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Aspects of Crisis and Its Management in Ancient Egypt

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ABSTRACT

The research deals with the aspects of the crisis and how the ancient Egyptians dealt with its various aspects. It classifies the crisis to social crises and environmental crises. The research aims to present the types of crises and to demonstrate the ingenuity of the ancient Egyptians in solving or adapting to them. The research depends on the archaeological and historical books, articles, archaeological evidence such as statues, stelae, and tomb scenes. Finally, the conclusions highlight the main observations through discussing the primary sources and set a list of additional information to the academic knowledge related to the ancient Egyptian crisis.

KEYWORDS

crisis, upheaval, flood, climate change, Harem conspiracies, Ahmose Tempest Stela.

مظاهر الأزمة وإدارتها في مصر القديمة

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الملخص

يتناول البحث جوانب الأزمة وكيفية تعامل المصريين القدماء معها بأنواعها المختلفة، مقسمًا إياها إلى أزمات اجتماعية وبيئية. ويهدف البحث إلى بيان أنواع الأزمة وذكاء المصريين القدماء في حلها أو التكيف معها. ويعتمد البحث على الكتب والمقالات الأثرية والتاريخية، بالإضافة إلى الشواهد الأثرية كالتماثيل والنقوش ومناظر المقابر. وأخيرًا، جاءت الخاتمة لتوضح أهم الملاحظات التي تم التوصل إليها من خلال مناقشة المصادر الأولية، وتُقدم معلومات إضافية تُثري المعرفة الأكاديمية المتعلقة بالأزمة المصرية القديمة.

الكلمات الدالة

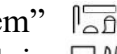
أزمة، فوضى، فيضان، تغير المناخ، مؤامرات الحريم، لوحة العاصفة لأحمس.

Introduction

Ancient Egypt is regarded as one of the greatest civilizations in human history, known for its rich culture, powerful kings, and long periods of stability. However, like all societies, it faced many crises that affected the lives of its people. These crises came in different forms, such as low floods of the Nile that caused poor harvests and hunger, political problems like weak rulers or civil wars, and even attacks from enemies or thefts from tombs. This research classifies the aspects of crises as: environmental crises and social crises. The environmental crises combined the disruptions caused by natural changes such as droughts, inundation, climate change, and diseases while the social crises combined the disruption made by human such as conflicts and social upheavals, robberies, and conspiracies. The research discussed each point and how the ancient Egyptians dealt with it.

The ancient Egyptians left immense archaeological evidence which helped in revealing their daily life. The authors rely on stelae such as Ahmose Tempest Stela as an attestation of the climate change and King Peribsen's funerary stela as an evidence of removing Horus and replacing him with Seth indicating the religious conflict. The study also relies on tomb scenes such as a scene of famine shown on a stone block of the causeway leading to the pyramid of Wnis at Saqqara, and also inscriptions to understand what were the types of crises and the solutions that the ancient Egyptians applied.

Linguistic Analysis of the term "Crisis" in the Ancient Egyptian Language

The study could not identify a precise equivalent for the term crisis in the ancient Egyptian language. However, it attempts to approximate the concept through various synonyms and related terms. For instance, "disaster"  *nšni*[1], "obstacle"  *ḏr*[2],  *sḏb*[3], "implant an obstacle"  *ḥw sḏb*[4], and "problem" *sštꜣ*[5], but the authors found only one attestation to the term "crisis" which is  *pryt*[6].

To conclude, it seems that ancient Egyptians often appeared to avoid referencing crises, possibly reflecting a reluctance to acknowledge their occurrence.

Ancient Egyptians dealt with crises either by trying to find solutions or by adapting to them which in both cases reflect a high degree of resilience and intelligence of our ancestors.

1. Social Crisis

The social crises include disruptions that affected the stability, structure, or harmony of society. These crises often stemmed from economic decline or political instability. They are as follows:

[1] This word also has the meaning of storm or foul weather, see: Faulkner, R.O., *A Concise Dictionary of Middle Egyptian*, Edited by B. Jegorović., Griffith Institute, Ashmolean Museum, Oxford, 2017, p.175.

[2] Faulkner, *A Concise Dictionary*, p.400. See: Piankoff, A., and Clere, J.J., "A Letter to the Dead on a Bowl in The Louvre", *JEA* 20, No.3/4 (2010), p.160.

[3] Faulkner, *A Concise Dictionary*, p.400.

[4] Faulkner, *A Concise Dictionary*, p.204.

[5] Faulkner, *A Concise Dictionary*, p.305.

[6] Faulkner, *A Concise Dictionary*, p.112.

1.1 Conflicts and Upheavals

Ancient Egypt lived often in stability but sometimes it was struck by several moments of political, social, and religious upheaval that disrupted the centralized power of the country. Among these disastrous moments is the religious conflict of the end of the 2nd Dynasty, social revolution of the 6th Dynasty, the invasion of the Hyksos, and Workers' Strike at Deir el-Medina.

The main reasons of the religious conflict that happened at the end of the Archaic Period was the cults of Horus and Seth. Early kings used to attach their names with Horus on royal *Serekh*[7], however, king Peribsen from the 2nd Dynasty, deviated from this tradition by the replacement of the Horus falcon with the god Seth. Peribsen placed Seth atop his royal *Serekh* which was considered a unique deviation in royal titulary[8], An example of this significant shift can be seen in King Peribsen's funerary stela from Tomb P at Umm el-Qa'ab (Abydos), preserved in Cairo Museum No. JE 3068[9].

Fig. 1: King Peribsen's funerary stela
After: Petrie, *The Royal Tombs of the First Dynasty*, pl. XXXI.

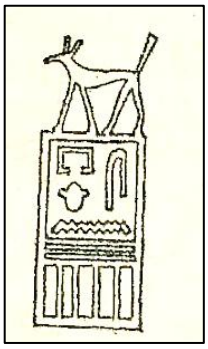


Fig. 2: Royal *Serekh* of King Peribsen surmounted by Seth instead of Horus
After: Emery, W. B., *Archaic Egypt*, London, 1961, fig.59, p.96.

The exact reason for Peribsen's new deviation is unknown especially that it had led to internal conflict between the followers of Horus and Seth. This change could be related to the idea of a divided kingdom between the north and the south during the 2nd Dynasty[10]. A less common theory argues that Peribsen elevated Seth's status as part of

[7] Bard, K. A., *An Introduction to the Archaeology of Ancient Egypt*, 2nd ed., New Jersy, 2015, p.88.
[8] Wilkinson, T. A. H., *Early Dynastic Egypt*, Routledge, 1999, p.93.
[9] Petrie, W. M. F., *The Royal Tombs of the First Dynasty*, Part II, London, 1901, pl. XXXI, p.33.
[10] Wilkinson, *Early Dynastic Egypt*, p.96.

political reform, asserting his independence from the Horus-followers from the religious nobles[11].

Nearly all the royal monuments at Abydos, and Saqqara have been found badly damaged by fire. Some scholars suggested that the destruction by fire of these monuments took place at this period of obvious religious and political upheaval[12]. In addition, this period weakened the central authority and resulted in country unrest. This conflict ended with the ascension of the last ruler of the 2nd Dynasty, king Khasekhemwy to the throne. To end this upheaval, he made his royal *Serekh* include both Horus and Seth as known from the numerous jar-sealings, the king's name is always surmounted by the falcon Horus and the Seth animal, indicating some form of unity (Fig. 3)[13]. This also indicated the Egyptian intelligence of the kings in managing the crisis.

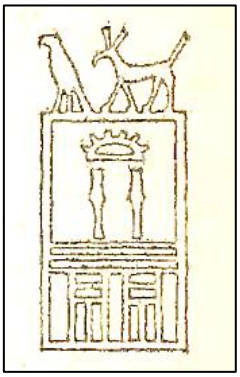


Fig. 3: Royal *Serekh* of King Khasekhemwy surmounted by Horus and Seth
After: Emery, *Archaic Egypt*, fig.65, p.101.

At the end of the Old Kingdom, especially during the reign of king Pepi II from the 6th Dynasty, one of the earliest large-scale disruptions in ancient Egyptian history occurred. This period saw the weakening of central authority, economic decline, and climate-related challenges that led to famine and civil disorder. Sources such as the "Admonitions of Ipuwer"[14] describe the social inversion, and widespread suffering[15].

