

# **ILLUMINATING THE PATH OF DARKNESS:**

Social and sacred power of artificial light in Pharaonic Period Egypt



This thesis is submitted for the degree of Doctor of Philosophy

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ABSTRACT

Light is seldom addressed in archaeological research, despite the fact that, at least in ancient Egypt, it would have impacted upon all aspects of life. When discussing light in Egyptology, the vast majority of scholarly attention is placed on the sun, the primary source of illumination. In comparison, artificial light receives very little attention, primarily due to a lack of archaeological evidence for lighting equipment prior to the 7<sup>th</sup> century BC. However, 19<sup>th</sup> and 20<sup>th</sup> century lychnological studies have exaggerated this point by placing an overwhelming emphasis on decorated lamps from the Greco-Roman Period. In an attempt to move beyond these antiquarian roots, recent scholarship has turned towards examining the role that light, both natural and artificial, played in aspects of ancient societies' architecture, ideology and religion. The extensive body of archaeological, textual and iconographic evidence that remains from ancient Egypt is well suited to this type of study and forms three core data sets in this thesis. Combining a materials-based examination of artificial light with a contextualized, theoretical analysis contributes to a richer understanding of ancient Egyptian culture from the 3<sup>rd</sup> to 1<sup>st</sup> millennium BC.

The first three chapters of this study establish a typology of known artificial lighting equipment, as well as a lexicon of lighting terminology. A comparison of the archaeological and textual evidence allows for a discussion on the consumption of lighting in ancient Egypt and its impact on social and economic spheres. From this material it becomes apparent that artificial light was a luxury and this corresponds to its inclusion in religious texts and iconography, as well as the presence of lighting implements in tombs of the wealthy elite. The second half of the thesis examines the ritual application of artificial light, incorporating iconographic and textual evidence, consideration of ritual space and timing, and experimental archaeology. This interdisciplinary approach allows for a discussion of the sensory experience of artificial lighting and its perceived potency in ancient Egypt. It also demonstrates the contribution that Egyptology can make to lychnological and sensory studies of the ancient Near East and Mediterranean by examining the impact of light on phenomenology and aesthetics.

**Declaration**

This dissertation is the result of my own work undertaken while a doctoral student in the Department of Archaeology and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text.

It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my dissertation has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text.

**Statement of Length**

This dissertation does not exceed the prescribed word limit of 80,000 words (approx. 350 pages), plus a 10,000 word extension approved by the Archaeology Degree Committee and the Student Registry.

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## LIST OF ABBREVIATIONS

FIFAO	Fouilles de l'Institut français d'archéologie orientale
LD	LEPSIUS, C.R. 1849. <i>Denkmäler aus Aegypten und Aethiopien</i>
MIFAO	Les Mémoires publiés par les membres de l'Institut français d'archéologie orientale
PM	PORTER, B. & R.L.B. MOSS. 2004. <i>Topographical bibliography of ancient Egyptian hieroglyphic texts, reliefs, and paintings; Vol. 1. The Theban necropolis Part 1. Private tombs</i> . Second, revised and augmented
SAGA	Studien zur Archäologie und Geschichte Altägyptens
TLA	Thesaurus Linguae Aegyptiae
<i>Urk IV</i>	SETHE, K. 1905. <i>Urkunden der 18. Dynastie</i> . 4 vols. <i>Urkunden Des Agyptischen Alterums</i> 4
<i>Wb</i>	ERMAN, A. & H. GRAPOW. (ed.) 1926 - 63. <i>Wörterbuch der aegyptischen Sprache</i> . 12 volumes
Aristotle	ARISTOTLE. 1961. <i>De anima</i> . (ed.)D. Ross
Diodorus	DIODORUS SICULUS. 1933. <i>Library of History, Volume 1: Books 1 - 2.34</i> . (trans.) C.H. Oldfather. Loeb Classical Library 279
Herodotus	HERODOTUS. 1972. <i>The Histories</i> . (ed.)A.R. Burn. (trans.)A. de Sélincourt. Revised edition with new introduction. Penguin Classics
Pliny	PLINY. 1945. <i>Natural History, Volume IV: Books 12 - 16</i> . (trans.)H. Rackman. Loeb Classical Library 370
Strabo	STRABO. 1932. <i>Geography, Volume VIII: Book 17, General Index</i> . (trans.)H.L. Jones. Loeb Classical Library 267

## Chapter 1 - INTRODUCTION

Artificial light, a man-made source of illumination, is seldom directly addressed in archaeological research. This is surprising not only because artificial lighting is one of the earliest tools used by humans, but because it impacts on so many areas of life. The first use of artificial light, for instance, correlates to the first time that humans made fire. While very early fires may have served as a means of cooking and heat, they also provided illumination at night or in dark caves. In this thesis, however, I will focus on artificial lighting implements that were produced with the express purpose of serving as a light source. These are simple in construction, requiring an illuminant, a fat or oil, and a wick, such as a strip of fabric or a piece of reed or wood. If a wick and illuminant are placed in a vessel, the device is called a lamp. Alternatively, the wick could be coated in illuminant to create an implement that could be placed upright in a holder or held in the hand. These light sources are given a variety of names including torch, taper and candle. While basic in form, artificial lights can provide a great deal of information about the ancient world.

