

Unpublished Shroud of *Djedhor* at Hurghada Museum: Iconographic Examining and Conservation for Late Painted Linen¹

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Abstract

The ancient Egyptians have done their best to preserve mummy corpses from decay and corruption. They have taken all measures from the Pre-dynastic period till the end of history aiming at the resurrection. One of these measures was the shroud. It was typically wrapped around the mummy after the mummification process and became important during the Late Period to Graeco -Roman because it has replaced the coffin itself.

The authors aim to study in-depth this unpublished shroud of Djedhor's coffin "TR 1.11.16.5(b), SR 4/ 11332(b)" by taking scenes, comparing it to other shrouds, and analyzing the performance. This paper also illuminates the religious significances which were behind the decorations and texts on this shroud in the shade of the coffin to introduce a complete image of the role of the shroud.

The decorations of the shroud have been executed based on the plan for the whole coffin. All decorations were organized well aiming to resurrection. On the conservation side of the Djedhor's shroud, the authors used multidisciplinary methodologies for description, documentation, and conservation of archaeological shroud at Hurghada Museum.

Finally, we'll discuss some new explanations for the shroud's decorations in relation to other shrouds from the same time period.

Keywords: Shroud; Conservation; Hurghada Museum; Djedhor; Late Period.

¹ We would like to thank Dr. Mekis, T for his support and Prof. Hassan Selim for his precious help, and also our deep thanks to the curator of Hurghada Museum, all the team of conservations for their support and help.

Introduction

The shroud in ancient Egypt was considered layers of linen which were wrapped carefully around the mummy corpse.² The ancient Egyptians put materials between layers helping in parchedness, and absorbing the dampness from the corps.³

The kings and individuals were required to cover the bodies with the shrouds, but the individuals were not permitted to use any of the royal mummification techniques.⁴ From the Old to the New Kingdom, all the royal shrouds were considered linen bandages layers with the life-size representation of god Osiris is painted in blue color. There were some religious changes during the Late Period; particularly the elites have the force ability to possess coffins with all royal details like decorated shrouds. It was not just layers of linen wrapped over the corps; however, it was layers of linen which remotely was fixed enriched stripes of scenes have taken from the decorations' scenes.⁵

The coffin of *Djedhor* consists of four parts (fig 1). It looks like another coffin in Egyptian Museum Inv. number T.R.6.9.16.1; it was published by Mekis, T., and others in *RdE* 2011. The two coffins belonged to Djedhor. It

² Cooney., K.M., *Coffins, Cartonnages and Sarcophagi*, A companion to Ancient Egyptian Art, 1st edition, 2015, pp. 270-292; *idem*, *Cost of Death*, 2007; Roth, A.M., *Fingers, Stars, and the 'Opening of the Mouth': The Nature and Function of the nTrwj-Blades*, *JEA* 79, 1993, pp. 57-79; Niwiński, A., and G. Lapp, G., "Coffin, Sarcophagi, and Cartonnages": *The Oxford Encyclopedia of Ancient Egypt*, vol. I, Oxford, (2001).

³ Lüscher, B., *Das Totenbuch pBerlin p. 10477 aus Achmim*, vol. 6, 2000, pp. 47-49.

⁴ Maspero, G., *Sarcophages des époques Persane et Ptolemaïque*, CG.29306-29323, Tome I, Le Caire, 1914; also Cooney has a lot of publications deal with sarcophagi and coffins *such as*; K. M. Cooney, 'Gender Transformation in Death: A case Study Coffins from Ramesside Period Egypt', *NEA*, vol. 73, Issue 4, *ASOR*, (2010), p. 230; Cooney, K.M., *Cost of Death*, 2007; *idem*, *Changing Burial Practices at the End of New Kingdom, Coffins, Decorations*, *JARCE*, (2011); Manassa, C., *Late Egyptian Underworld Sarcophagi and Related Texts from the Nectanebid Period*, part I, Wiesbaden, 2007.

⁵ Ikram., S and A. Dodson, A., *The Mummy in Ancient Egypt: Equipping Dead for Eternity*, London, 1998, p. 193; Taylor., J.H., *Egyptian Coffins*, London, 1989, p. 7; Patterson., J. H and, Andrews., C. *Mummies: Death and Life in Ancient Egypt*, New-York, 1978, p. 35; K. M. Cooney, 'Gender Transformation in Death', pp. 230-251; R. Brech, R., 'Spätägyptische Särge aus Akhmim'. *Eine typologische und chronologische Studie* (AegHam 3), (2008), pp. 219- 221

would be a benefit for us to compare the two coffins to conclude the similarities and differences.⁶

Djedhor coffin was found in a good state with complete parts.⁷ It was painted by the same figure which existed on the surface of the coffin. Daressy⁸ pointed out that this coffin came from Akhmim,⁹ that information was confirmed by the style of the cartonnage and the coffin. Gauthier¹⁰ argued that this coffin was executed during the Late Period, but he didn't determine the precise dating. The authors would narrow down the date of this coffin to suggest precise dating, which was based on iconographic, text analyses. The anthropoid coffin has a lid, a mummy, and a shroud with a cartonnage.¹¹ This coffin TR 1.11.16.5 (b), SR 4/ 11332 (b) was displayed for the first time at Hurghada Museum on 12 January 2019.¹²

The unpublished *Djedhor*'s shroud is a part of the complete coffin for a high official who has lived during the end of the Late Period (fig. 1). It was in bad need of restorations which have been done by a special team of conservation to be ready for displaying at the museum.