During the Second Intermediate Period, Egypt was divided, with the Hyksos ruling the north, and native Egyptian rulers from Thebes ruling the south. These rulers particularly Seqenenre, Kamose, and Ahmose I, led military campaigns to expel the Hyksos[16]. The Hyksos conflict depopulated and economically weakened parts of the

[11] Kahl, J., *Ra is My Lord: Searching for the Rise of the Sun God at the Dawn of Egyptian History*, Penn State University Press, Pennsylvania, 2007, p.57.
[12] Emery, *Archaic Egypt*, p.97.
[13] Emery, *Archaic Egypt*, p.101.
[14] The Admonitions of Ipuwer is a poetic text that vividly depicts a world turned upside down, where chaos, famine, and social disorder are widespread, for more details, see: Lichtheim, M., *Ancient Egyptian Literature*, Vol.1, University of California Press, California, 1975, p.149-152.
[15] Lichtheim, *Ancient Egyptian Literature*, Vol.1, p.149-152; Grimal, N., *A History of Ancient Egypt*, Oxford, 1992, p.138.
[16] Shaw, I., *The Oxford History of Ancient Egypt, Oxford*, 2000, p.202-206.

Delta[17]. In addition, it led to political fragmentation and loss of central authority[18] by disrupting the unity of Egypt, creating a political division between the northern and southern kingdoms that lasted for nearly a century[19]. Economic activity suffered because of political instability and the division of the country. The occupation of Hyksos caused trade disruptions and redistribution systems, particularly affecting the south[20]. The Delta trade routes were redirected or controlled by the Hyksos interests, and internal economic links between Upper and Lower Egypt were severed or strained[21].

Egyptian sources describe the Hyksos not only as foreigners but also as rulers who disregarded native customs, desecrated temples, and brought religious chaos[22].

In fact, from the 29th year of Ramses III into the reign of Ramses IV grain prices rose steeply which caused considerable hardship for the poorer classes and the workers of the royal tombs[23]. Among the social upheavals is the workers' strike at Deir el-Medina. This strike is one of the most documented examples of labor unrest in the ancient world that occurred during the reign of king Ramses III. Workers of Deir el-Medina, who worked on royal tombs, went on strike due to delayed wages and food shortages[24]. The country dealt wisely instead of punishment, the local authorities responded by listening to their grievances, sending emergency food supplies and assuring the workers that their payments would be made regularly. This practical response helped calm the situation, and the workers soon returned to their jobs[25].

1.1.1 Conflicts and Upheavals' Management

Based on the previous details it can be said that the ancient Egyptians managed the crisis of the social conflicts and upheavals by various ways according to the nature and circumstances of each case; for example, in case of extremism to a specific deity or thoughts, they tried to find a compromise to satisfy both parties and merging or jointly venerating the disputed deities. Moreover, they avoided the prolonged conflict. In case of foreign invasion, they resisted as much as possible to expel the invaders out of their country. In case of social strikes, the authorities listened to the demands of the protesters and responded by meeting their needs.

1.2 Tomb Robberies

Despite extensive efforts of the ancient Egyptians to protect tombs with curses, hidden chambers, and guards, the valuable objects that were buried with them attracted tomb

[17] Redford, D. B., *Egypt, Canaan, and Israel in Ancient Times*, Princeton University Press, New Jersy,1997, p.79

[18] Shaw, *The Oxford History of Ancient Egypt*, p.183; Redford, *Egypt, Canaan, and Israel in Ancient Times*, p.61.

[19] Shaw, *The Oxford History of Ancient Egypt*, p.196.

[20] Van de Mieroop, M., *A History of Ancient Egypt*, Wiley-Blackwell, UK, 2011, p.106.

[21] Bard, *An Introduction to the Archaeology of Ancient Egypt*, p.123.

[22] Redford, *Egypt, Canaan, and Israel in Ancient Times*, p.57.

[23] Kitchen, K. A., *The Third Intermediate Period in Egypt*, 4th ed., England, 2009, p.245; Erman, A., *Life in Ancient Egypt*, London, 1894, p.246.

[24] Kitchen, *The Third Intermediate Period in Egypt*, p.245; Erman, A., *Life in Ancient Egypt*, London, 1894, p.125-126.

[25] Edward, W., *Letters from Ancient Egypt*, Scholars Press, Atlanta, 1990, p.175-177.

robbers[26]. Many tombs reveal evidence of ancient damage, such as smashed doors and broken bones caused by thieves who broke seals and plundered burial chambers. They often unwrapped mummies in search of amulets or gold, damaging or destroying the body in the process[27].

Tomb robbery was considered a crisis and a serious crime, both religious and civil in ancient Egypt. It was a spiritual offense as tomb robbery disrupted the deceased's afterlife journey by violating the burial space and the integrity of the body. The Egyptians believed this could prevent the *Ka* from surviving[28].

Robberies disturbed tomb contexts, destroying inscriptions and artifacts, which impaired modern archaeological and historical reconstructions[29]. The desecration of royal tombs symbolized a decline in the pharaohs' divine authority and religious order (Ma'at)[30]. During the reign of Ramses IX, a formal investigation took place. This is documented in the "Abbott Papyrus", which describes the inspection of royal tombs. The "Amherst Papyrus*"* records the interrogation and punishment of accused robbers[31].

Among the reasons that led to these robberies are the economic conditions such as famines, high price of food, graft and corruption, and loss of respect for the kings whether dead or reigning. All these factors transformed the sporadic violation of a royal tomb into a flood of pillage in the ensuing decades[32].

Among the robberies is the tomb of Queen Isis the wife of Ramses III. Eight workmen at the village of royal tomb builders Deir el-Medina, were arrested in tomb robberies[33], especially during times of delayed rations or pay. Court records show a group of workers admitted to robbing tombs with help from guards or priests[34]. Confessions from papyri reveal organized gangs breaking into royal tombs, stealing jewelry and precious items, sometimes with help from insiders[35].

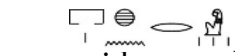
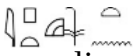
1.2.1 Tomb Robberies' Management

To limit the ongoing robberies, the country made severe punishments such as beatings, mutilation, or execution for thieves found guilty of tomb robbery. The use of royal cachettes, notably DB320 and KV35, were considered a wise idea to secure the royal

[26] Wilkinson, T. A. H., *The Rise and Fall of Ancient Egypt*, London, 2010, p.324.
[27] Reeves, N., *The Complete Tutankhamun*, Thames and Hudson, London, 1990, p.38-41.
[28] Assmann, J., *Death and Salvation in Ancient Egypt*, New York, 2005, p.59.
[29] Reeves, N. and Wilkinson R. H., *The Complete Valley of the Kings*, Kegan Paul International, London, 1996, p.49.
[30] Shaw, *The Oxford History of Ancient Egypt*, p.329.
[31] Peet, E. *The Great Tomb-Robberies of the Twentieth Egyptian Dynasty*, Oxford University Press, Oxford, 1930, p.12-15, 51-75.
[32] Kitchen, *The Third Intermediate Period in Egypt*, p.247.
[33] Antoine, J. Ch., "Papyrus PM 49.11.1, Dating the Great Tomb Robberies, and the Chronology of the Late 20 Dynasty", *ZÄS* 151, No.1 (2024), p.19.
[34] Peet, *The Great Tomb-Robberies*, p.10,13.
[35] Antoine, J.Ch. "The Sociology of Tomb and Temple Robbers of the Late 20th Dynasty: Part II, The Bands of Thieves and the Ramesside Society", *JEA* 110, No.1-2 (2024), p.87-104; Peet, *The Great Tomb-Robberies*, p.42-60.

mummies particularly during the political instability of the late New Kingdom and Third Intermediate Period[36].

1.3 The Harem Conspiracies in Ancient Egypt as Crises

Ancient Egypt kings' polygamy was a tradition[37], assuring the king's power and wealth. Due to the king's polygamy, there was a considerable number of wives and children. This resulted in the emergence of dedicated residence for them. It was called  ***pr ḫnr*** or  ***ỉpt nswt*** both mean "the royal harem"[38]. This harem residence appeared since earlier periods. It was considered as residence for the non-principal wives of the king such as the secondary wives, mistresses, the relatives of the king, the foreign princesses, and the children who had borne the royal blood. The king's mother may also reside there[39].

The ancient Egyptian Kings tried to appoint their relatives in key positions in order to guarantee their loyalty and not to cause any upheavals, but during the reign of king Pepi I, the great number of wives, sons and relatives paved the route to the upheaval[40]. The more they obtained privileges, the more the danger increased on the king. Other troubles and dangers which could threaten the king were the existence of many temples, deities, and priests[41].

Salah mentioned that there were three trials of conspiracies occurred in ancient Egypt against kings such as Pepi I, Amenemhat I and Ramses III. The main purpose was to usurp the throne after the king's assassination. The study will highlight these three statuses of conspiracies as follows:

1.3.1 The Conspiracy against King Pepi I in the Old Kingdom

One of these trials against Pepi I was the conspirator queen Weretamtes (one of his consorts), who tried to assassinate the king unsuccessfully[42], based on the autobiography of Weni[43]. The exact punishment against the queen was not known but the most accurate was expelling the queen and her son out of the Harem, probably to the desert exile or her execution[44].

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[36] Reeves, N., *The Valley of the Kings: The Decline of a Royal Necropolis*, London, 1990, p.88.