The procurement of oil or fat and wick material for lighting devices, for example, reflects agricultural practices. The cost of fuel for light, the production of lighting implements and the possible trade of these items speak to the health of a local economy, as well as any existing trade networks. Light sources can also impact on the built environment, material culture, social structure and religious ideology. The ways in which artificial light is used also varies between different cultures and provides the opportunity for cross-cultural comparison. Additionally, artificial light serves as a medium for examining the utilization and experience of ancient nights and darkness, another area of research that has been largely ignored in archaeological scholarship. Significantly, artificial light can be examined both as a physical object and as a symbolic element. Similarly, it can serve as a passive source of illumination and/or an active element that inflicts change on the environment within which it is placed, as well as the people and objects within that space. Despite the variety of arenas to which an examination of artificial light could contribute, the majority of publications on the topic have focused exclusively on the remnants of lighting implements.

However, lychnology—a subsection of archaeology that focuses on the examination of pre-modern lighting devices—has a self-professed Egypt problem. Despite the numerous publications

of artificial lighting implements of the ancient Mediterranean and Near East, Egypt only features in discussions from the 7<sup>th</sup> century BC onwards. If Egypt is mentioned at all in lychnological publications that examine material prior to the 7<sup>th</sup> century BC, scholars remark that “not much is known of the lighting utensils there” and that archaeological evidence for artificial light is “wholly lacking”(Sussman 2007: 9, no. 18; F.W. Robins 1939b: 184). Though frustrating, these opinions are not surprising when placed within the context of the development of lychnology.

The discipline seems to evolve out of an antiquarian tradition of lamp collecting.<sup>1</sup> Due to their small size and compact form, a great number of lamps, dating from approximately the 7<sup>th</sup> century BC through the 8<sup>th</sup> century AD, survived in the archaeological record from Israel, Palestine, Greece, Rome and Egypt (Sussman 2007: 2). These lamps not only survived but were frequently decorated with floral motifs, as well as depictions of animals, amphibians, deities and erotica. As a result, they were aesthetically pleasing to a Western eye and quickly became a common souvenir item on the Grand Tour (Greene 1992: 17). Their small size meant that they were easily transportable and relatively affordable, two qualities that make lamps desirable on the antiquities market even today. As Paton succinctly said in his guide to collectors, “For many people, to be able to own and handle pieces of such antiquity is supremely satisfying. And it doesn’t cost a fortune”(Paton 1978: 23). This aesthetic approach to lighting also influenced late 19<sup>th</sup> and early 20<sup>th</sup> century lychnologists who sought to create typologies of lamps and determine their chronological development based on their shape and decoration (Fischbach 1896; Loeschcke 1919). Museum catalogues of lighting devices, which were prevalent in the 1970s and 1980s, though useful, also perpetuate the aesthetic/antiquarian focus as they greatly benefited from bequests of lamp collectors (Szentlélek *et al.* 1969; Bailey 1975; Bailey 1980; Bailey 1988; J.W. Hayes 1980).<sup>2</sup> F. W. Robins, for example, who is the only author to publish on archaeological evidence for lighting devices in the Pharaonic Period, amassed a personal collection of over 1,000 lamps, which he bequeathed to the Pitt Rivers and British Museums upon his death in 1962. The aesthetic emphasis of lamp collecting has directly impacted on the contributions of Egyptian lighting implements to lychnological

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<sup>1</sup> A similar trend has also been noted in the study of Roman period lamps (Eckardt 2002), as well as pottery in general (Orton *et al.* 1993).

<sup>2</sup> Bailey’s *Concordance B* (1975: 360–79) illustrates how crucial these bequests and donations were between the First and Second World Wars as museums, such as the British Museum, lacked the funds and political stability to sponsor their own archaeological missions or to purchase additional pieces for their collections.

scholarship. In my opinion, a particular hindrance in examining these lighting devices thus far seems to be that they were not deemed beautiful enough to warrant interest. It is therefore not surprising that examples of decorative Egyptian frog, corn and wreath lamps from the mid-2<sup>nd</sup> to 4<sup>th</sup> centuries AD are well documented (Petrie 1905: 9–11, plate LXIII-LXV; F.W. Robins 1939a: 65–69, plate XIV; Szentléleky *et al.* 1969: 121–24) (Figure 1-1).