Wrapping the body in a shroud is a practice common to many cultures. In Egypt, once the body has been mummified and carefully wrapped with

⁶ The authors contacted Mekis, T. Concerning his publication, the paper was entitled 'The Ensemble of the *Djed-Hor* Coffin, Cartonnage, and Hypocephalus in the Egyptian Museum of Cairo', *RdE*, 2011, pp. 89-101. The authors did it to make sure that he did not deal with this shroud of mine in Hurghada Museum from near or far. Indeed, we sent him the paper and wait for his comments, after two weeks he answered that our coffin and shroud is new and he did not study it in his publication, restoration. He expressed that he was happy that there were researchers who have completed the publication of *Djed-Hor*'s coffin.

⁷ Lüscher, B., op.cit, pp. 47-49, Taf. 21-35 recto, 36-39 verso. M. Mosher, *The Papyrus of Hor (BM EA 10479) with Papyrus MacGregor: The Late Period Tradition at Akhmim (CBDBM 2)*, 2001, p. 6, n. 8.

⁸ He described briefly the lid of the coffin and its style.

⁹ Akhmim cemetery was found was discovered by Maspero in 1884, *See*, G. Maspero, G., *BIE Deuxième série* 6 (1886), pp. 88-90; A. Kamal, *Catalogue Général des Antiquités Égyptiennes du Musée du Caire (Nr. 23001-23256), Tables d'Offrandes, I (CGC)*, 1909, pp. 124-125, 129-130; P.M V, p. 25.

¹⁰ Maspero, G and Gauthier, H., *Sarcophages des époques Persane et Ptolemaïque. Inst. Français d'Archéologie Orientale*, 1939; Gauthier, H., "Cercueils Anthropoïdes des prêtres de Montou": CG 41042-41072, Tome I, Le Caire, 1902, p. 134.

¹¹ Maspero, G., *Sarcophages des époques Persane et Ptolemaïque*, CG.29306-29323, Tome I, Le Caire, 1914.

¹² It was put in stores of the Cairo Museum; a few months ago they were transferred to Hurghada museum for displaying after restoration. It was moved by committee of Egyptian Antiquities in 2018 to be displayed in the museum.

bandages, a large sheet of linen (shroud) was usually the final stage before the body was placed in the coffin. Sometimes text was written on this shroud, and in the early New Kingdom and the Late Period, texts of the Book of the Dead were sometimes written on them (fig 1, 2).¹³



Fig 1: Coffin of Djedhor from Akhmim cemetery, Hurghada Museum, Accession number TR 1.11.16.5 (b), SR 4/ 11332(b), photo by authors.

¹³ Addressed topics ranged from the techniques for investigating corrupted yarns, according to the near investigation of explicit accounts of materials and mummification traditions; See, Good, I., *Archeological Textiles: 'A review of current research'*, *Annual Review of Anthropology*, 30, (2001), pp. 209-226.

The utilization of analytical techniques, at first created in the field of material science, for objects of craftsmanship and prehistoric studies gives the specialty of students of history and archeologists the likelihood to acquire data about the material sort of such items, the method of assembling relics, and subsequently, the lifestyle of the way of life examined and plans answers to the inquiries of where, when is made. Additionally, this stage was viewed as the main goals of the conservator to pick the proper strategies for rebuilding to be utilized. (fig. 3); Ortega-Avi, M and P. Vandenabeele, D. Tenorio, M. Jimenez-Reyes, N. Gutierrez, *Spectroscopic investigation of a 'Virgin of Sorrows' Canavas Painting: A Multi-method Approach*, *Analytica Chimica Acta*, 550 (1-2), (2005), pp. 164-172; Although the exceptionally dry conditions in Egypt have kept the survival of that completed object. Besides, burial cloths usually bear evidence of the progress of ancient Egyptians. All organic materials are very fragile, brittle, and suffered due to factors of deterioration all the time, Amin, E., *The documentation and treatment of the Coptic Child's Tunic in Egypt*, *Egyptian Journal of Archaeological and Restoration Studies*, Volume 9, Issue 1, (2019), pp.1-11; The preservation measures incorporated a few phases starting with mechanical cleaning and drying steps, just as uniting and preventive protection, Amin, E., *Technical Investigation and Conservation of a Tapestry Textile from the Egyptian Textile Museum, Cairo*, *Scientific Culture*, Vol. 4, No 3, (2018), pp. 35-46.