[37] Salah, M. et al., "The Harem Conspiracies in Ancient Egypt", *ResearchGate*, 2023, p.2.

[38] For more details about the Archaeological evidence of the Harim from 1st to 20th Dynasty, see: Callender, V. G., "The Nature of the Egyptian 'Harim': Dynasties 1–20", *BACE* 5 (1994), p.16-23.

[39] Robins, G., *Women in Ancient Egypt*, London,1993, p.39, 112; Tyldesley, J., *Hatchepsut: The Female Pharaoh*, Viking Press, New York,1996, p.187.

[40] Tassie, G. J., *The Social and Ritual Contextualisation of Ancient Egyptian Hair and Hairstyles from the Protodynastic to the End of the Old Kingdom*, Vol.1, PhD. Thesis, Institute of Archaeology, University College London, 2008, p.79.

[41] Kanawati, N., *Conspiracies in the Egyptian Palace, Unis to Pepy I*, London, 2003, p.1.

[42] Salah, et.al , *The Harem Conspiracies in Ancient Egypt*, p.6.

[43] Weni was appointed by Pepi I to be responsible for the royal Harem and investigating the conspirator for more details see: Kanawati, *Conspiracies in the Egyptian Palace*, p.4.

[44] See: Richards, J., "Text and Context in late Old Kingdom Egypt: The Archaeology and Historiography of Weni the Elder", *JARCE* 39 (2002), p.78.

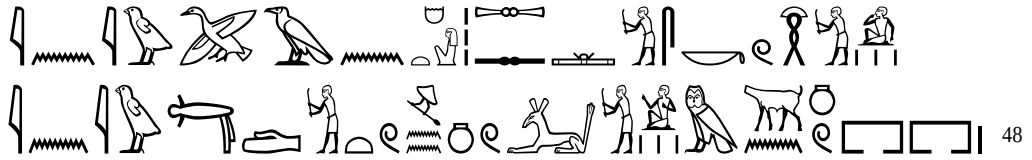
1.3.2 The Conspiracy against King Amenemhat I in the Middle Kingdom

According to Amenemhat I Instructions, the text points to the occurrence of such a plot against the king and Harem conspiracy as follows:

 [45]

m mḥ ỉb.k m sn m rḫ ḫnms m sḫprw n.k ʿḳw nn km ỉry[46]

"Put no trust in a brother, acknowledge no one as a friend, do not raise up for yourself intimate companions, for nothing is to be gained from them"[47]

 [48]

ỉn ỉw pɜ.n ḥmwt ṯs skw

ỉn ỉw šd.tw ḫnnw m ḫnw pr[49]

"Had women ever organized the troops?

Are revolutionaries ever educated right within the palace?"[50]

1.3.3 The Conspiracy against King Ramses III in the New Kingdom

The death of Ramses III is a matter of a great argue among the scholars, but there is a great attestation on Ramses III assassination trial and probably ended unsuccessfully. The Judicial "Turin Papyrus"[51] pointed out to four attempts of his assassination and the punishment that the conspirators had received. The main conspirators were the secondary wife Tiy and her son Pentawer[52]. She allied with the palace Harem, the officers of the army and officials of the Harem to enable her son to be his father heir. Moreover, the scholars also refer to the possibility of the King injury after the Harem conspiracy and then died after a period because of this injury[53].

Concerning the punishment of the conspirators against Ramses III some of them were forced to suicide and others got their ears and noses cut. The papyrus did not mention

[45] Geoga, M., "New Insights into Papyrus Millingen and the Reception History of The Teaching of Amenemhat", *JEA* 107 (2021), p.231.

[46] *mḥ- ỉb,* means "one who is trusted", "confidant", Faulkner, A *Concise Dictionary,* p.141.

[47] Simpson, W. K., *The Literature of Ancient Egypt: An Anthology of Stories, Instructions, Stelae, Autobiographies, and Poetry*, 3rd ed., New Haven, 2003, p.168.

[48] Geoga, *JEA* 107 (2021) p.231.

[49] *https://www.ucl.ac.uk/museums-static/digitalegypt/literature/teachingaisec.html,* accessed at (12:40 PM, 12-5-2025).

[50] Simpson, *The Literature of Ancient Egypt,* p.169.

[51] For further details about the Judicial Turin Papyrus see: De Buck, A., "The Judicial papyrus of Turin", *JEA* 23, No.2 (1937), p.152-164.

[52] Salah, et al., *The Harem Conspiracies in Ancient Egypt,* p.8.

[53] Hawass, Z., et al., *Revisiting the harem conspiracy and death of Ramesses III: anthropological, forensic, radiological, and genetic study*, 2012, p.1.

the accurate punishment of Tiy but mostly committed suicide[54]. Of course, the punishment must be a deterrent to stop the conspiracies.

1.3.4 Conspiracies' Management

Conspiracies' management is represented in the ways in which they stopped the conspirators. The ways of punishment were such as expelling the accused queen and her son out of the Harem, probably to the desert exile or her execution, forcing to suicide and getting the conspirators' ears and noses cut.

2. Environmental Crises

Environmental crises in ancient Egypt were tied to the Nile River, agriculture, and climate conditions. Since the civilization relied entirely on the annual inundation (flooding) of the Nile, any disruption to this natural cycle had severe consequences. Here are the key types of environmental crises:

2.1 Flood Disturbance

However, the benefits resulted of the Nile flood from being a source of the fertile mud, it sometimes caused crisis for the ancient Egyptian society. The crisis happened because of the changes of its levels; when the level of the Nile was too high, flood could destroy irrigation works, dikes,[55] settlements, food stores and livestock, endanger seed stocks and increase epidemic disease[56]. In contrast, low flood did not irrigate farm lands which resulted in reducing the wetted area, the soil saturation, and the amount of fertile silt deposited, but increased the salt concentration of water that was reaching fields. This all decreased the cultivated lands as well as the productivity[57], resulting in food crises ranging from food shortages to famine.

The discovered textual evidence describes how the non-flooding and low flood were considered as a crisis. For instance; the famous "Famine stela" on "Sehel Island" near the first cataract, which dates back to Ptolemaic Period[58]. It describes seven lean years in Egypt occurred at the time of king Djoser[59]. The stela shows how the non-flooding affected the whole country even though the stela was inscribed in a different period[60].

[54] Salah, et al., *The Harem Conspiracies in Ancient Egypt*, p.9; De Buck, *JEA* 23, No.2 (1937), p.156.

[55] Noaman, M. N. and El-Qousy, D., "Hydrology of the Nile and Ancient Agriculture", in: M. Satoh, and S. Aboulroos, (eds.), *Irrigated Agriculture in Egypt: Past, Present and Future*, Switzerland, p.9-28, 2017, p.18.

[56] Butzer, K.W., "Long-Term Nile Flood Variation and Political Discontinuities in Pharaonic Egypt", in: C. J. Desmond & B. A. Steven, (Eds.*), From Hunters to Farmers, California*, 1984, p.105.

[57] Butzer, *From Hunters to Farmers,* p.105; Christensen, W., *Empire of Ancient Egypt*, New York, 2009, p.10.

[58] Bunson, M., *Encyclopedia of Ancient Egypt*, New York, 2002, p.136.

[59] Simpson, *The Literature of Ancient Egypt*, p.386; Török, L., *Between Two Worlds: The Frontier Region Between Ancient Nubia and Egypt*, Leiden, 2009, p.403.

[60] Ellenblum, R., "How Did Climate Change Cause the Collapse of Civilization in the Historical Past", in: Arregui, A., et.al (eds.), *Decolonial Heritage: Natures, Cultures, and the Asymmetries of Memory*, Waxmann Verlag, New York, 2018, p.59.

The stela is a decree from King Djoser to the governor of the south at Elephantine[61]. This case is known as the first famine in the ancient Egyptian history[62].

The stela's texts say *"... My heart was extremely sad since the Inundation had not come on time for a period of seven years. Grain was scarce, the kernels dried out, everything edible in short supply. ……. The child was in tears, the youth astray, and the elderly—their hearts were miserable, their legs drawn together, squatting on the ground with their arms held inward. The courtiers were in ruin, the temples sealed up, the chapels dusty, everything found wanting……"* [63].

Moreover, the letters between Hekanakhte (the 12th Dynasty landowner), and his dependents showed how the crops of his cultivated lands decreased when the Nile partially flooded that caused his normal surplus to be reduced in this year compared with a normal flooded year with about 140 sacks of barley[64].

At the season of inundation, all agricultural works stopped which could have been considered a crisis too because all peasants' families gained their daily sustenance from working in lands and fishermen who used to catch fishes from the river[65].

2.1.1 Flood Disturbance's Management

Ancient Egyptians dealt with this crisis by different ways as presenting the offerings and prayers to deities to gain their satisfaction and to stop the famine. In addition, the country provided people with jobs such as stone quarrying, gold mining, and building works in the season of flood[66], as mentioned in Herodotus' account of building the Great Pyramid involved 84,000 men working 80 days a year for 20 years[67].