Figure 1-1 - Roman period frog lamp (UC54459) from Ehnasya; Petrie Museum of Egyptian Archaeology, London ([petriecat.museums.ucl.ac.uk](http://petriecat.museums.ucl.ac.uk)) (Petrie 1905: plate LXIXA, F57)

The emphasis placed on decorative lamps also seems to have created a scholarly bias in opinion that lamps were the preferred type of lighting device used in ancient Egypt. Brief references are sometimes made to the use of torches (F.W. Robins 1939a: 7; N. de G. Davies 1924; Forbes 1958: 126–28). However, due to the combustible nature of ancient torches, which are generally described as bunches of reeds or sticks soaked in illuminant, they rarely survive in the archaeological record. Consequently, this also meant that torches could not be collected and studied by antiquarians and amateur lychnologists, placing further emphasis on lamps as the primary lighting technology.

While lychnological studies have advanced beyond their antiquarian roots, they still rely on unequivocal examples of lamps. The evidence for this is either a nozzle or spout for a wick and/or the presence of burn marks around this spout. When neither of these features is present, this results in a scholarly “dark age”. This term has been applied to lychnological scholarship in Greece from the 11<sup>th</sup>–7<sup>th</sup> centuries BC (Parisinou 1998: 327–28; Parisinou 2000), and could equally be applicable to Egypt prior to the 7<sup>th</sup> century BC. When discussing light in Egyptology, the vast majority of scholarly attention is placed on the sun, a physical constant of the landscape and the primary

source of illumination. Information on the significance of natural light in ancient Egyptian culture is abundant, although scholarship typically focuses on how light was mythologized and materialized in statuary, elaborately detailed wall paintings, and even monumental architecture. In comparison, artificial light receives very little attention, primarily due to a lack of archaeological evidence. A lack of material remains is also compounded by a difficulty in identifying lighting devices. The absence of burn marks or a distinctive feature such as a wick nozzle complicate this process. Similarly, it is not always possible to distinguish between a censer and a lamp, nor is it possible to state whether fumigation or illumination was a vessels primary or secondary function. In the absence of concrete physical examples of lighting devices, it seems logical to examine textual and iconographic material for evidence of artificial light, but this too is challenging. The lack of remains of lighting paraphernalia in ancient Egypt is compounded by negligible textual material that references lighting, as well as an almost complete disregard for iconographic evidence of artificial light sources. While archaeological, textual or iconographic evidence for artificial light may not be robust enough to produce their own extensive individual publications in isolation, there is enough material to combine in a multidisciplinary approach and achieve significant results. This moves beyond a more traditional, compartmentalized methodology and allows for an examination of the role of lighting in ancient Egyptian culture as a whole.

## **1. Research objectives**

Recent lychnological scholarship has moved past the production of catalogues and typologies in order to address the part that lighting played in religious, economic and social spheres (Harris 1980; Parisinou 2000; Eckardt 2002; Anderson 2006; Griffiths 2016). Similarly, in recent years attention has turned towards examining the impact that light, both natural and artificial, had in influencing aspects of ancient societies' architecture, ideology, and religion (Winter 1994; Bille & Sørensen 2007; Zignani 2011; Moullou *et al.* 2012; Shepperson 2012; Winter 2012). These types of studies necessitate an interdisciplinary approach drawing from archaeological, textual and iconographic sources to create a culturally specific view of light usage. I will adopt a similar methodology in this thesis in order to examine the role of artificial light in ancient Egyptian culture from the earliest identifiable examples of lighting devices to the infiltration of Hellenistic lamps in the 7<sup>th</sup> century BC (Figure 1-2). To do this, the thesis will address several research questions:

1. What lighting implements did the Egyptians utilize between ca. 4000 – 600 BC?
2. Did Egyptians require artificial light sources and if so, in what contexts were they used?
3. Was lighting used by all strata of society?
4. What resources were needed to create lighting devices? And what were the economic implications for the production and procurement of these materials?
5. Was there a symbolic value associated with artificial light?
6. What sensory impact did artificial light sources have on the people who used them and the spaces in which they were employed?

Answering these questions will not only contribute new ideas to lychnological scholarship, but will provide fresh insights into social and religious ideologies of the Pharaonic Period. Additionally, it will open a dialogue on the sensorial experience of artificial light, something which has not been previously discussed by the lychnological or Egyptological communities. This will include an examination of the sensory profile of artificial light, from producing the illuminants, to making the lighting device, to burning and extinguishing the light source. The sensorial impact on those holding the lighting implement and those witnessing its effects will also be considered within the setting and time of day at which the light source was used.