Fig 2: Coffin of Djedhor from Akhmim cemetery, Hurghada Museum, Accession number TR 1.11.16.5 (b), SR 4/ 11332(b), photo by authors.

Unpublished shroud of Djedhor

The owner of the shroud and mummy was *Djedhor* who lived in Egypt at the end of the Late Period. He was a royal scribe as well as a priest of the fertility god *Min*, Hathor the moon and healing god *Khonsu*.¹⁴ He lived in *Apu* (Akhnim) and was mummified and buried in a cemetery there after his death.¹⁵

- **Material:** Decorated layers of linen with gesso.
- **Measurements:** Length: 179.1 cm (70 1/2 inches).
- **Place of preservation:** Hurghada Museum.
- **Accession numbers:** TR 1.11.16.5(b), SR 4/ 11332(b).
- **State of preservation:** High state of preservation, except the bottom, left side of the shroud.
- **Place of discovery:** Akhnim cemetery.
- **Dating:** The end of the Late Period, the beginning of the Ptolemaic period.
- **Parts of the coffin:** Three parts, included the shroud wrapping mummy of Djedhor.

Archaeological Description of Djedhor's shroud

Before description the Djedhor's shroud, it should be mentioned the identification of Djedhor. In the beginning, the owner of the shroud is Dd-Hr, there were many high officials have carried the name Dd-Hr especially, at the end of the late-period; the first character had been named Dd-Hr the son of

¹⁴ Buhl, Marie-Louise, *The Late Egyptian Anthropoid Stone Sarcophagi*, Nationalmuseets Skrifter, Arkæologisk-historisk række, 6, Copenhagen: Nationalmuseet, (1959), pp. 117–119, fig. 69; no. F, b 6.

¹⁵ M. Mosher, *The Papyrus of Hor (BM EA 10479) with Papyrus MacGregor: The Late Period Tradition at Akhnim (CBDBM 2)*, 2001, p. 6, n. 8.

Tasheritentaihet who has served as a military officer during the reign of Alexander, he has ascended from a prominent local family and he has been enjoying particular favor of the king.¹⁶ Another character has been named Dd-Hr was a priest of Min and Hathor he was degraded in positions from royal scribe to priest, his mother Tikas.

Djedhor's family his father was called ns-mnw pA Xrdw and the name of the mother did not appear, but it could be Mw.t-Htp,¹⁷ or nsw pA lwAa.¹⁸ Mekis, T& Takwa, S & Kholoud, A., have published a coffin and cartonnage for Djedhor from Egyptian museum,¹⁹ the name of Dd-Hr was written in different variations was as follows.²⁰



Djedhor's Mummy was wrapped in linen shroud bandages and placed inside an Anthropoid wooden coffin. The coffin consists of three parts: the coffin consists of a box and a lid and sometimes a box, mummy board and a coffin lid. The whole coffin was covered with flourish colorful decorations; the dark red color is the domination on a faded yellow color as the background (fig 3). The shroud was executed by weavers as layers of linen; between each layer, they put glue for the shroud to become strong and protect the mummy from rotting and moisture. They have designed the shroud as an anthropoid enveloping the mummy corpse; the shroud measures 179.1 cm long. It was composed of single linen cloth, worked with perpendicular warp and weft.

¹⁶ *Djedhor* was the military officer had many titles like *Djedhor the savior of Athribis*; he had statue in Cairo, Egyptian Museum, JE 46341, and another statue in Chicago Museum, E. Jelinkova-Reymond, 'Les inscriptions de la statue Guérisseuse de Djed-her-le-sauveur', 'Djedhor the Saviour: Statue Base OI 10589.

¹⁷ Mekis, T& Takwa, S & Kholoud, A., 'The Ensemble of Djed-Hor Coffin, Cartonnage and Hypocephalus in the Egyptian Museum of Cairo', *Revue d'Égyptologie* 62, 2011, pp. 89-103; B. Lüscher, *Das Totenbuch pBerlin P. 10477 aus Achmim HAT 6*, 2000, p. 47-49, Taf. 21-35 recto, 36-39 verso; M. Mosher, *The Papyrus of Hor (BM EA 10479) with Papyrus MacGregor: The Late Period Tradition at Akhmim CBDBM 2*, 2001, p. 6, n. 8.

¹⁸ Gauthier, H., 'Les fêtes du Dieu Min', *RAPH* 2, 1931, pp. 39-51; Brech, R., 'Spätägyptische Särge aus Akhmim, op.cit, pp. 219-221.

¹⁹ The coffin, cartonnage and hypocephalus of Djedhor in Egyptian museum of Cairo number is T.r.6.9.16.1; Buhl, M. L., *The Late Egyptian Anthropoid Stone Sarcophagi*, pp. 112- 114.