2.2 Food Crisis

Food production in ancient Egypt was mainly dependent on cultivation of the Nile Valley agricultural lands[68]. Ancient Egypt sometimes suffered from food shortage or famine, and this happened because of many reasons such as bad harvests, climate change, wars, revolts, and inundation as previously discussed[69]. Some archeologists suggest that the collapse of the Old Kingdom was due to a food shortage crisis which resulted from a climate change[70].

Various cases indicated the food crisis in ancient Egypt. Among these cases is a relief from the 5th Dynasty found in the causeway of King Wnis at Saqqara, starving people

[61] Lichtheim, *Ancient Egyptian Literature*, Vol.3: Late Period, California, 2006, p.94.

[62] Bayoumy, T., and Ibrahim, I., "Food Crises Management in the Pharaonic and the Ptolemaic Periods", *JTHH* 3, No.1 (2021), p.2-3.

[63] Simpson, *The Literature of Ancient Egypt*, p.387; Lichtheim, *Ancient Egyptian Literature*, Vol.3, p.95-96.

[64] Allen, J., *The Heqanakht Papyri*, p.171; Coulon, L., "Famine", in: W. Wendrich, ed., *UCLA Encyclopedia of Egyptology*, University of California, Los Angeles, p.1.

[65] David, R., *Handbook to Life in Ancient Egypt*, New York, 2003, p.142.

[66] David, *Handbook to Life in Ancient Egypt*, p.142.

[67] Allen, *Explorations in Economic History*, Vol.34, p.148.

[68] Coulon, *UEE* (2008), p.1.

[69] Bayoumy and Ibrahim, *JTHH* 3, No.1 (2021), p.1.

[70] Hassan, F., "Droughts, Famine and the Collapse of the Old Kingdom: Re-reading lpuwer", in: Z. Hawass and J. Richards, eds., *The Archaeology and Art of Ancient Egypt: Essays in Honor of David B. O'Connor Annales du Service des Antiquites De L'Egypte*, Cahier No.36, Vol.1, 2007, p.359.

appear with skinny bodies which may indicate a period of food shortage (Fig.4). Moreover, inscriptions in the tomb of Meri I at Athribis (end of the Old Kingdom) mention that during the season of winter "*prt*", in years of famine, he lived the poverty "*sʿnḫ swɜ*" [71].

Fig. 4: Scene of famine shown on a stone block of the causeway leading to the pyramid of Wnis at Saqqara
After: Nunn, J.H, *Ancient Egyptian Medicine*, Oklahoma, 2002, p.20; *https://www.flickr.com/photos/amthomson/41728824530*, accessed at (4 A.M: 18-10-2024).

Recent records mentioned that cases of droughts occurred in ancient Egypt in Nile Delta from the end of the 6th Dynasty to the beginning of the 9th Dynasty and probably lasted from 20 to 25 years[72]. In addition, in the 20th Dynasty, documents indicate that the food crisis during the reign of king Ramses III, was because of the administration itself that it gave the diplomatic gifts from the granary storage, which led to the failure of the workers payment in Deir el-Madina[73]. Among the archaeological evidence indicated famine existence is that case which dates back to the 20th Dynasty, when a woman was asked about the quantity of the silver she said that she brought them in exchange of barley in "the year of hyenas" when there was a famine, which shows that a high price was in exchange of barley[74].

The famine is mentioned not only in the historical resources, but the religious books[75] as well; for example, "the Holy Quran" in Surah Yusuf revealed how they dealt with these hard years. When the prophet Joseph interpreted the king's vision of seven fat cows eaten up by seven skinny ones; and seven green ears of grain and seven others dry as that it would come seven years of great hardship which would consume whatever they had saved, except the little they would store for seed. They dealt with these hard years when the prophet Joseph replied, "You will plant ˹grain˺ for seven

[71] Bayoumy and Ibrahim, *JTHH* 3, No.1 (2021), p.3.
[72] Bayoumy and Ibrahim, *JTHH* 3, No.1 (2021), p.2-3.
[73] Kemp, B., *Ancient Egypt: Anatomy of a Civilization*, USA, 2004, p.252; Bayoumy and Ibrahim, *JTHH* 3, No.1 (2021), p.5.
[74] "Year of the Hyenas" as a sign of the famine that afflicted Egypt in the Late New kingdom, 20th Dynasty, for more details, see: Selim, A., "The Connotation of the Expression ... *rnpt n n3 ḥtyw* "Year Of The Hyenas" in the Late of the Twentieth Dynasty", *EJARS* 7, No.1 (2017), p.11-16; Kemp, *Ancient Egypt: Anatomy of a Civilization*, p.243.
[75] The full story is mentioned in the Holy Quran surah Yusuf and in the Holy Bible book of Genesis 37-50 (the dream interpretation in chapters 40-41of Genesis)

consecutive years, leaving in the ear whatever you will harvest, except for the little you will eat"[76].

The idea of food crises management reflects the efforts of ancient Egyptians in finding solutions to protect the country from famine by several agricultural activities as building dams, canals, storing and distributing food. The first known large-scale dam for water management was Sadd-el-Kafara Dam[77]. The dam was built to control the flood. In addition, many nomarchs helped their people to overcome starvation by opening their granaries to them and distributing the grain during the famine[78].

2.2.1 Food Crisis' Management

The data collected here provide evidence of managing the food crisis by digging canals, building the dams, opening granaries, distributing food over the people, and improving the administration system[79].

2.3 The Climate Change

The Holocene is the term of the Earth history since the time of the glacial epoch ending, around 8500 BC. Since the Predynastic Period and the end of the humid epoch, the ancient Egyptians began to move to the Nile Valley, abandoning the Sahara desert and the drying regions to the Oasis like Al-Farafra and Al- Dakhla or to Gilf al Kabeer[80] (The 5th Millenium - 4th Millenium B.C), even the cattlemen abandoned the desert to the Nile[81].

The humidity decreased severely from (5900 to 5500 B.C), it was the beginning of the Predynastic Period, so they moved to the Valley of the Nile with the emergence of the countryside and villages with its agriculture[82]. From 3300 to 3200 B.C, the drought spread severely and even if the flood of the Nile decreased[83]. The ancient Egyptians executed some adaptation strategies to overcome this drought and the decrease of the flooding through adjusting the basins, breaking the dams and narrow canals of irrigations began to be dug[84].

It is mentioned that around 3200 B.C, Egypt unified and the Egyptian state began to be established, coinciding with the severe aridification of the desert, so the crisis of the aridification of the Sahara desert caused the foundation of the 1st Dynasty (3100 B.C)

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[76] *The Holy Quaran, Surah Yusuf*, 12:46-48.

[77] "Sadd-el-Kafara" is the oldest dam of the world, was situated in the Wadi Garawi 30 km south of Cairo. For more details, see: Saxena, K.R. and Sharma, V.M., *Dams: Incidents and Accidents*, A.A. Balkema Publishers, India, 2005, p.7-8.

[78] Bayoumy and Ibrahim, *JTHH* 3, No.1 (2021), p.1,3-4.

[79] Bayoumy and Ibrahim, *JTHH* 3, No.1 (2021), p.5,12.

[80] Yletyinen, J., *Holocene Climate Variability and Cultural Changes at River Nile and its Saharan Surroundings*, MSc Thesis, Stockholm University, Department of Physical Geography and Quaternary Geology, Stockholm, 2009, p. 21.

[81] Yletyinen, *Holocene Climate Variability*, p.25-26.

[82] Kuper, R. and Kröpelin, S., "Climate Controlled Holocene Occupation in the Sahara", *Motor for Africa's Evolution, Science* 313, No.5788 (2006), p.803-807.

[83] Hassan, F.A., "Pre-Pharaonic Egypt", in: D. M. Pearsall, ed., *Encyclopedia of Archaeology*, Vol.1, Elsevier, Oxford, 2008, p.45-50.

[84] Stubbs, B, "The Impact of Intraregional Climate Change on the Ancient Egyptian Old Kingdom Collapse", *GEOL 0240*, (Earth: Evolution of a Habitable Planet), Brown University, 2018, p.1.

and the Egyptian state came out into the light, extending from The Valley of the Nile to Aswan[85].

The evolution and the transformation of ancient Egypt from the primitive cultures to the dynastic Kingdom was due to the adaptation against the aridity[86] and the wise change in the population density through the period of the predynastic Egypt. Another result of the migration to the Valley of the Nile was a sort of struggle or troubles occurred among the native populations and the arriving groups, resulting in the emergence of the classism in the workforce[87].