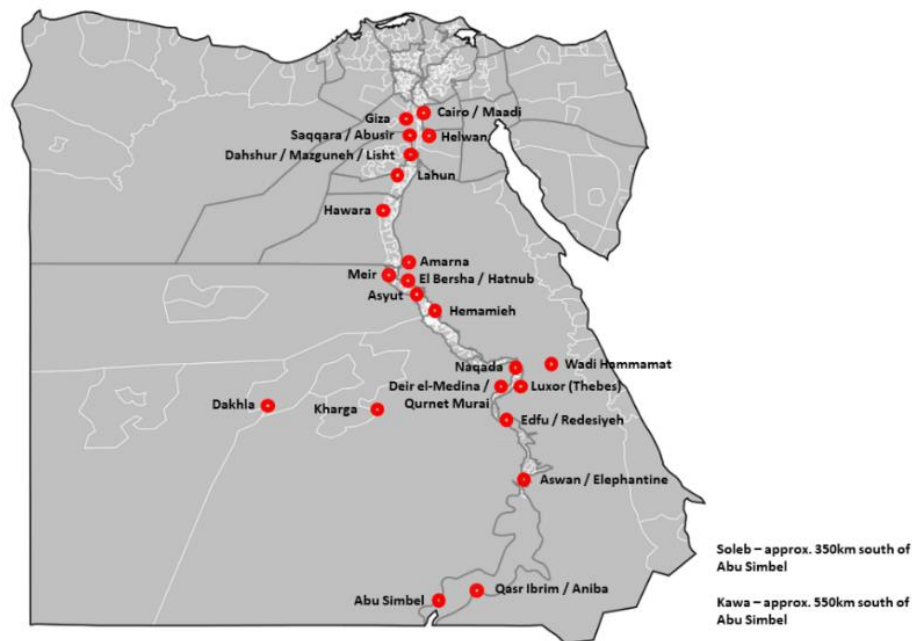


Figure 1-2 - Map of sites referenced in the text

## 2. Thesis structure

In order to address the above research questions each chapter will be arranged thematically, incorporating different methodologies as appropriate, which will be addressed in the introduction of individual chapters. Each chapter will also present an overview and analysis of previous scholarship for the topics addressed within it and will state the sources of data used. Overall the thesis draws on four sources of material: ancient lighting devices, texts, tomb and temple scenes, and data from experimental archaeology. These data sets are diverse and each requires a different methodological framework for thorough analysis. I therefore present my methodologies separately: archaeological examples of lighting implements are collected in Chapter 2, lexemes for lighting equipment in Chapter 4, iconography of light offerings in Chapter 5 and experimental evidence in Chapter 6. As a result, lexicographical analysis is used predominantly in Chapter 4, iconographic analysis is used throughout the entirety of the thesis but particularly in Chapter 5, and empirical methodologies of experimental archaeology and study of sensory perception are employed in Chapters 6 and 7.

The first half of the thesis is designed to build a foundation of evidence from which to have a dialogue, in the second half of the thesis, on the sociology of artificial light during the Pharaonic Period. Admittedly, archaeological, textual and iconographic evidence is limited, but so too are

publications that address artificial lighting in ancient Egypt. Robins (1939b) is the only scholar to address the archaeological evidence for lighting, but he did this in just 3 pages of writing. Similarly, Davies (1924) has produced the only publication (9 pages in total) addressing the iconography of lighting implements. Studies by Dümichen (1883), Reisner (1918), Wilson (1936), Schott (1937), Nelson (1949b), Gutbub (1961), Haikal (1985) and Luft (2009), have all discussed artificial lighting, but only as a means of discussing a ritual performance or corpus of liturgical texts. As an example, Luft in her 350-page publication of Book of the Dead spell 137 A and B, a *r3 n tk3w* “spell for *tk3w* (a lighting device)”, devotes one footnote to a brief discussion of what a *tk3* is, in order to produce a readable translation. This fact might be viewed as surprising, given the central role that *tk3* played in a number of important rituals, particularly the spell for *tk3w*. All of the publications listed above examine either archaeological, textual or iconographic material in isolation and, consequently, achieve minimal results. None of these studies, for example, have produced a typology of lighting devices or a lexicon of lighting terminology. Problematically, they have also all discussed ancient Egyptian lighting from an outsider etic perspective by looking for evidence and describing artificial light from a Classical, Western viewpoint.<sup>3</sup> This thesis will approach the material from both etic and emic perspectives, emphasizing what the ancient Egyptians describe as the most important aspects of artificial lighting. The thesis will also, as much as possible, link archaeological, textual and iconographic evidence together.

In keeping with this structure, Chapter 2 creates a typology for artificial lighting equipment utilized in Egypt from ca. 4000 – 600 BC. Admittedly, this is a broad chronological scope that incorporates various cultural shifts. However, due to the limited archaeological data it is necessary to cast a wide net in order to create as comprehensive a typology as possible. It highlights earlier scholarly reliance on Classical sources and the methodological implications of this bias. The chapter adopts an interdisciplinary approach incorporating archaeological and iconographic material to form a culturally specific typology of the most common lighting devices of the Pharaonic Period.

