Mechanical Engineering in Ancient Egypt, Part XXXIV: Stone Statues Industry (11th to 17th Dynasties)

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Abstract:
This paper is the 34th research paper in a series investigating the evolution of mechanical engineering in ancient Egypt. It tries to achieve this purpose through investigating the production of ancient Egyptians stone statues during the era from the 11th to the 17th Dynasties. Each stone statue is presented chronically with present location if known and with engineering analysis showing its creativity. The stones used in producing the statues are assigned.

Keywords — Mechanical engineering, ancient Egypt; stone statues; 11th to 17th Dynasties.

I. INTRODUCTION
Ancient Egyptians produced wonderful stone statues for their Kings, Officials and even servants to authorise their role and existence in the ancient Egyptian society. They mastered this industry and left statues from different types of stones with sizes ranging from miniature to huge and located them in Tombs and Temples. This is the second paper in this aspect where the first paper covered stone statues from Naqada II to the Old Kingdom.

Alerd (1950) in his book about the Middle Kingdom art in ancient Egypt presented stone statues from the 11th, 12th and 13th Dynasties most of them from the 12th Dynasty [1]. Smith (1960) in his book about ancient Egyptians as represented in the Museum of Fine Arts at Boston presented some stone statues such as the granite head of Lady Sennuwy from the 12th Dynasty, Statue of Senostris III from the 12th Dynasty and the statue of Amenhotep III and head of Tutankhamun from the 18th Dynasty [2]. Watts (1998) in his resources for educators about the art of the ancient Egyptians presented the limestone head of Pharaoh Tutankhamun wearing the Blue Crown from the 18th Dynasty, the grandiosite setting statue of Pharaoh Horemheb and his wife from Late 18th Dynasty, the limestone statue Yuny and his wife from Early 18th Dynasty and a Gneiss sphinx of King Senwisret III from the 12th Dynasty [3]. Teeter, Alexander and Greuel (2001) in their work about art of the Mediterranean world presented the granite head of an official from the 13th Dynasty and the basalt statue of Shebenbu from the 26th Dynasty [4].

Magdolen (2002) studied the existence of two fragments of a statue in the City Museum Bratislava. He discussed some of the conclusions presented by Mr. Josef Hudec in his paper presented in the 8th International Congress of Egyptologists in Cairo [5]. Teeter (2003) in her book about the treasures from the collections of the Oriental Institute of Chicago presented selections First Intermediate Period, Middle Kingdom, New Kingdom, Third Intermediate Period, Late Period and Ptolemaic-Roman Periods. Among her presentations are statue from the 18th Dynasty, quartzite statue of Pharaoh Tutankhamun from the 18th Dynasty and a limestone statue of a Priest from the 22nd – 25th Dynasties Period [6]. Bard (2007) in her book about the archaeology of ancient Egypt presented a statue for King Mentuhotep II from the 11th Dynasty [7]. Sadikoglu (2007) in her book about the ancient Egyptian art influences on modern time through history presented stone statues from the Karnak Temple at Luxor, statue of Priest Imhotep, statue of Queen Hatshepsut at Amun Temple, sphinx statue of a king, statues of Memnon at Thebes, statue of Myretamun, daughter
of Pharaoh Ramses II, statue of Pinudjem, Priest of Amun Temple, block statue of Amun-Re in Karnak, bust of Pharaoh Akhenaten, statue of Seneb and his family, statue of Thutmos IV and his wife, statue of Amenhotep III and his wife and statue of Ramses II and his wife Nefertari in Hator Temple [8].

Brooklyn Museum (2011) arranged an exhibition for over 120 collections of its Egyptian treasures. The collections included statues and covered a time span from 3650 BC to 365 CE [9]. Pienoski (2016) in her Master of Arts thesis about he historical evolution of the Cleveland Museum of Art's Egyptian collection presented a number of stone statues such as the statue of Pharaoh Amenhotep III from the 18th Dynasty [10]. Wikipedia (2016) wrote an article about block statues emerged in the Middle Kingdom of ancient Egypt and continued to the Late Period. As an example they presented the block statue of Official Senwosret from the 12th Dynasty [11]. Hassaan (2016) investigated the evolution of mechanical engineering in ancient Egypt through studying the industry of stone statues during the time span from Naqada II to the Old Kingdom Periods. He presented a large number of stone statues including single, pair and group statues for classes from Pharaohs to servants. He outlined the characteristics of each statue [12].

II. MIDDLE KINGDOM

The Middle Kingdom of ancient Egypt includes the 11th and 12th Dynasties over a time span from 2050 to 1800 BC [13]. Stone statues have achieved great development during the Old Kingdom [12]. Here, we will show how this industry was developed during the Middle Kingdom through a number of presentations from both 11th and 12th Dynasties:

- Fig.1 shows a limestone statue for Steward Meri (2124-1981 BC) in display in the Metropolitan Museum of Art at NY [14]. The designer showed Meri setting and putting both arms crossed on his chest, wearing a short Schenti and a nicely decorated Khat headdress and having a light moustache as clear in the zoomed view in Fig.1.

- The second example of stone statues in the 11th Dynasty is for King Mentuhotep II, the 5th King of the dynasty (2061-2010 BC). It is carved from sandstone, has a height of 2.53 m, in display in the Metropolitan Museum of Art and shown in Fig.2 [15]. The King is standing wearing a short Schenti, a cloak and a Modius Crown. He is putting both hands crossed on his chest with held palm.