Many scholars recently tried to determine the exact reason for the collapse and the end of the Old Kingdom by other types of evidence unlike the known and the familiar ones (economic, political, and social reasons). The archaeological, geological and paleoecological evidence may confirm the collapse and the end of the Old Kingdom[88]. A scholar called Brooks also approved this opinion, so he mentioned that the ecological catastrophe and the sudden climatic change caused the fall of the Old Kingdom[89].

Substantial diluvial layers were uncovered within nearly all the tombs located in the western region of Saqqara, particularly in burial shafts or chambers dating from the late 6th Dynasty. The filling material consisted of limestone debris, combined with weathered rock waste and silty sand, which included significant amounts of Nile silt as remnants of sun-dried bricks. Numerous tombs also exhibited signs of rainwater, as evidenced by clayey-silty laminated layers and deposits of dry mud that displayed characteristic surface cracking[90]. Around 4100 to 4000 BP (Before Present), a sudden and fast climatic change occurred turning this period from being wet to very dry (Fig.5), accompanied by severe storm with rubbles and sands.

Another indication to a climatic change towards the end of the Old Kingdom also to the south of Saqqara at "Tabbet Al Gesh;" which is a necropolis of the very late of the 6th Dynasty[91], being a good reference to a sort of damage and destruction as a result of severe rainfalls.

Another evidence for the climatic change during the Old Kingdom was also near the pyramid of Teti; to the north of Saqqara, the archaeologists found that the superstructure of Inumin tomb was demolished due to severe floods[92]. No wonder to mention that the burial chamber was drowned by frequent floods. At Giza- to the south of the Complex

[85] Yletyinen, *Holocene Climate Variability*, p.32; Brooks, N., "Cultural Responses to Aridity in the Middle Holocene and Increased Social Complexity", *Quaternary International* 151 (2006), p.35.

[86] Brooks, *Quaternary International* 151 (2006), p.36-37.

[87] Maisels, C.k., *Early Civilizations of the Old World*, London, 1999, (online version of book without numbered pages).

[88] Yletyinen, *Holocene Climate Variability*, p.32.

[89] Brooks, *Cultural Responses to Aridity*, p.29.

[90] Welc., F., and Marks L., "Climate Change at the End of the Old Kingdom in Egypt around 4200 BP: New Geoarchaeological Evidence", *Quaternary International* 324 (2014), p.130.

[91] Dobrev, V., "A New Necropolis from the Old Kingdom at South Saqqara", in: M. Bárta, ed., *The Old Kingdom Art and Archaeology: Proceedings of the Conference 2004*, Czech Institute of Egyptology, Faculty of Arts, Charles University, Prague, 2006, p.127-131.

[92] Welc and Marks, *Quaternary International* 324 (2014), p. 131.

of Menkawre- some traces can be attestations on severe rainfalls caused severe destructions in this site[93].
All these previous attestations of aridifications, low floods and also severe rainfalls caused the collapse and the termination of the Old Kingdom.

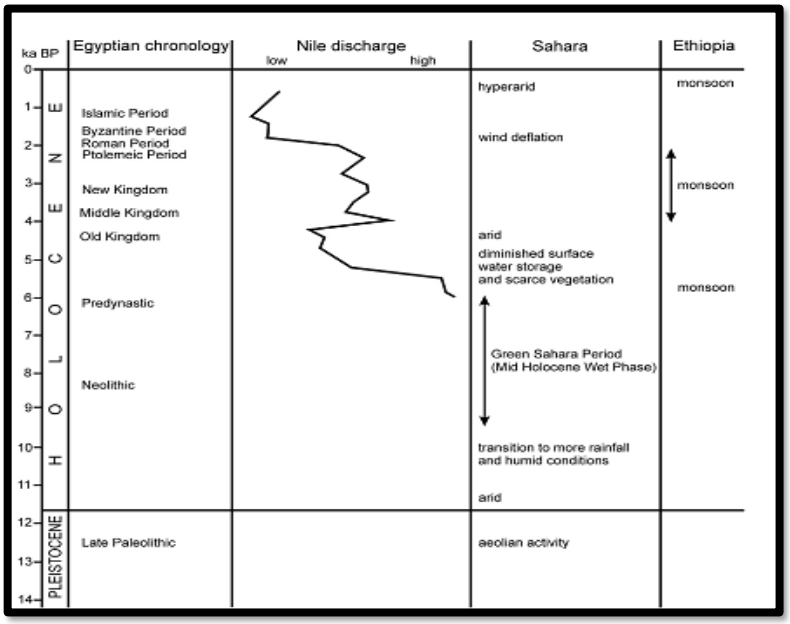


Fig. 5: Palaeoclimate changes in the Nile catchment against Egyptian chronology
After: Welc and Marks, *Quaternary International* 324 (2014), p.125, fig.1.

2.3.1 The Impact of Climate Change on the Nile Level during the End of the Old Kingdom and the First Intermediate Period

Hassan mentioned that, within the deposits of the delta[94], they found reddish brown silt layers dated back to (2250-2050 B.C) with reddish brown iron oxides on the surface[95], this proves that the delta suffered from a severe flood which lasted for a long time. Another evidence is the dry period caused the sand of the Sahara Desert to swallow the structures and the settlements of the Old Kingdom[96], with sandy storms in the delta and outside. There was a coincidence of the low Nile level with the low rainfall and this period is called the period of the dry Climate (2200-2100 B.C) [97].
Toward the end of the Old Kingdom, there were a lot of evidence and indications to climate change and desertification, resulting in its collapse. The Nile flood declined, causing a catastrophic famine, social collapse, and a weakness in the central government. All of these were because of the dry and warm climate.

[93] Butzer, K.W., "When the Desert was in Food. Environmental History of the Giza Plateau", *Newsletter of the Ancient Egypt Research Associates* 5 (2001), p.3-5.
[94] Hassan, *The Archaeology and Art of Ancient Egypt*, p.360.
[95] Krom, M.D., Stanely, J. D., et al, "Nile River Sediment Fluctuations over the Past 7000 Years and their Key Role in Sapropel Development", *Geology* 30/1 (2002), p.72.
[96] Giddy, L. and Jeffreys, D., "Memphis", *JEA* 78 (1992), p.1-11.
[97] Hassan, *The Archaeology and Art of Ancient Egypt*, p.360.

Evidence at Abusir from the vizier Qar's tomb - the 6th Dynasty- proves the desertification 180 years before the decline of the Old Kingdom[98]. This evidence is the remain of beetles which was discovered inside the burial chamber. Beetles are considered best paleoecological evidence[99] (Fig.6), as they did not travel for a long distance. Beetles study is one of the attestations on the climate change in ancient Egypt and helped the recent scholars to recognize the exact reason for the collapse of the 6th Dynasty and the Old Kingdom. The specimen of beetles which Barta discovered[100] in Qar's tomb - supposed to live on the banks of the saline lakes and sandy soil. Other beetles called "Poecilus Pharao" were found inside the tomb of Inti (Fig.7), these beetle with the genus Scarites used to inhabit in the saline and dried conditions and environments and in the desert. This proves that the desertification began to include not only Abusir lake but also different areas in Egypt later. This aridification was due to the low levels of the Nile flood which depends on the monsoonal rainfalls of the Blue Nile in Ethiopia[101]. Inscriptions date back to the First Intermediate Period of the tomb of Ankhtifi indicate how the ancient Egyptians suffered from famine because of the low flood and aridity[102].

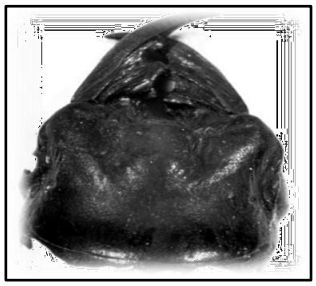


Fig. 6: Specimen of a beetle inside the burial chamber of the vizier Qar's tomb.
After: Barta and Bezdek, *Beetles and the Decline of the Old Kingdom*, p.219, fig.1.

Fig. 7: Beetles "Poecilus Pharao" were found inside the tomb of Inti
After: Barta and Bezdek, *Beetles and the Decline of the Old Kingdom*, p.221, fig.5.

[98] Stubbs, *The impact of intraregional Climate*, p.2,3.
[99] Barta, M., Bezdek, A., "Beetles and the decline of the Old Kingdom: Climate Change in Ancient Egypt", in: H. Vymazalová and M. Bárta, eds., *Chronology and Archaeology in Ancient Egypt (The Third Millennium B.C.): Proceedings of the Conference held in Prague*, Czech Institute of Egyptology, prague, 2008, p.215.
[100] Bárta, M., "Old Kingdom Palaeoecological Evidence from Abusir", *Studia Quaternaria* 30, No.2 (2013), p.75-82.
[101] Stubbs, *The impact of intraregional Climate*, p.4,12.
[102] Marriner N, Flaux C, et al, "ITCZ and ENSO-Like Pacing of Nile Delta Hydrogeomorphology during the Holocene", *Quaternary Science* 45 (2012), p.73-84.