Chapter 3 places the archaeological evidence for lighting devices within the social and economic context of the Old to New Kingdoms. It illustrates the limitations of archaeological data for lighting

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<sup>3</sup> For an overview of the terms *etic* and *emic* as distinguished by Pike (1967) and its applications in anthropological theory see (Jardine 2004).



equipment from Egypt, in addition to analyzing various factors that may have impacted on the use of lighting in the Pharonic Period. It also provides a discussion on the raw materials utilized in the production of artificial lighting implements, and considers the social and economic ramifications of manufacturing and procuring those materials.

Chapter 4 is a lexicographical analysis of terminology related to artificial lighting implements.<sup>4</sup> While drawing primarily from textual sources, it complements Chapters 2 and 3 by linking, as well as possible, material objects with their appropriate lexemes. The textual material also provides insights into evidence for time-limited phraseology and/or regional dialects, as well as symbolic qualities attributed to specific lighting implements.

Chapter 5 focuses on the iconographic evidence for rituals involving the offering of artificial light sources. It first provides a discussion on the decorum of light offerings before analyzing the occasions on which artificial light is offered, as well as appropriate ritual timing and setting. The tomb and temples scenes allow for a discussion of the practicalities of light offering rituals, in addition to their religious significance, potential origins and development over time.

Chapter 6 examines the impact of artificial lighting on the sensorium. It discusses data gathered from personal experimentation of making ancient Egyptian lighting devices, in addition to presenting a preliminary case study on perception relating to the interaction between coffin panels and Egyptian light sources. It also demonstrates the contributions that experimental archaeology can make to religious and material culture studies within Egyptology and suggests that lighting should be considered in discussions of ancient Egyptian aesthetics.

Chapter 7 incorporates evidence presented in all previous chapters in order to discuss the social and sacred potency of artificial light within the Pharaonic Period.

Chapter 8 provides conclusions and focuses on the potential for future research. It also considers how this thesis contributes to a discussion on the impact of artificial light in ancient Mediterranean cultures.

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<sup>4</sup> In order to conserve space, I have transcribed all hieroglyphic text in horizontal lines and indicated line breaks where necessary in the transcription and transliteration.

## Chapter 2 – ARCHAEOLOGY OF LIGHT

*At Sais, when the assembly takes place for the sacrifices, there is one night on which the inhabitants all burn a multitude of lights in the open air round their houses. They use lamps in the shape of flat saucers filled with a mixture of oil and salt, on the top of which the wick floats.*

Herodotus *Histories* II.62

Herodotus recorded this observation in the 5<sup>th</sup> century BC during the festival of Neith, patron goddess of Sais. It would be more than 2,000 years before another scholar would write about the methods of ancient Egyptian artificial lighting. In 1924, Norman de Garis Davies remarked on the appearance of “A Peculiar Form of New Kingdom Lamp” in 19<sup>th</sup> Dynasty Theban tombs. He described these objects as “white cones decorated with red and yellow bands, set on short poles” that are presented before a deceased individual either in the hand of an offering bearer, or placed into an altar (N. de G. Davies 1924: 9). Although Davies uses the word “lamp” in his title, he refers to these objects as “tapers” or “candles” throughout his 9-page article, as that is what they most closely resemble in modern vernacular. Davies’ piece serves primarily as a catalogue of 18<sup>th</sup> and 19<sup>th</sup> Dynasty tomb scenes in which this type of lighting device is depicted. He does provide some analysis, however, by suggesting that these objects may have served for purposes of illumination and/or fumigation.

Petrie briefly touches on the use of lamps based on his discovery of two limestone vessels during his excavations at Lahun (discussed in Section 2.3). He does not attempt to discuss lamps in ancient Egypt more broadly, but suggests that salt water may have been used in the 12<sup>th</sup> Dynasty lamps and that this would explain Herodotus’ observation at Sais (Petrie *et al.* 1912: 34; Brunton 1920: 13). Petrie also suggests that water must have been used in Egyptian lamps because that was the type of lamp used in the Middle Ages and in modern day Egypt. However, he provides no support for these assertions, nor any evidence for continuity between the 12<sup>th</sup> Dynasty lamps and modern Egyptian types. Interestingly, despite Petrie’s (1905: 4–14, plates LIII–LXXIV) publication of the earliest corpus of Roman lamps from Egypt and his work on the origins and development of the ceramic oil lamp of the ancient Levant, which he designated as type 91 (1928: 22, plate LXI), Petrie never produced a typology of lamps for the Pharaonic Period. In 1939, F.W. Robins would publish

the only examination of archaeological evidence for artificial lighting from the entire Pharaonic Period, an area of research of which, he rightly suggested, “little or nothing is known” (Robins 1939: 184).<sup>5</sup> Robins quickly jumps to the conclusion that lamps must have been the primary source of illumination for the Egyptians, even though “lamps of the dynastic period seem to be wholly lacking from recorded finds” (Robins 1939: 184). In order to explain this lack of material evidence, Robins returns to Herodotus and focuses in on the observation that Egyptians used a “floating wick” type lamp. This type of lamp, Robins states, is “the hardest of all to identify...since the flame floated more or less in the centre of an open bowl there are not necessarily any visible signs of burning” (F.W. Robins 1939b: 185). There are only a small number of subsequent writings that discuss lighting in ancient Egypt archaeologically, but they all follow the conclusions put forward in Davies and Robins’ articles:

1. The ancient Egyptians used “floating-wick” oil lamps for illumination (Nelson 1949b: 321–25; Forbes 1958: 143; Bailey 1975: 239; Fischer 1980: 913; Sussman 2007: 9)
2. The Egyptians must have also used some form of hand-held torch because of their depiction in temple and tomb reliefs from the New Kingdom (Forbes 1958: 127–28; F.W. Robins 1939b: 186; Nelson 1949b: 321–25).

Herodotus, Davies and Robins all have contributed valuable information to the examination of artificial lighting in ancient Egypt, but there is certainly opportunity to address questions that they have left unanswered. Herodotus wrote his observation about lamps in the 5<sup>th</sup> century BC, and it seems unwise to assume that the Egyptians used only one type of lighting technology throughout the 3,000 years prior to his description. Robins provides an intriguing explanation for the lack of material evidence of lamps but fails to explain how a “floating wick type” lamp would function. Additionally, drawing literally from the observations of Herodotus may be problematical. His comment on the “floating wick” likely relates to the visibility of the wick within the bowl, which would have been in contrast to wicks in contemporaneous Archaic Greek lamps that were concealed within a wick nozzle (Howland 1958; Bailey 1975: 29–48, plates 6-13) (Figure 2-1).

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<sup>5</sup> Robins also published *The Story of the Lamp* in 1939 and it seems that his 3-page article specifically on ancient Egyptian lamps is stitched together excerpts from this monograph.



Figure 2-1 - Attic Greek lamp (1886,0401.1347) from 500-470 BC;  
British Museum, London ([www.britishmuseum.org](http://www.britishmuseum.org)) © Trustees of the British Museum

From a mechanical standpoint, it is impossible for a lamp wick to float on top of the oil or in the middle of a bowl of its own accord. A scrap of fabric may have been able to float on the surface of the oil if it was wrapped around or threaded through a piece of wood or cork, but no material evidence has been found to suggest that this was done in ancient Egypt. There is also no evidence for a vegetal material that could serve as a floating wick such as the calyx of *Ballota acetabulosa*, an evergreen plant native to Greece and Turkey, which was used in lamps in ancient Greece and is still used today (Parisinou 1998: 331, 333–35). In addition to the use of a floating wick, Robins (1939b: 185) theorizes that ancient Egyptian lamps likely developed out of adapting household vessels for use as a lighting device. However, he provides no archaeological evidence to support this claim. This chapter will investigate this hypothesis by determining what types of vessels were utilized for lamps and whether or not they were purpose-made as lighting devices. Additionally, wick emplacements or means of creating a “floating wick” will also be considered.

Davies’ article highlights the contributions that iconography can make to our understanding of lighting paraphernalia, but as his writing provides minimal analysis, these scenes certainly require reinvestigation. Davies’ article clearly illustrates, however, that oil lamps were not the only type of lighting device that ancient Egyptians used. This begs the question of whether there was a distinction in or hierarchy of lighting implements? Were different devices employed in specifically designated spaces? The ancient Egyptians themselves are not particularly explicit in describing their lighting utensils and as a result, the materials used to create these objects, their shape, color,

size, and the context in which the lights were used are not always apparent. Nevertheless, I would suggest that there is sufficient archaeological evidence for lighting from the Predynastic through the Late Period (ca. 3000 – 650 BC) from which to build a basic typology of Pharaonic Period lighting equipment.

## 1. Methodology

The focus of this chapter is to provide a typology based on the most consistent types of lighting equipment from the Pharaonic Period. I have also focused on identifying types which can be correlated with textual or iconographic evidence. My starting point for the typology is Fischer's (1980) study in the *Lexikon der Ägyptologie*, which provides a broad overview of pieces that have been identified as lamps within published archaeological field reports (Figure 2-2).<sup>6</sup>