²⁰ Elias, J., *Coffin Inscriptions in Egypt after the New Kingdom*, vol III, Chicago, 1993; Ranke, H., *Die Ägyptischen Personennamen*, Bd. 1: Verzeichnis der Namen. Glückstadt: J.J. Augustin, 1935, pp. 411- 412.

The mummy's shroud was decorated with vibrant colors; the artist simulated the linen appearance through representing lappet decorations as a background for the scenes. Without cartonnage, the artist could draw the facial features inaccurately. It looked like the cartonnage in decorations of petals and flowers. The master scene of the shroud represented the goddess MAat with her recognized wings holding an ankh sign in each hand. The other important scene on this shroud was a representation of the scarab with outstretched wings holding the sun by upper hands while the Sn sign by other hands; it was encircled by four Sons of god Horus. The vertical line of texts has the titles and epithets of the owner of the coffin. (fig 4)



Fig.3 The shroud in its first stage without any treatment being carried out for its restoration, photo by authors.

The shroud of Djedhor became clear after the facsimile (fig. 5). The scenes on the shroud could be described as follows.²¹

- **DH1** represents the head part of Djedhor and the facial features; the artist tried to imitate the facial features of the coffin's lid of Djedhor with thick facial features. The Wdjat Eyes with curved eyebrows and

²¹ DH is abbreviation to the name of the shroud Djed Hor.

prominent eyes, aquiline nose with fleshy tip and two wings, thick mouth with lips; also, the false beard. The formation of the facial features differs from stone to linen. The hair wig of Djedhor's shroud was designed by two thick long lappets; it is colored with green and yellow colors. Two ears are exposed from the hair wig. After restoration, it becomes easy to recognize the Djedhor's facial features (fig. 4).

- **DH2** represents the *wsx* broad collar; the collar is wide and drawn in fresh colors which were fitted up with the other colors of the shroud. It begins under the neck and extends to the chest as layers of decorations ending with raptors-petals. The broad collar of the shroud is different from the collar's lid; the collar of the lid is designed in broad layers of lotus, flowers, and petals (fig. 1). The artist designed the collar of the shroud as small and low in layers.

Decoration for Djedhor's shroud²²

The shroud of *Djedhor* was decorated through the open-work technique; it looks like the net.²³ Painting stripes which were fixed on the shroud by gesso or glue in addition to magic stitches; the weavers have designed the stripes separately after painting the decoration religious scenes; and then were fixed these painting stripes to the shrouds by different means. These stripes were divided into three main parts:

- The cartonnage which was fit on the head of the mummy with gilded face and facial features.
- The second part was the main part which was fixed on the chest of the mummy.
- Finally, the separated stripe near to the legs of the mummy.

Djedhor appears wearing a simple tripartite wig which was tucked behind the ears; it leaves the two ears are exposed (DH1). Between the frontal locks of the hair wig, there is a broad collar which is known as *wsx n bik*; it consists of the 4 layers (fig. 5); beginning with semi-circle layer then rosette motif layer and the third layer is lotus flower and finally, the last layer of the collar is formed as petals or water drops. The broad collar extends to the shoulders

²² We redrew and put **DH** as symbol to **Djed-Hor** on all over of the shroud from DH1 to DH8 after facsimile of the shroud.

²³ This type of the decoration was common at end of the Late Period. There is another coffin for Djedhor from Cairo Museum. It was registered under Inv. number T.R.6.9.16.1. It was published by Mekis, T and others in *RdE* 2011, pp. 89-101. This coffin in Cairo Museum and the other coffin of Hurghada Museum were different but for the same person Djedhor.

ending with a falcon head without a crown as usual (DH2).²⁴ It is worthy to mention that this representation of the falcon-head without crown is unusual as all the representations on the lids during the Late Period. The facial features of the *Djedhor* were stylized with an expression of calm; the eyebrows and the cosmetic lines of the eyes are black. The tip of the nose is broad and fleshy, likely to the facial features of the lid.

- DH3 represents the goddess *Nut* in her popular kneeling pose as usual with two outstretched wings and her arms are extending parallel with the wings holding the *Ank* sign of life in each hand (fig.5).²⁵ She appeared wearing straps tight dress and sun disk is upon her head bearing her name *Nwt*. Ancient Egyptians thought that *Nut* will grant them eternity like stars *Ikhnw-sk*.²⁶ Schott²⁷ pointed out that Egyptians used the name *mwt* on the coffin as a relation to goddess *nut* and her role in protecting the deceased.²⁸
- The representation of DH4 and DH6 is the sons of the god *Horus*;²⁹ it was arranged in two rows with cardinal directions,³⁰ DH4 shows from

²⁴ It's very rare to see the broad collar ending with falcon head without crown as usual; The collar appears wide covering the whole shoulders; it is a multi-rowed, beaded *wSX* collar; its design to be like floral collar with rows of faience beads; it bears many colors such as; blue, red, yellow and green; R. H. Wilkinson., *Symbol and Magic in Egyptian Art*, London, 1994, p. 89; G. Robins., 'Color Symbolism', *the Oxford Encyclopedia of Ancient Egypt*, vol. I, Oxford, 2001, p. 291.