2.3.2 Ahmose Tempest Stela as an Attestation of the Climate Change

The Tempest stela of Ahmose acts as an attestation on the climate change (Fig.8). There is a connection[103] between the stela of Ahmose at Karnak (The 1st king of the 18th Dynasty and the founder of the New Kingdom) and the so-called Disastrous Volcano of Thera. Davis approved this[104]. Another Interpretation by Moeller that this stela may be not related to the Thera Eruption but a short- term climate change, covering Egypt entirely with many and frequent rainfalls and Thunderstorms[105].

It was mentioned that the crisis in Ahmose stela lasted for days not only for hours, so according to the text the storm endured *"for a period up to […] days […] while no torch could be lit in the two lands*." These days could be 4-5, 7-9, 14-19 or probably 24-29. *The tempest stela of Ahmose illustrates a natural crisis of a storm and its horrible impact of damage*[106]. The text of the stela mentioned some synonyms and terms like rainy storm, noise, darkness, flood, and damage to the whole land of Egypt as follows:

107

[ꜥḥꜥ.n rdỉ.n] nṯrw ỉwt pt m ḏꜥ n ḥ [(w)y.t][108]

kkw m rɜ-ꜥ ỉmntt

pt šnꜥ.tỉ n wnt [*ɜbw ḳɜ.tỉ rḫ*]*rw rḫyt wsr.*[*tỉ r . . .khɜ*

wsr.[*tỉ r . . . khɜ ḥ*(*w*)*yt*] *ḥr ḫɜswt r ḫrw ḳrt ỉmyt ɜbw*

[103] Ritner, R. K. and Moeller, N., "The Ahmose Tempest Stela: An Ancient Egyptian account of a natural Catastrophe", in: L. Feliu, J. Llop, A. Millet Albà and J. Sanmartín, eds., *Reading Catastrophes: Methodologies and Historiography in the Ancient Near East and the Mediterranean World, Proceedings of the Conference, Rome, December 2012*, Ugarit-Verlag, Münster, 2014, p.61.

[104] Davis, E.N., "A Storm in Egypt during the Reign of Ahmose", in: D.A. Hardy and A.C. Renfrew, eds., *Thera and the Aegean World III, Proceedings of the Third International Congress*, The Thera Foundation, London, 1990, p.232-235.

[105] Ritner and Moeller, *Reading Catastrophes*, p.76.

[106] Wiener, M.H. and Allen, J.P., "Separate Lives: The Ahmose Tempest Stela and the Theran Eruption", *JNES* 57, No.1 (1998), p.1-27; Ritner, R. K. and Moeller, N., "The Ahmose 'Tempest Stela': Thera and Comparative Chronology", *JNES* 73, No.1 (2014), p.7.

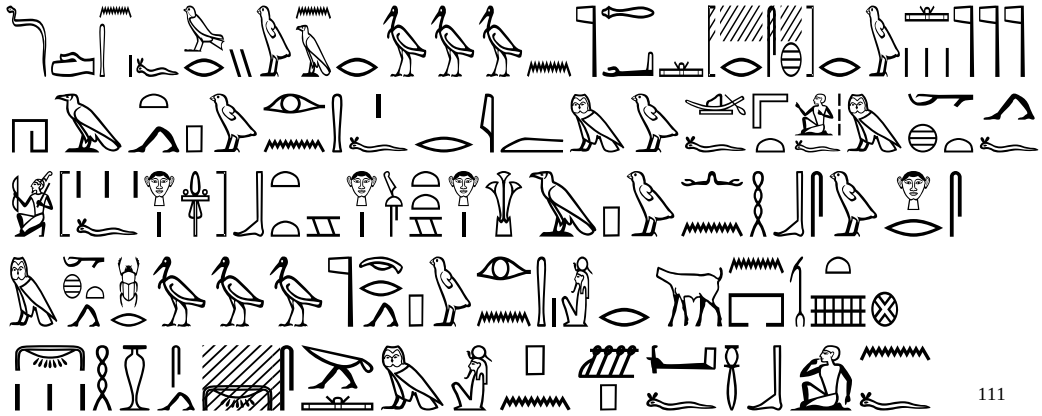
[107] Helck, W., *Historisch-Biographische Texte der 2. Zwischenzeit und neue Texte der 18. Dynastie*, Wiesbaden, 1983, p.105-106.

[108] The text of the stela transliterated and translated in Ritner and Moeller, *JNES* 73, No.1 (2014), p.5-9.

wn -ỉn pr nb ỉwyt nbt sprt.sn
hɜwt.sn ḥr mḥ ỉ.t ḥr mw mỉ
smḥw nw dyt m rɜy ḥr ꜥḫnwty

"[Then], the gods [caused] that the sky come in a tempest of r[ain], with darkness in the condition of the West and the sky being in storm without [cessation, louder than] the cries of the masses, more powerful [than ...], [while the rain howled] on the mountains louder than the sound of the underground source of the Nile that is in Elephantine". "Then every house, every quarter that they (scil. the storm and rain) reached their corpses(?) floating on the water like skiffs of papyrus outside the palace audience chamber[109]**.**

Comment: According to this text, there are some terms describing the crisis of the Tempest such as the words: *ḏꜥ* which means "storm" or "storm-wind", *ḥwyt* means "rain", *šnꜥ* means "storm-cloud", *kkw* means "darkness"[110]. Finally, *ḫɜwt.sn ḥr mḥỉt ḥr mw mỉ smḥw nw dyt;* this sentence means *"*their corpses floating on the water like skiff of the papyrus". All this clarifies to what extent the storm was severe.
The management of this crisis can be known through the text as follows:



[111]

ḏd-ỉn ḥm.f wr.wy nɜ r bɜ.w n ntr ꜥɜ [*r s*] *ḫr.w nṯrw*
hɜ.t pw ỉr.n ḥm.f r ỉmw.f knbt.f m-ḫt.f
mšɜt(*?*) *ḥr ỉɜbt ỉmntt ḥr ḥɜpw nn ḥbsw ḥr.s*
m-ḫt ḫpr bɜw nṯr spr pw ỉr.n ḥm.f r ḫn wɜst
nbw ḥsm nbw sšm pn šsp.f ɜb.n.f [112]

"Then His Majesty said: 'How much greater this is than the wrath of the great god, [than] the plans of the gods! His Majesty then descended to his boat, with his council following him, while the crowds [on] the East and West had hidden faces, having no clothing on them, after the manifestation of the wrath of the god. His Majesty then reached the interior of Thebes, with gold confronting gold of this cult image, so that he received what he desired"[113]**.**

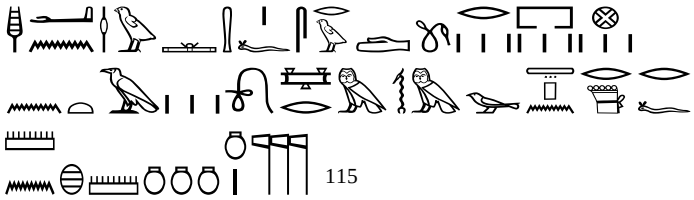
[109] Ritner and Moeller, *JNES* 73, No.1 (2014), p.5-6.
[110] Faulkner, *A Concise Dictionary*, p.396, 204, 328, 356.
[111] Helck, *Historisch-Biographische Texte der 2*, p.106,107.
[112] Ritner and Moeller, *JNES* 73, No.1 (2014), p.5-6.
[113] Ritner and Moeller, *JNES* 73, No.1 (2014), p.9.

The most essential procedure in managing this crisis is the reestablishment of the two lands after the catastrophic Tempest as follows:

 [114]

wn ỉn ḥm.f ḥr snmt tɜwy ḥr sšmt mḥywt

"Then His Majesty began reestablishing the Two Lands, giving guidance (or "a conduit") for the flooded territories."

 [115]

ʿḥʿ n wd n ḥm.f srwd rɜw-prw ntyw wɜ r dɜm m tɜ pn r dr.f smnḫ mnww nw nṯrw

"Then His Majesty commanded to restore the temples that had fallen into ruin in this entire land: to refurbish the monuments of the gods"[116].

Comment: The text indicates that they managed to control this crisis through some procedures executed by the king himself. The king descended with his council to the boats, directly to Thebes, with amounts of gold to gain the blessing and satisfaction of the god, then he began to reestablish the two lands after the great destruction and damage caused by this storm.