- The third example is again for King Mentuhotep II which is a painted limestone statue in display in the Egyptian Museum at Cairo and shown in Fig.3 [16]. The King here is shown setting wearing a white cloak and the Red Crown of Lower Egypt. Here also he is holding his hands while crossed on his chest.

- The fourth example of stone statues in the Middle Kingdom is a quartzite statue for Sealer Nemtihotep from the 12th Dynasty (1981-1802 BC) in display in the Metropolitan Museum, of 0.765 m height and shown in Fig.4 [17]. The Sealer is shown wearing a long Schenti, cloak rapped around his hands and a decorated Nemes-like headdress. Even though the quartzite stone is one of the hardest rocks, ancient Egyptians could carve it to the accuracy and high quality shown in Fig.4.
The fifth example is a limestone statue for Steward Sehetepibreankh from the 12th Dynasty (1919-1885 BC) in display in the Metropolitan Museum, having an 0.945 m height and shown in Fig.5 [18]. The designer showed the Steward setting, wearing a short Schenti, decorated Nemes headdress similar to this in Fig.4 for Sealer Nemtihotep and putting his two hands on his legs holding an object by the right palm and extending the fingers of the left hand.

- The sixth example is a granite statue for King Senusret III (1870-1831 BC), the 5th King of the 12th Dynasty in display in the Brooklyn Museum at NY and shown in Fig.6 [19]. The designer showed the King wearing a short decorated Schenti and a Nemes headdress, putting his hands on his legs in a pose similar to that shown in Fig.5.
- The seventh example is a red granite head for King Senusret III in display in Luxor Museum and shown in Fig.7 [20]. The King is shown wearing the White Crown of Upper Egypt.
- The eighth example is granodiorite statue for King Amenemhat III, the 6th King of the 12th Dynasty in display in the Claveland Museum of Art having an 0.512 m height and shown in Fig.8 [21]. The designer showed the King standing with his hands extending downward and wearing a
decorated short Schenti, a belt and a decorated Nemes headdress.

- The last example of stone statues produced during the Middle Kingdom is a quartzite block statue for Senwosret-Senebefny from Late 12th Dynasty (1836-1759 BC) in display in the Brooklyn Museum and shown in Fig.9 [22]. The designer showed the owner of the statue setting on the ground and putting both hands on his legs under a cloak and wearing a Khat headdress while his wife is standing in front of his legs.

III. SECOND INTERMEDIATE PERIOD

The Second Intermediate Period of ancient Egypt covers the 13th to 17th Dynasties over a time span from 1802 to 1550 BC [23]. The examples of stone statues available from this period are all from the 13th Dynasty presented as follows:

- The first example is a diabase, 0.35 m height statue for King Neferhotep I, the 25th King of the 13th Dynasty in display in the Archaeological Museum of Bolognat, Italy and shown in Fig.10 [24]. Even though the diabase is one of the hardest stone, the ancient Egyptian carver mastered carving it and produced a setting statue for the King with his hands on his legs, wearing a short Schenti and a Nemes Crown. The statue is shining meaning it was well polished.

- The second example is a diorite statue for King Sobekhotep IV (1732-1720 BC), the 27th King of the 13th Dynasty in display in the Metropolitan Museum of Art and shown in Fig.11 [25]. The designer using a hard stone produced a wonderful statue for the King wearing the standard short Schenti with belt and tail wearing a decorated Nemes headdress and putting his two hands on his thighs.
The designer showed the King kneeling, wearing the standard short Schenti with belt and tail and wearing a nicely decorated Nemes headdress as clear from his zoomed view.

- The fourth example is a statue for King Mentuhotep of Upper Egypt (1585 BC) from the 16th Dynasty of Thebes in display in the British Museum and shown in Fig.13 [27]. The King is wearing a standard fashion of the Kings since the Old Kingdom. The Schenti is short and decorated with belt and front tail, the Nemes headdress is decorated and his hands are extending downwards and holding an object.

- The fifth and last example from the 2nd Intermediate Period is a limestone statue of Siamun (1580-1550 BC) from the 17th Dynasty in display in the Metropolitan Museum of Art and shown in Fig.14 [28]. The designer showed him setting on a backless chair, wearing a short Schenti and a decorated Khat headdress as clear in the zoomed view in Fig.14.
VI. CONCLUSIONS
- Ancient Egyptians were pioneers in producing stone statues.
- They authorized the history of Kings, high officials and lower-rank people through stone statues set in Temples and Tombs.
- During the 11th to 17th Dynasties of ancient Egypt they used a number of Egyptian stones in carving their statues such as: limestone, sandstone, quartzite, granite, granodiorite, diabase and diorite.
- The ancient Egyptians could carve statues using very hard stones such as: granite, diabase and quartzite.
- The ancient Egyptians during the era under study designed stone statues in different positions such as: setting on chairs statues, setting on the ground status, standing statues and kneeling statues.
- The statue arms took different positions such as: Extending vertically with opened palm in standing statues, holding objects in each palm, crossing arms on the chest in setting on chair statues and holding the knees by both hands in block statues.
- The designer was keen to present the statue owner with his favourable headdress including: Khat, Modius, Red Crown, Nemes, Nemes-like and White Crown.
- The men dressing through this era as depicted by the stone statues presented was the short Schenti, either plain or decorated.
- Some statues appeared with the owner holding an ointment jar in his hand.
- All the Royal Nemes were decorated and carrying the Copra icon on its front-top end.

REFERENCES


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BIOGRAPHY

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- Emeritus Professor of System Dynamics and Automatic Control.

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