²⁵ Piankoff, A., 'The Sky Goddess *Nut* and the Night Journey of the Sun', *JEA* 20, 1934, pp. 57- 61.

²⁶ S. Ikram., and A. Dodson., *The Mummy in Ancient Egypt: Equipping Dead for Eternity*, London, 1998, p. 193; A. Rusch, "Die Entwicklung der Himmelsgöttin *Nut* zu einer Totengottheit": *MVÄG*, vol. 27, Leipzig, 1922, p. 37; P. Remler., *Egyptian Mythology A to Z*, New-York, 2010, p.137.

²⁷ S. Schott., 'Nut Spricht als Mutter und Sarg' *RdE* 17, 1965, p. 81.

²⁸ Erman, A., et al., eds., *Wörterbuch der Ägyptischen Sprache*, 1957, p. 214; Billing, N., *Nut: The Goddess of Life: In Text and Iconography*, Department of Archaeology and Ancient History, Uppsala University, 2002.

²⁹ During 21st Dynasty the embalmers of the elites began to preserve all viscera in the corps, while the canopic jars became empty, J. Assmann, *Death and Salvation in Ancient Egypt*. Ithaca: Cornell University Press, 2005, p. 357; Germer, R., 'Mummification'. In Regine Schulz; Matthias Seidel (eds.). *Egypt: The World of the Pharaohs*, Cologne, Könnemann, 1998, pp.460-61.

³⁰ It is known from ancient Egyptian beliefs that sons of god *Horus* are responsible for the safe of the deceased's organs; *Imsty* appears as human protected the liver; it represents the south and associated with *Isis* in New Kingdom, *Hapy* is as baboon head, protected the lungs, represents the north and he is associated with *Nephthys*. *Dwamwtf* the jackel represents the East; associated with *Neith*. Finally, *Qebhsenuf*

the left side is Imsty then Hapy in front of him the second row DH6 represent *dWA mwt. f* and in front of him *QbH snw. f*. They were the safeguarding for the organs of the deceased; the Egyptians have linked these four gods with animals; each of them had a symbol and aim for example; Imsty refers to a human, may be linked to the Osiris himself which the deceased hope to unify with him in the afterlife. Hapy who appears with baboons like god Thoth, the god of wisdom and knowledge.³¹ The jackal was represented by *DWAmwtf* who played an important role in the mummification process.

- DH5 is the main representation of the shroud of Djedhor; it was considered the everlasting life with Osiris. The scene is scarab with outstretched wings holding sun disk in his frontal arms, while the Sn sign between his back arms. The symbol behind this scene is the eternity of the deceased Djedhor.

The arrangement of the scene was logical and a religious dimension, goddess Nut is above all scenes because she represents the sky and the scarab scene is below and between them the sons of Horus as guarding the organs. The shroud of Djedhor told us that Djedhor who is protected by goddess Nut in the sky would enjoy eternity by protecting his organs by sons of god Horus.

- DH7 is the representation of the one vertical line of inscriptions for the name of Djedhor and his titles. It starts with:

*Dd mdw in Wsir xnty imntt nTr aA nb AbDw Ra nxt qrst nfrt n Hm-nTr wr ixt
Hm-nTr n Imn-Ra nb PXrt Dd-Hr mAa-xrw sA mi-nw-pA-Xrd-mnw mAa-xrw
ms nbt pr nsp-wn-Tw.*

Recitation by Osiris, the Foremost of the West, great god, lord of Abydos, Re, the strong one, a beautiful burial for the priest of great offering, the priest of Amun-Re, Lord of Pkhert, Djed-her, true of voice, son of Menwpakherdmenw, true of voice, who was born of the lady of the house Nespwenthw.

is as hawk; he is related with goddess Serket and west direction; for more information *See*; Germer, R., 'Mummification'. In Regine Schulz; Matthias Seidel (eds.). Egypt: The World of the Pharaohs, 1998, p. 460-61; Assmann, J., Death and Salvation in Ancient Egypt. Ithaca: Cornell University Press, 2005, p. 467.

³¹ Baboons also chatter and become rejoice when see the sun rise which rising their hands as kind of worshipping, *See*; Fleming, F., Alan Lothian, A., The Way to Eternity: Egyptian Myth, vol. 2, 1998, p. 27.