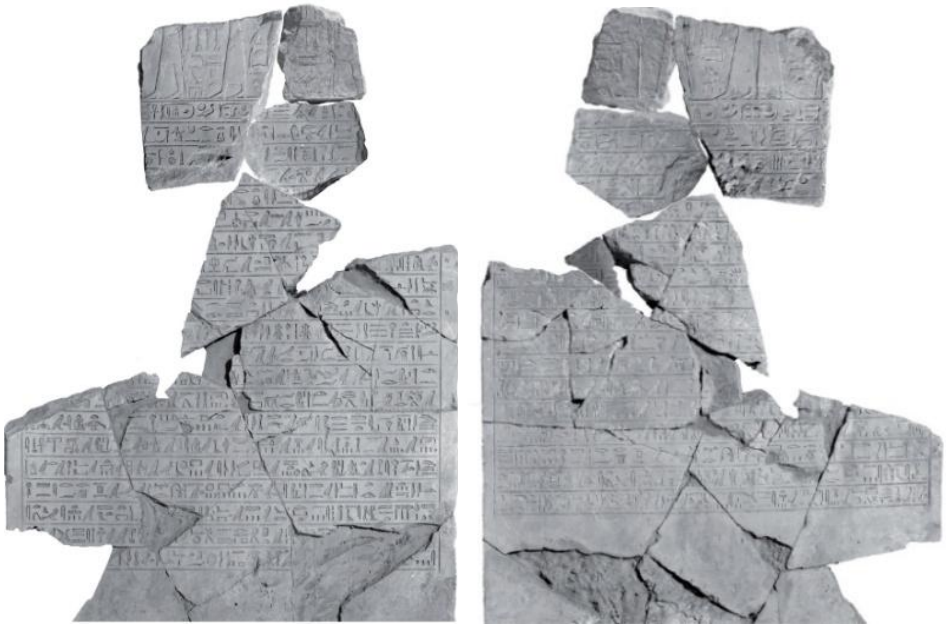


Fig. 8: The Recto and the Verso of Ahmose Tempest Stela at Karnak Temple.
After: Biston-Moulin, S., "À Propos de Deux Documents d'Ahmosis À KarnaK", in: *Les Cahiers de Karnak* 15, 2015, p.39-49, especially p.48-49.

[114] Helck, *Historisch-Biographische Texte der 2*, p.108,109.
[115] Helck, *Historisch-Biographische Texte der 2*, p.108,109.
[116] Ritner and Moeller, *JNES* 73, No.1 (2014), p.9.

2.3.3 The Climate Change Management

Based on the collected data, they managed climate change through a combination of adaptive strategies, religious beliefs, economic planning, and social organization[117].

2.4 Diseases and Epidemics

Ancient Egyptians suffered from diseases and epidemics which were considered as a crisis. The ancient Egyptians tried to deal with these diseases either by medical remedy or by adapting with the disease such as in cases of deformations and fatal diseases. However medical papyri provided remedy for different diseases and detailed them[118], authors did not find statistics about cases of death or infection, or documents explain how the society was affected by these diseases. The consequences of diseases could resemble those of nowadays. Although congenital deformities did not constitute a major crisis in ancient Egypt, they might have developed into a crisis in case that ancient Egyptians had not managed them wisely.

Ancient Egyptians suffered from different diseases such as the infectious diseases as tuberculosis, and poliomyelitis[119]. Snake and scorpion bites were quite common in ancient Egypt. There were two kinds of treatment. One of the two methods applied was magical treatment which was by casting the poison onto the floor through magical practices, while the other way was the medical and it was by applying a knife to the wound and cutting the poison out. The magical treatment was mentioned in the Metternich stela[120].

2.4.1 Infectious Diseases

Palaeopathology and DNA analyses show that Tuberculosis was an endemic disease in ancient Egypt, and M. tuberculosis has been found in mummies of young and old people, and in tombs of different status[121]. For example, recent researches over mummies showed fatal diseases which led to death, as clarified by examination of a mummy for a lady called Irtyersenu from the 26th Dynasty who is thought to be died from ovarian cancer. It is likely that the lady Irtyersenu was infected with a strain of M. tuberculosis that was spread at that time between the populations[122].

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[117] For more details see: Butzer, K. W., *Early Hydraulic Civilization in Egypt: A Study in Cultural Ecology*, University of Chicago Press, Chicago, 1976, p.1-25, 144-180; Kemp, B. J., *Ancient Egypt: Anatomy of a Civilization* (2nd ed.), Routledge, London, 2006, p.152-180.

[118] The medical papyri which mentioned diseases are Edwin Smith Papyrus, Hearst Papyrus, Ebers Papyrus, Chester Beatty Medical Papyrus…etc, for more details, see: Mudry A., "Otology in Medical Papyri in Ancient Egypt", *The Mediterranean Journal of Otology* 3 (2006), p.133-142; Leake, Ch., *The Old Egyptian Medical Papyri,* 2nd series, 1952, p.57-67; Dawson, W. R., "Studies in the Egyptian Medical Texts", *JEA* 18, No.3/4 (1932), p.150-154; Nunn, J.H, *Ancient Egyptian Medicine*, Oklahoma, 2002, p.24-41.

[119] The mummy was examined by Dr. Granville who was an eminent physician and obstetrician for more details, see: Donoghue, H. D., et.al, "Tuberculosis in Dr Granville's Mummy: a Molecular Re-Examination of the Earliest Known Egyptian Mummy to be Scientifically Examined and Given a Medical Diagnosis", *Proceedings of the Royal Society B* 277 (2010), p.51.

[120] Nunn, J, *Ancient Egyptian Medicine*, British Museum Press, London, 1997, p.59.

[121] Zink,A. et al., "Molecular analysis of skeletal tuberculosis in an ancient Egyptian population", *Journal of Medical Microbiology* 50 (2001), p.355-357; Donoghue, et.al, *Proc. R. Soc. B* 277 (2010), p.51,55.

[122] Donoghue, et.al, *Proceedings of the Royal Society,* p.51,55.

However, the Nile has always been an important source of life, it contained parasites and other living creatures that were less beneficial to health. Bilharzia or Schistosomiasis was an endemic disease in Egypt. A fatal disease known as "Aaa", which appeared about fifty times in ancient Egyptian texts, is described in the Ebers Papyrus as having blood in the urine, caused by worms. The papyrus mentioned the remedy for worm diseases. It is also described that it could lead to death[123]. A case of smallpox may have affected Ramses V, the king of the 20th Dynasty. The mummy of Ramses V had been discovered had scars probably caused by smallpox[124]. He also may suffer from inguinal hernia and hydrocele[125].

Plague was a fatal disease in ancient Egypt as many people died because of plague. This disease had many reasons to be spread in ancient Egypt. For example, Egypt conducted a lot of commercial campaigns, besides being on the trade routes of the ancient civilizations which made Egypt easy to be struck by plague, especially that there were many cases of plagues spread in ancient world. Among these cases are Amarna letter EA 11 that was sent from the Babylonian King Burnaburiyas to Amenhotep IV in response to one in which the king told him his father's wife died because of a plague[126]. In Amarna letter EA 35, the king of probably Cyprus explains the little quantity of copper he sent to Egypt was because the plague spread in his country; he had slain all the men of his country, and there was no (single) copper-worker[127]. Moreover, Near Eastern texts mentioned that the Hittite king Suppiluliumas, and his son king Arnuwanda II died in a plague attack, while the Hittite king Mursili said that the plague came from Egyptian war prisoners who carried the plague to Hatti taken at the battle of Amka in Syria, and it stayed for 20 years[128].

In addition, the holy books indicated the ten plague and biting insects which were spread in Egypt at the time of Prophet Moses as a punishment from God[129]. According to the biblical narrative in Exodus 8: 20-32, swarms of flies (or biting insects) which appeared during the fourth plague invaded Egyptian homes, streets, and settlements[130]. The flies that were attracted to the carcasses of dead frogs and fish, creating an ideal environment for their reproduction. These insects are known to be dangerous vectors

[123] Adu-Gyamfi, S., "Diseases and Disease Combat in Ancient Egypt", in: Özlem Sir Gavaz and Gülgüney Masalcı Şahin, eds., *Eskiçağda Salgın ve Hastalıklar,* Ege Yayınları, Istanbul, 2021, p.16-17; Baligh, R., "Pestilences in Ancient Egypt and Their Relation to Certain Deities and Events", *Annal of the General Union of Arab Archaeologists,* No.25 (2022), p.56; Nunn, *Ancient Egyptian Medicine*, p.63.

[124] Sullivan, R., "A Brief Journey into Medical Care and Disease in Ancient Egypt", *Journal of the Royal Society of Medicine* 88 (1995), p.143; Baligh, *Annal of the General Union of Arab Archaeologists*, No.25 (2022), p.54.

[125] Smith, E., *Catalogue Général des Antiquités Égyptiennes du Musée du Caire N*os. 61051-61100: *The Royal Mummies*, Cairo, 1912, p.91.

[126] Baligh, *Annal of the General Union of Arab Archaeologists*, No.25 (2022), p.41, 42.

[127] Panagiotakopulu, E., "Pharaonic Egypt and the Origins of Plague", *Journal of Biogeography* 31 (2004), p.273.

