and 22nd Dynasties. It shows the Pharaoh wearing a Nemes headdress with Cobra on its front and having a long beard.

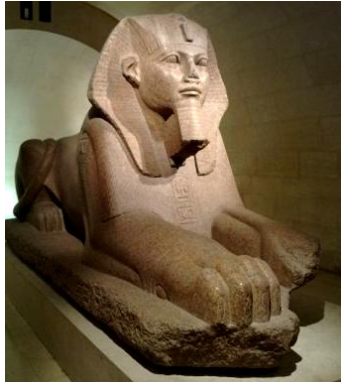


Fig.6 Sphinx Statue of Shoshenq I [17].

The third example from this dynasty is a basalt block statue for Prince Nimlot (910-896 BC) in display in the Kunsthistorisches Museum, Vienna, and shown in Fig.7 [18]. It has a height of 0.775 m. The front of the Prince robe is fully inscribed and he is wearing a Khat headdress..



Fig.7 Block Statue of Prince Nimlot [18].

The fourth example is a standing statue for Shoshenq II, the 3rd Pharaoh of the 22nd Dynasty ((887-885 BC) in display in the Egyptian Museum at Cairo and shown in Fig.8 [19]. The designer showed the Pharaoh standing, wearing a long Schenti with long decorated front tail, a Nemes headdress, a pectoral and holding objects in both hands. As clear from the zoomed image in Fig.8, this is a high class carved piece with very attractive features of the face showing how the ancient Egyptians mastered the carving art.



Fig.8 Standing Statue of Shoshenq II [19].

C. The 23rd Dynasty:

There is one example from the 23rd Dynasty. It is a Greywacke block statue for Hor (775 BC) in display in the Egyptian Museum at Berlin and shown in Fig.9 [20]. It is a continuation of the block-statues types emerged during the 12th Dynasty. Even though greywacke is one of the hardest stones, the carver could carve it perfectly with very clear elements for the face and perfectly rounded corners as depicted in the zoomed view. Hor is wearing a Khat and his robe is inscribed by two deities. .



Fig.9 Block Statue of Hor (23rd Dynasty) [20].

D. The 25th Dynasty:

The 1st example of stone human statues produced during the 25th Dynasty is a schist block statue for Hor son of Ankhkhonsu (770-712 BC) in display in the Egyptian Museum at Cairo and shown in Fig.10 [21]. It has an 0.51 m height. The statue owner is wearing a Khat and an inscribed robe. There is a vital difference in this block-statue designed compared with all the previous designs. That is the two hands are emerging out of the robe and how he is putting the right hand over the left hand on his knees.

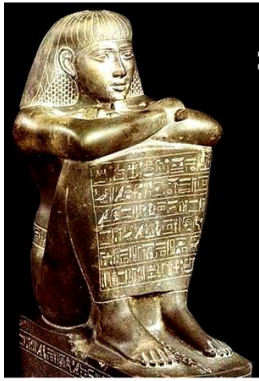


Fig.10 Block Statue of Hor (25th Dynasty) [21].

The 2nd example is a standing statue for Khonsuiraa (760-660 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.11 [22]. It is carved from a black stone and has an 0.435 m height. The owner is shown wearing a medium Schenti with belt and a tight cap headdress. He is holding an object in each hand.



Fig.11 Standing Statue Of Khonsuiraa [22].

The 3rd example is again a standing statue of Princess Shepenwepet II, daughter of Piye, the 1st Pharaoh of the 25th Dynasty (752-721 BC) in display in the Egyptian Museum at Cairo and shown in Fig.12 [23]. She is wearing a long Tunic, two-feather Crown with a Cobra on its front and holding an object in each palm.



Fig.12 Standing Statue Of Shepenwepet [23].

The 4th example of human stone statues in the 25th Dynasty is a setting statue for Harwa (710 BC) in display in the British Museum and shown in Fig.13 [24]. Harwa was shown holding two figures and having a necked head.

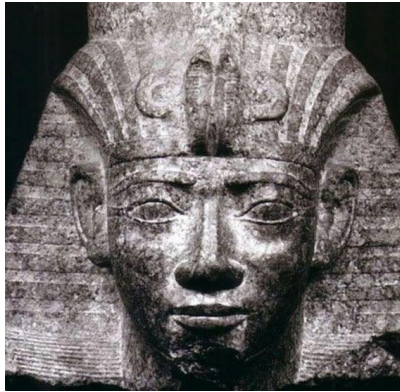


Fig.13 Setting Statue Of Harwa [24].

The 5th example is a statue for Shebitku, the 4th Pharaoh of the 25th Dynasty (707-690 BC) in display in the Nubian Museum at Aswan and shown in Fig.14(a) [25]. There is no information about the stone nor the dimensions nor the design of the whole statue. Another statue for the same Pharaoh is shown in Fig.14 (b) [26]. There is no information about the statue stone, present location or dimensions. The Pharaoh is shown wearing the standard Nemes headdress with a Cobra on its front.



(a)



(b)

Fig.14 Statue of Pharaoh Shebitku [25,26].