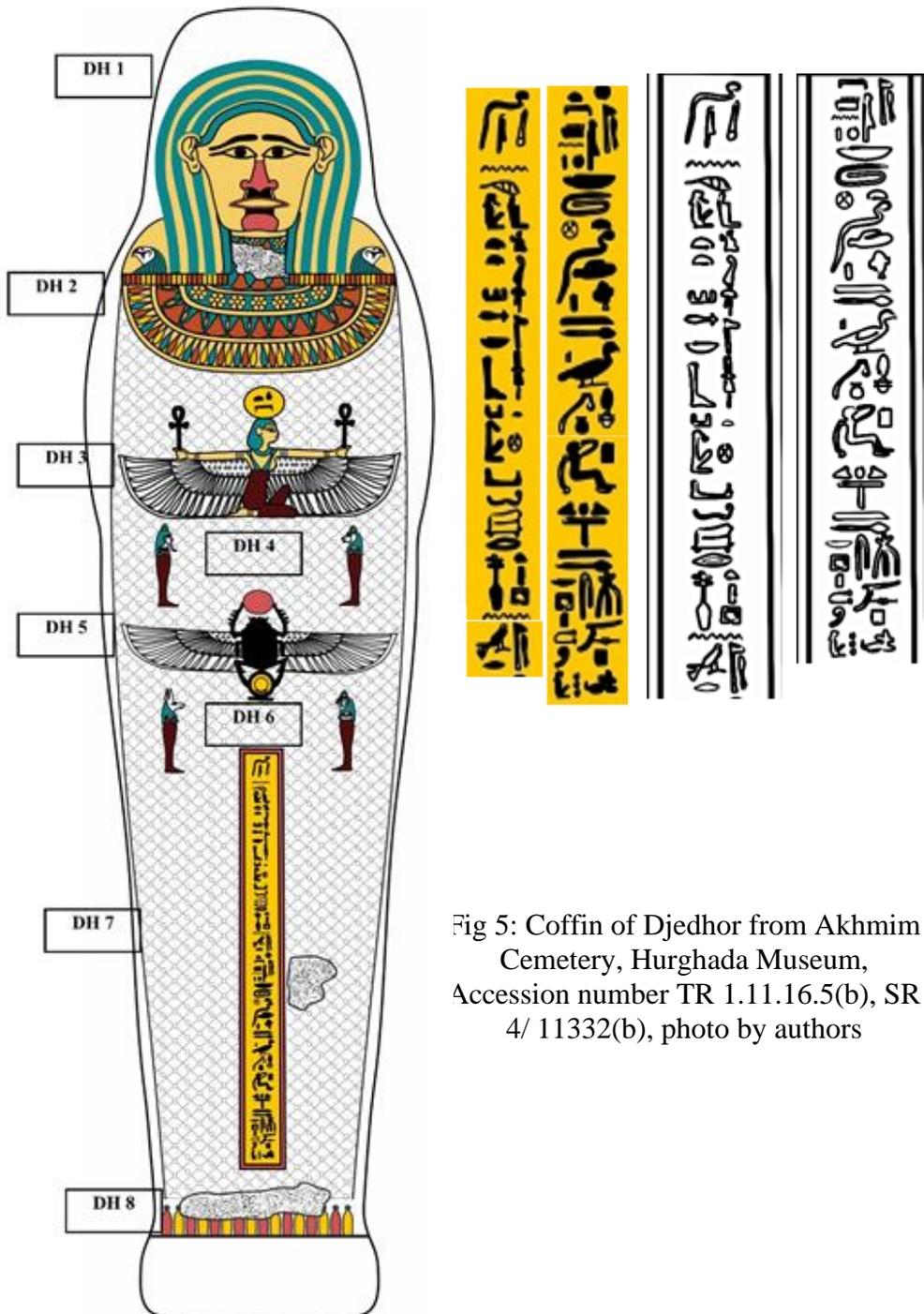


Fig 5: Coffin of Djedhor from Akhmim Cemetery, Hurghada Museum, Accession number TR 1.11.16.5(b), SR 4/ 11332(b), photo by authors



Fig 4: The upper part of the shroud before and after the mechanical process.

Discussion

Goddess Nut according to the Book of the Dead had both a solar and an Osirian role in the afterlife. She was the mother of Osiris and bore Re anew each day.³²

The *Nut's* representation is the guarantee for the deceased to be judged in fairway and acting as the mother of the deceased and his protector,³³ and goddess MAat helps him to overcome the difficulties in the afterlife. Definitely, this scene always preceded the scene of embalming. *Nut* was always depicted as a full lady with sun disk on her head, holding the feather in each hand referring to her symbol as a goddess of justice. The artist was able enough in utilizing more colors in this register, for example, yellow, red, blue on a blurred rich foundation. The authors presumed that the portrayal of the goddess Nut did not resemble its representations on the coffins of the New Kingdom; however, the execution was a pool of experience and sufficiency.