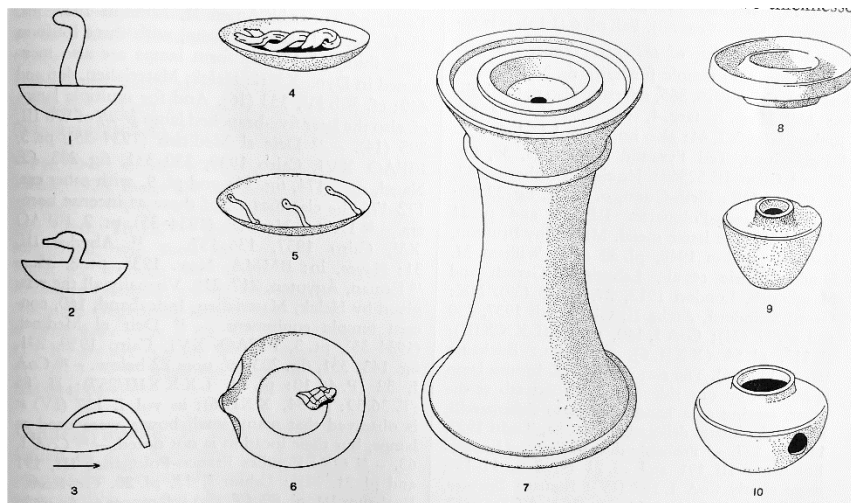


Figure 2-2 - Figure from Fischer entry on "Lampe" in *LÄ* (Fischer 1980: 914, fig. 1)

The types that I discuss in this chapter developed from comparing Fischer's examples to museum collections and catalogues, tomb and temple iconography, lychnological publications, and published finds from across Egypt and Sudan. As much as possible, the lighting devices I use as examples in the typology are pieces that I was able to examine myself. This was accomplished either through research trips to museums: the Petrie Museum of Egyptian Archaeology, the British Museum, the Fitzwilliam Museum, the Louvre and the Vatican Museums; or, by viewing collections online that contain a complete data record and photographs, such as that of the

<sup>6</sup> The drawing includes hieroglyphs which Fischer suggests represent lamps (nos. 1-3), as well as physical remains of lamps (nos. 4-10). I have excluded no. 5 from this chapter, as it is likely a spinning bowl, and nos. 8-10 because of their questionable forms which have no parallels in the corpus of material examined for this thesis.

Metropolitan Museum of Art. This chapter is not meant to serve as an exhaustive catalogue of all ancient Egyptian lighting devices as these are poorly published and difficult to identify. Instead, it will present examples of the most consistent types of lighting equipment that I have identified, which can then be used to study and (re)examine relevant archaeological material, as well as provide a focus for the future collection of additional examples.

It is important to acknowledge that the majority of these devices derive from mortuary contexts, and while they are useful, there are also minimal numbers. In an attempt to avoid abstract terminology, such as candle, torch, etc., I have instead used descriptive names for the four types of lighting devices I have identified: non-spouted open vessel lamp, spouted open vessel lamp, wick-on-stick device, and wick-in-stick device. Because there are so few extant examples, the typology includes vessels and relevant accessories (i.e. lampstands) made from ceramic, stone, metal and wood. As stated in the Introduction, the majority of these pieces lack tell-tale markers of lighting devices, i.e., a wick spout or nozzle, burn marks or wick remains. The identification of vessels as lamps without these features, designated as “probable” or “possible” in this chapter, is therefore tentative. There is also no way to account for the number of lamps that may have been ignored or discarded during excavation due to a lack of these features. Nor can I address the number of lamps that may exist in storage magazines or museum collections that have lost identifiable signs of use as a lamp due to cleaning or degradation.

The vessels presented in the typology also could have served multiple purposes. Müller's (2006) article on the function and origin of the "cup and saucer" vessel form highlights the potential multi-purpose functionality of some of the objects discussed in this chapter. For example, she includes several limestone vessels in her article, which are discussed in Sections 2.3 and 2.4 below (Müller 2006: fig. 1, nos. 3-7) (Figure 2-3).<sup>7</sup>

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<sup>7</sup> The objects included in Müller's article in figs. 2-4 were excluded from this chapter based on their irregular form.

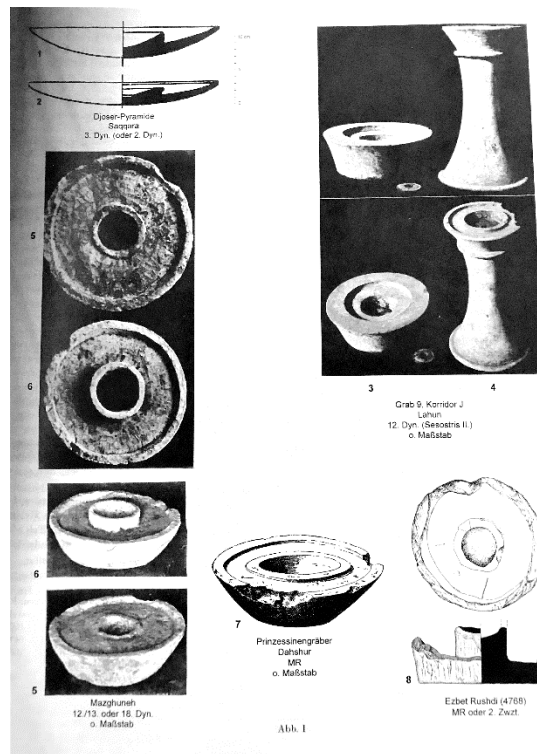


Figure 2-3 - Selection of Egyptian "cup-and-saucer" lamps, nos. 3-6 included in this chapter (Müller 2006: 261, fig. 1)