The 6th example is a granite sphinx statue for Taharqa, the 4th Pharaoh of the 25th Dynasty (690-664 BC) in display in the British Museum and shown in Fig.15 [27]. The Pharaoh is wearing a Khat with two Cobra on its front. The height of the statue is 0.406 m and the face was carved professionally even though granite is one of the hardest stones.

- The 7th example is again for Pharaoh Taharqa.



Fig.15 Statue Of Pharaoh Taharqa [27].

The 7th example is again for Pharaoh Taharqa which is a standing statue for the Pharaoh in display in the Sudan National Museum and shown in Fig.16 [28]. The designer showed the Pharaoh wearing the Double Crown of ancient Egypt with Cobra on its front and having a thin long beard.



Fig.16 Taharqa Standing Statue [28].

The 8th example is a granodiorite block statue for Padimahes (680-650 BC) in display in the Brooklyn Museum at NY and shown in Fig.17 [29]. It has a height of 0.463 m and shows the owner wearing a Khat headdress, and an inscribed robe from the front. The hands are crossed on the knee similar to the design presented in Fig.10.



Fig.17 Block Statue Of Padimahes [29].

The 9th and last example is a statue head for Tantomani, the last Pharaoh of the 25th Dynasty (664-656 BC) in display in the Ashmolean Museum of Oxford and shown in Fig.18 [30]. The designer showed the Pharaoh wearing the Double-Feather Crown with very clear details of his face. Unfortunately, the stone type is not assigned.



Fig.18 Statue of Pharaoh Tantamani [30].

height of the statue is 0.435 m and the designer showed the owner wearing a short Schenti (the legs are necked), a Khat headdress with hands above his knees. .



Fig.20 Block Statue of Harsomtusemhat [33].

III. THE LATE PERIOD

The Late Period of ancient Egypt covers Dynasties from the 26th to the 31st over the time span from 664 to 3321 BC [31]. We have examples of human stone statues produced during the 26th, 29th and 30th Dynasties detailed as follows:

A. The 26th Dynasty:

The 1st example is for the Army General Pa-Di-Chahdedet who was in service during the reign of Psamtic I, the 1st Pharaoh of the 26th Dynasty (664-610 BC) in display in the Louvre Museum and shown in Fig.19 [32].

The 3rd example is a greywacke block statue for Paakhref (664-525 BC) in display in the Egyptian Museum at Cairo and shown in Fig.21 [34]. The designer showed the owner in the old classical design with both hands on the knee under the robe, wearing a Khat headdress with a symbol in the front without any inscriptions.



Fig.19 Block Statue of Pa-Di-Chahdedet [32].

The designer showed the Army General putting both hands on his knees in a position similar to that in Figs.10 and 17 and wearing a Khat headdress. The front surface of the robe is fully inscribed as clear in the zoomed image of Fig.19.



Fig.21 Block Statue of Paakhref[34].

The 2nd example is a basalt block statue for Harsomtusemhat (664-610 BC) holding the sesheshet in display in the Lower Egypt Archaeology Museum at Madrid and shown in Fig.20 [33]. The

The 4th example is a granodiorite kneeling statue for Nespaqashuty, the Vizier of Pharaoh Psamtiik I (664-610BC) in display in the British Museum and shown in Fig.22 [35]. The designer showed the Vizier kneeling, holding an object by both hands, wearing a medium Schenti and a Khat headdress.



Fig.22 Kneeling Statue of Nespashuty [35].

The 5th example is a limestone block statue for Djedbastetiufankh (664-600 BC) in display in the Cleveland Museum of Art, USA and shown in Fig.23 [36]. The designer showed the owner wrapped in his robe with both hands on his knees under the robe with fingers emerging out of the robe. The zoomed image of the face shows that the designer showed a problem with the eyes of the owner. This indicates the truth of both designer and carver in the ancient Egyptian society.

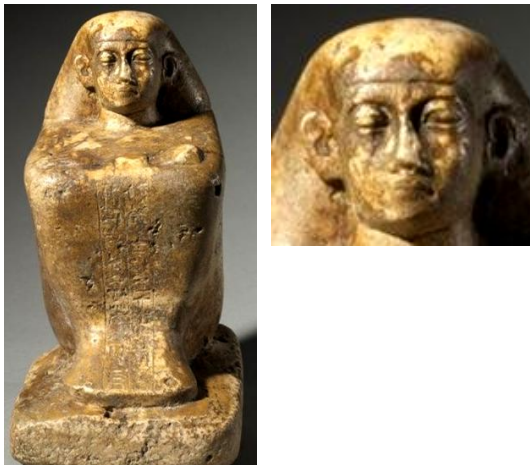


Fig.23 Block Statue of Djedbastetiufankh [36].

The 6th example is a basalt block statue for Shebenhor (664-525 BC) in display in the Art Institute of Chicago and shown in Fig.24 [37]. The statue height is 0.28 m and it is of the design started in the 25th Dynasty (Fig.10) with inscriptions on the whole front surface.



Fig.24 Block Statue Of Shebenhor [37].