[128] Panagiotakopulu, *Journal of Biogeography* 31 (2004), p.273; Baligh, *Annal of the General Union of Arab Archaeologists*, No.25 (2022), p.43.

[129] Baligh, *Annal of the General Union of Arab Archaeologists*, No.25 (2022), p.47.

[130] Rushdoony , R.J., *Exodus: Volume II of Commentaries on the Pentateuch*, Ross House Books, California, 2009, p.118-123.

of several diseases such as anthrax, malaria, and leishmaniasis. This may have led to the widespread outbreak of infections among both humans and animals, representing a serious public health crisis at the time[131].

The grasslands which inhabited by “sylvatic” rats carried disease more than desert rats. The Nile rat "*Arvicanthis niloticus*" provides a natural reservoir for the bubonic plague and is abundant in Egypt. Since ancient Egyptians mainly depended on farming, they were likely in contact with these rats. As a result, this could have caused the disease to spread quickly between population and led to many deaths, which could lead to a serious crisis[132].

Ancient Egyptians controlled the diseases by describing the symptoms and diagnoses, denoting them inside papyri to help people know what they had suffered from and curing them with the suitable remedy. In addition, potable water, sanitary practices, and medical care have helped in reducing the cases of diseases[133].

Poliomyelitis is a disabling and life-threatening disease caused by poliovirus. The virus spread from person to person, and it was highly infectious. Ancient Egyptians would have been aware of this disease, its symptoms, and its effects. A stela dated from 1500BCE has been discovered that depicts Ruma as having one leg shorter than the other and having to use a stick for mobility (Fig.9) [134]. In addition, the mummy of king Siptah has revealed that his left foot was deformed, and it was shorter and thinner than the right leg[135] (Fig.10).

Fig. 9: The stela of Ruma, a doorkeeper of the 18th or 19th Dynasty, in the Carlsberg Glyptotek Museum, Copenhagen AIN 134

After: Nunn, *Ancient Egyptian Medicine*, Oklahoma, 2002, p.77; Loebl and Nunn, *J R Soc Med*, p.454, fig.7.

[131] For more details check the World Health Organization website: *https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases.*

[132] Panagiotakopulu, *Journal of Biogeography* 31 (2004), p.272; Baligh, *Annal of the General Union of Arab Archaeologists*, No.25 (2022), p.44.

[133] Baligh, *Annal of the General Union of Arab Archaeologists*, No.25 (2022), p.56.

[134] Nunn, J.H., *Ancient Egyptian Medicine*, Oklahoma, 2002, p.77.

[135] Redford, D. B., *The Oxford Encyclopedia of Ancient Egypt*, Vol.1, Oxford, 2001, p.366.

Fig. 10: The mummy of King Siptah reveals the deformity of his left leg
After: (Left) Smith, E., *Catalogue Général des Antiquités Égyptiennes du Musée du Caire* Nos. 61051-61100: *The Royal Mummies*, Cairo, 1912; pl.LXII. (Right) *https://nmec.gov.eg/mummies-hall/septah/*, accessed at (5:20 A.M, 19-7-2024).

2.4.2 Physical Deformities

Ancient Egypt had cases of achondroplasia disease, as depicted in statues and scenes. Achondroplasia is generally considered to be an obstacle in the community as it prevents the dwarf from doing some works but in ancient Egypt dwarfs were welcomed and had jobs which were suitable for their cases such as dancers, musicians, animal keepers, craftsmen,[136] overseers of linen, jewelers, and entertainers[137]. The reasons of making them respected that they were linked to certain gods such as Bes the dwarf god of protection, childbirth, music, and household joy. His image was believed to ward off evil spirits. This religious association elevated their status and made them symbols of blessing and protection[138].

Unlike in many later societies, dwarfs in ancient Egypt were not marginalized. They could marry, own property, and even reach important administrative position. Many cases show their position in ancient Egypt, for example, their deformity was treated in their statues in an intelligent way as in the group statue of the dwarf Seneb and his

[136] For more examples about achondroplasiacs or dwarfs and their jobs see: Kozma,Ch., "Historical Review: Dwarfs in Ancient Egypt", *American Journal of Medical Genetics Part A 140A*, No.4 (2006), p.306-310; El-Aboudy, O., "Representation Modes of Dwarf Animal-Keeper", *JGUAA* 2 (2021), p.67-82.

[137] Nunn, *Ancient Egyptian Medicine*, p.78.

[138] Wilkinson, R., *The Complete Gods and Goddesses of Ancient Egypt*, Thames & Hudson, London, 2003, p.104; Véronique, D., *Dwarfs in Ancient Egypt and Greece*, Clarendon Press, Oxford,1993, p.354.

family from the Old Kingdom showing him with crossed legs and in the space that supposed to be occupied by his legs, the artist depicted the children instead [139] (Fig.11). Moreover, the southern Egyptian governor Harkhuf from the 6th Dynasty, inscribed on his tomb a letter he received from king Pepi II in which the king praised him and promised Harkhuf great rewards for having brought a dwarf from the land of Punt. The dwarfs were brought to the royal palace to delight their masters[140]. This indicated the dwarfs' administrative positions. Dwarfs also worked as sailors as found in Tutankhamun's tomb an alabaster boat sailed by an achondroplasiac[141]. In addition, a carved relief for the achondroplasiac dancer Djehor on the lid of his sarcophagus from the Late Period during the time of king Nechtanebo II (Fig.12).

Fig. 11: Dwarf Seneb with his family
After: Kozma, *American Journal of Medical Genetics Part A 140A*, No.4 (2006), p.307, fig.4.

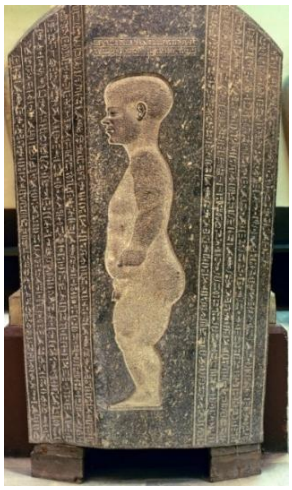

Fig. 12: An achondroplasiac dancer is represented on the sarcophagus of Djehor from the Late Period
After: *https://wellcomecollection.org/works/u9rbrnvq/images?id=y7q6x74u*, accessed at (4 AM, 31-7-2024); Kozma, *American Journal of Medical Genetics Genetics Part A 140A*, No.4 (2006), p.307, fig.5.

[139] Kozma, *American Journal of Medical Genetics Genetics Part A 140A*, No.4 (2006), p.307; Sullivan, *Journal of the Royal Society of Medicine* 88 (1995), p.142.
[140] Kozma,Ch., "Bones and Art Narrate the History of Dwarfs in Ancient Egypt", in: *Annals of Orthopaedics, Trauma and Rehabilitation* 2/2 (2019), p.5 (ResearchGate Article); Nunn, *Ancient Egyptian Medicine*, p.78.
[141] Sullivan, *Journal of The Royal Society of Medicine* 88 (1995), p.142.

2.4.3 The Crisis of Diseases and Epidemics Management

The Ancient Egyptians dealt with diseases and epidemic crises using a combination of medical knowledge, religious beliefs, hygiene practices, and state support. Their approach mixed practical treatments with spiritual and magical elements. Moreover, they tried to adapt to deformational diseases.

Conclusions

The study can conclude that ancient Egyptians tried to avoid mentioning the occurrence of crises or confessing it, trying not to exaggerate the crisis, assuring they made all their control against any disturbance, troubles, or problems.

The study revealed that the ancient Egyptians managed the crises wisely and always sought solution. In case of the internal conflicts and social upheavals, kings did significant efforts to suppress the conflicts to provide stability to the country and its people. To limit the continuous tomb robberies, the country made severe punishments such as beatings, mutilation, or execution for thieves found guilty of tomb robbery and used royal cachettes. Concerning the crisis of conspiracies, the ancient Egyptian tried to manage it through executing the punishment on the conspirators varied among forcing them to commit suicide, getting their ears and nose off and sometimes their execution. The ancient Egyptian country found solution for stopping works in season of the flood by providing them with jobs as stone quarrying, gold mining, and building works. They tried to find effective solutions to protect the country from famine by several agricultural activities such as building dams, canals, storing and distributing food.

The period from (5900 to 5500 B.C) was the time of abandoning the Sahara Desert, moving to the Valley of the Nile and the emergence of the developed countryside and villages of the Nile Valley with its agriculture, so the crises of the humidity decrease during this period affected positively on the emergence of the Villages in the valley of the Nile. Ancient Egyptians managed the crisis of the climate change through the divine intervention, and some procedures executed by the King.

The ancient Egyptians tried to deal with diseases either by medical remedy or by adapting with the disease such as in cases of deformations and fatal diseases. Medical papyri provided remedy for different diseases and illustrated their symptoms. In addition, sanitary practices and medical care have helped in reducing the cases of diseases.

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