The Djedhor's shroud state suffered from deterioration and it has many missing parts, stains, darkness, and fading color existed weakened fibers, and brittleness, in addition to hardness, old restoration error (such as using a

³² Hollis, S. T., Women of Ancient Egypt and the Sky Goddess Nut, *The Journal of American Folklore*, Vol. 100, No. 398, Folklore and Feminism (Oct.- Dec., 1987), pp. 496-503; Piankoff, A., 'the Sky-Goddess Nut and the Night Journey of the Sun', *JEA* 20, 1934, p. 57-61; Kozloff, A., 'Star Gazing in Ancient Egypt', *Hommage a J. Leclant* (Berger, C. et al., eds), IV, Le Caire, IFAO, *BIE*1064, 1993, pp.169-176.

³³ Assmann, J., *Altägyptische Totenliturgien*, Band 1: Totenliturgien in den Sargtexten des Mittleren Reiches; *Altägyptische Totenliturgien*, Band 2: Totenliturgien und Totensprüche in Grabinschriften des Neuen Reiches, 2002.

paper sticker to fix separate parts) were seen in many parts of the shroud (figs.5,6,7).



Fig.5: Sign of damage existed in the surface of the selected object, photo by authors

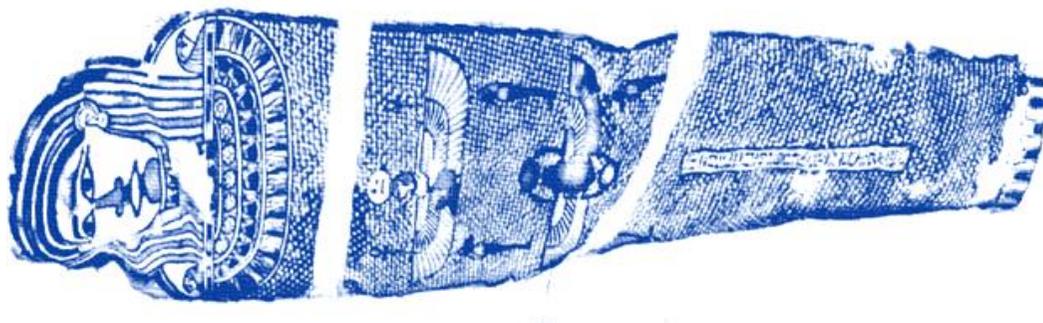


Fig.6: Photo drawn for the shroud for show sign of damage existed on the surface, drawn by authors



Fig.7: Sign of damage existed in the surface of the selected object, drawn by authors.

Testing and analysis

Morphological study

The samples taken from the painted shroud were examined to identify the kind of yarns and illustrate the mechanism of damage that existed on the surface. By Stereo Microscopes,³⁴ operates in the range between 380-1100 nm in the visible (VIS), near-ultraviolet (UVA), and near-infrared (NIR) using a modified Fuji Film. Photos prove that the shroud was made of linen in plain weave 1/1, and it was in a bad state of damage, such as hardness and fading of color (fig.8).



Fig. 8: Sign of damage existed in the surface of the selected object, photo by authors

Scanning Electron Microscope

Similar Small examples taken clearly from two Different parts were analyzed by utilizing Scanning Electron Microscope (SEM),³⁵ Philips XL30, SEM

³⁴ Research lab at Faculty of Archaeology, Fayoum University.

³⁵ Many samples were taken from different parts all over the shroud and were examined and analyzed by Stereo-microscope, SEM, and color measurement, FTIR for identification kind of fibers and dyes, and illustration the state of damage and mechanism of deterioration. According to the data analysis, a scientific strategy for treatment was done, as it could be helpful to have a good decision on the treatment

Photos emphasizes the splendor and hardness condition of material filaments, which were extremely damaged and covered with dust and stains, notwithstanding longitudinal scratches in its morphological appearance and missing part. (fig.9)

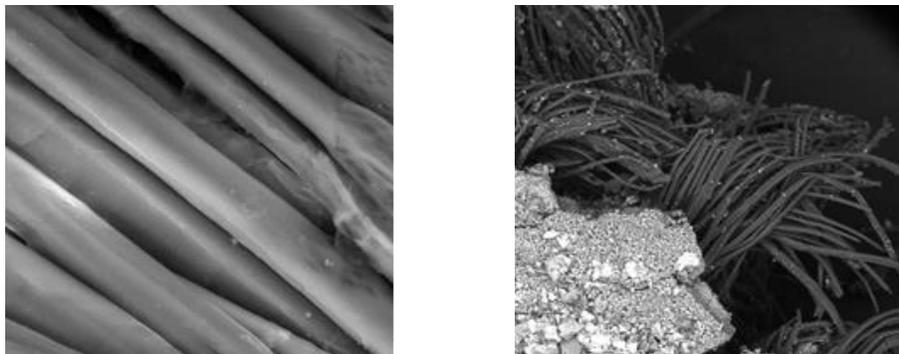


Fig. 9: The difference between the new and archaeological linen fabric, as sign of damage existed in the surface of the selected object, drawn by authors

FTIR "Fourier transform infrared analysis":

FTIR Model Cary 630 FTIR spectrometer,³⁶ produced by Agilent technologies Company, for both Qualitative and Quantitative (for liquid samples) analysis, in spectral range (wave numbers cm^{-1}) from 4000cm^{-1} to 400cm^{-1} without any treatment. Sample of brown linen was analyzed by FTIR and compared the results with the results of infrared spectra of the natural known one, spectra of the sample show that Indian cutch is the source of nature with different mordant (fig.10).