The 7th example is a block statue for Pa-Ankh-Ra, a Ship Master in the 26th Dynasty (650-633 BC) in display in the Metropolitan Museum and shown in Fig.25 [38]. The design of this block statue is similar to that shown in Fig.20 where the owner wears a short or medium Schenti and the legs and hand are appearing. There is a figure for an ancient Egypt deity between his legs. He is wearing a Khat headdress.



Fig.25 Block Statue Of Pa-Ankh-Ra [38].

The 8th example is statue for Padiaset (600-525 BC) of height 0.286 m sold in a sail in London for 136900 £ and shown in Fig.26 [39]. The designer showed the owner standing and holding a deity in front of him. The height of the statue is 0.286 m, wearing a long Schenti and a Khat headdress. The zoomed image depicts the professional carving of the statue where the face shows the serious pose of the owner.

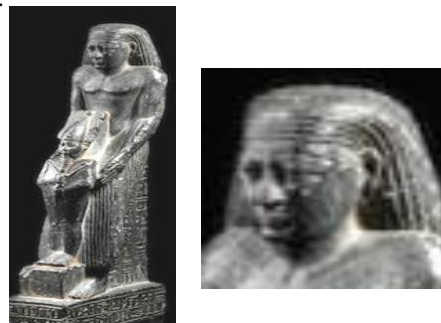


Fig.26 Standing Statue of Padiaset [39].

The 9th example is a stone head for Apries, the 4th Pharaoh of the 26th Dynasty (589-570 BC) shown in Fig.27 [40]. The designer showed the Pharaoh wearing a Cap with a symbol on its front. The head was professionally carved even though the stone type nor the location are known !!



Fig.27 Head of Pharaoh Apries [40].

The 10th and last example from the 26th Dynasty is again a stone head for Amasis II, the 5th Pharaoh of the Dynasty (570-526 BC) in display in the Neues Museum at Berlin and shown in Fig.28 [41]. The designer showed the Pharaoh wearing a decorated Nemes headdress with a symbol on its front.



Fig.28 Head of Pharaoh Amasis II [41].

B. The 29th Dynasty:

The 1st example from the 29th Dynasty of the Late Period is a sphinx statue of Nepherites I, the first Pharaoh of the 29th Dynasty in display in the Louvre Museum at Paris and shown in Fig.29 [42]. The stone type is not defined and the surfaces are smooth and shining through good polishing.



Fig.29 Sphinx Statue of Pharaoh Nepherites I [42].

C. The 30th Dynasty:

The 1st example from the 30th Dynasty is a schist head for Wesirwer, the Priest of Mont (380-342 BC) in display in the Brooklyn Museum and shown in Fig.30 [43]. The designer showed the Priest with hair completely cut and without any headdress. The details of his face depicts very high professionalism in carving his statue. The face elements look as if it is captured using a digital camera and not manually carved by an ancient Egyptian stone carver.



Fig.30 Head Of Priest Wesirwer [43].

The 2nd example is a granodiorite block statue for Ankh-Pekhred (380-340 BC) in display in the Walters Art Museum and shown in Fig.31 [44]. It is of the block statues type presented before in Figs.10, 17, 19, 20, 24 and 25. The owner is wearing an undecorated Khat headdress, having a short thin beard and the front surface of his robe is fully inscribed in rows. Even though the diorite is one of the hardest stoned, the carver could generate the face elements with very high profession as clear in the zoomed image of the owner face in Fig.31.



Fig.31 Block Statue of Ankh-Pekhred [44].

The 3rd and last example is a granodiorite head for Nectanebo II, the 3rd Pharaoh of the 30th Dynasty (360-343 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.32 [45]. The Pharaoh is shown wearing a Cap with a symbol on its front.



Fig.32 Head of Pharaoh Nectanebo II [45].

D. The 31st Dynasty:

The only example of stone statues available is a granite statue for a man in Persian costume in display in the Brooklyn Museum and shown in Fig.33 [46]. The height of the statue is 0.79 m and the man is shown wearing a Khat headdress and a Persian cloth.



Fig.33 Statue of a Man in Persian Costume [46].

IV. CONCLUSION

- This paper investigated the evolution of Mechanical engineering in ancient Egypt through the design and production of human stone statues during the Third Intermediate and Late Periods.
- The ancient Egyptians produced setting, standing, sphinx and block statues during the Third Intermediate Period.
- The produced standing, kneeling, sphinx and block statues during the Late Period.
- They designed stone statues with Khat, Cap, Nemes, Double Crown and Two-feather Crown during the Third Intermediate Period.
- They designed stone statues with Khat, Nemes and Cap headdress during the Late Period.
- Block stone statues were produced extensively during both periods.
- Stone statues with robe, sort, medium and long Schenti were produced in both periods.
- Stone types used during both periods: Basalt, greywacke, schist, granite, granodiorite and limestone.
- The designer of block statues presented three different designed of block statues during both periods:
 - The classical design appeared in the 12th Dynasty.
 - A modified design with both hands emerging out of the robe above the knees.
 - Both hands and legs appearing in the statue.
- There was a relatively lack of information about the stone statues of both periods relative to the other periods of the ancient Egypt history.

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