Standard Sample	Archeological Sample	Functional Group
-Ho-stretch	3292	3277.11
Ch stretch	2918	2922.88
-C=C-	1627.1	1633.15
-C=O-	1512.5	1515.78
=NO-	1439	1455.04
O-C	1036.9	1042.79

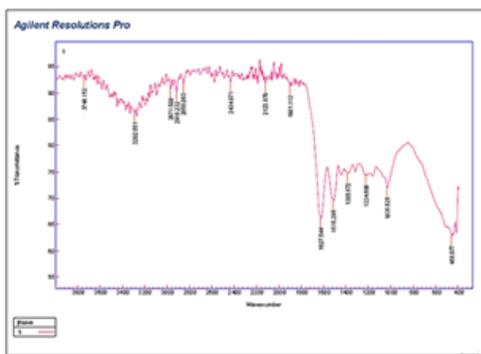


Fig.10: Spectra chart of brown dyed linen samples prove that the source of dye is Indian cutch, drawn by authors

procedure and material used in the conservation of the object. Mechanical and chemical cleaning was made.

³⁶ FTIR lab at national center for scientific research.

Calorimetry Measurements

Colorimetric measurements were performed according to commission International de l'Éclairage (CIE) LAB.³⁷ The measures show the changes in color and fading happen in the object by the effect of deterioration factors, as "L" indicates the Brightness of the sample, "A" indicates to value along with the red-green axis, and "B" indicates the value along a yellow-blue axis.³⁸

Table.1. Colorimeter measurement of a selected dyed sample of the painted shroud to show the fading of the sample

No. samples	L		A		B	
	Arch	Standard	Arch	Standard	Arch	Standard
1	50.56	74.49	10.50	4.55	16.51	22.99
2	55.74	74.49	9.22	4.55	16.51	23.15
3	48.79	74.49	12.19	4.55	16.51	24.82

Treatment Methodology

Rehydration process

The aging fabric (the shroud) was softened by spraying distilled water, three times every 30 m.to return its moisture content slowly, then covered the shroud with polyethylene sheets to keep the shroud in a moisturizing environment as much as possible (fig.11).



Fig.11: The rehydration process of the shroud by distilled water

³⁷ Research Lab at Faculty of Archaeology, Fayoum University.

³⁸ Lorusso, S and Andrea Natali, Chiara Matteucc, Colorimetry Applied to the Field of Cultural Heritage: Examples of Study Case, 2008, pp. 121-145.

Stability Testing

The test of the stability of the colored parts to wet cleaning was performed by immersing a piece of cotton wrapped around a wooden stick into the cleaning solutions and placing it in contact with the colorful parts of the object, each color was individually tested. It was found that all the dyes did not bleed with the wet cleaning solution.

Mechanical Cleaning

Removing free dust, residues of mummification process and sand (i.e., not attached to textile fibers) which were performed carefully by various types of fine brushes (fig.12).



Fig.12: The shroud before and after the mechanical process.

Wet Cleaning

water only and water with other detergent agents were the first steps for wet cleaning to remove the rest of the dust and show the brightness of color the result was very good (fig.13).



Fig.13: The shroud before and after the wet process

Chemical Cleaning

Many solvents were used to remove the darkened stains, such as acetone, ethyl alcohol, and toluene. The results were acceptable as we could remove many parts of stains and dust that existed on the surface. (fig. 14)



Fig.14: The shroud in its first state and after complete conservation

Conclusion

It can be concluded that during the end of the Late Period the Egyptian non-royal elites have got many privileges; they have the ability and power to possess a luxurious coffin consist of three pieces and a decorated shroud for mummy, in addition to the free representations of decorations on their coffins to enjoy resurrection like kings. Djedhor was a high official who lived in Egypt at the end of the Late Period. He was mummified and buried in a cemetery there after his death like the royal persons.

It is worthy to note that the remains of a shroud of the so-called Djedhor which was made entirely of linen woven in a simple way 1/1, but with craftsmanship that made the weaver make decorative ornaments on the shroud easily during the process of weaving on the loom, taking into account that the shroud combined the decoration during the process of weaving, which is known as *Qabati*, vertical columns were written in hieroglyphs. Another method of decoration was used for the printing on this shroud, in the upper part of the shape and features of the deceased's face. Finally, another style of decoration by adding to the shroud and that was done in the drawing of the goddess Nut spreading her wings, which was done in a style of decoration addition and this was evidenced by the sewing stitches that were made at the back of the shroud. We have to note that the collar extends to the shoulders ending with a falcon head without a crown as usual, and it's a very rare element on the shroud.

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