Müller concludes that these objects were used as lamps in both Egypt and the Southern Levant and that the cup and saucer vessel form may have been an Egyptian design that was adopted into the Levantine ceramic corpus. This theory has been disputed, however, with the latest discussions suggesting that a cup and saucer vessel could have been used as an incense burner and/or a lamp (Uziel & Gadot 2010). I acknowledge that the objects I discuss below were likely not used solely as means of illumination. Spouted vessels, for example, could be used for libations while non-spouted vessels could be used to hold food stuffs. I am not suggesting that every spouted or non-spouted vessel functioned as a light source. I am, however, indicating that these types of vessels had the potential to serve as a lamp and sometimes there is evidence that one did. Because the evidence is minimal and displays no clear development over time, the material will not be presented chronologically. Instead the pieces within each type will be presented by degree of plausibility that they served as lighting devices. Any chronological implications will be separately highlighted. Objects which can be securely identified as lighting paraphernalia include those containing remains of wick material and/or illuminant. Probable lighting devices are designated by the presence of burn marks, wick anchors, or iconographic evidence. Some types will also contain possible lighting objects that I have identified based on comparison to securely identified pieces or because of initial identification by an archaeologist. It is important to note that while

every effort has been made to be as detailed as possible, some of the data are limited due to the lack of published material. Several of these objects have never been published, while many were cursorily mentioned in archaeological reports of the 19<sup>th</sup> and 20<sup>th</sup> centuries and thus lack detail expected in modern archaeological publications. All available data for lighting devices presented in this chapter are presented in Appendix One.

## 2. Non-spouted open vessel lamps

Examples of non-spouted open vessel lamps exist in the archaeological record of Egypt as early as 4000 BC and continue in usage until the end of the Late Period. They are generally ceramic vessels made of Nile silt with the exception of the Middle Kingdom during which time limestone lamps are more prominent in the archaeological record; however, examples are also found in rough limestone, copper and calcite. They range in diameter from approximately 10–30 cm and in height from 4.9–33 cm, with conical, spherical, chalice and hemispherical body shapes and round or flat bases (Figure 2-4).

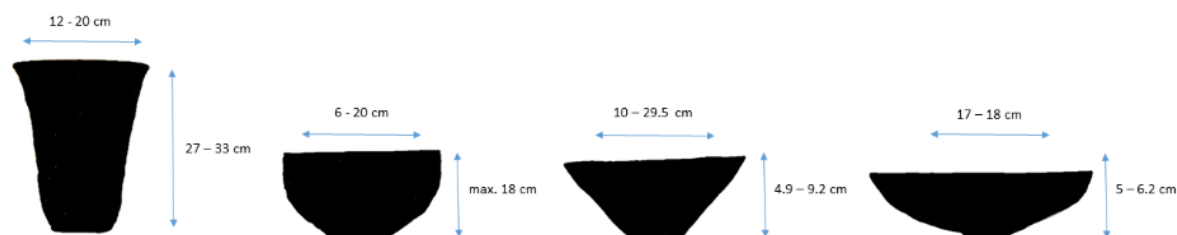


Figure 2-4 - Diagram of non-spouted open vessel lamp shapes and known dimension ranges

### 2.1 Definite examples of non-spouted open vessel lamps with wick remains and/or traces of illuminant

The earliest lamps which I have firmly identified based on the presence of wick remains inside the vessels come from the 6<sup>th</sup> Dynasty mastaba of Kaemsenu at Saqqara. There were, in fact, two lamps with wick remains found in Kaemsenu's mastaba, a copper lamp found in a subsidiary burial chamber and a Nile silt ware example found in a *serdab*. The latter will be discussed in the next section of this chapter as it is a spouted vessel lamp. This is however a good illustration of the use of both spouted and non-spouted bowls at the same time, and even in the same burial, as means of illumination. The spherical, non-spouted copper bowl measures approximately 10 cm in diameter and, based on the published drawing, appears to be round bottomed (Firth & Gunn 1926: 35, fig. 37).



The vessel was placed in front of the coffin along the east wall of the burial chamber on a shelf formed by the stones blocking the door (Figure 2-5). An intact wick was found inside the bowl although no indication is given in the publication as to whether the wick exhibited signs of burning or if any traces of illuminant were found in the vessel. Based on the drawing of the burial chamber, it appears the lamp was placed in line with the angle of the head of the deceased (Firth & Gunn 1926: 33–35, fig. 37). This close positioning of a lamp to the head, or at least within line of sight, of the deceased is a trend that continues into the New Kingdom in intact tombs where lamps appear.

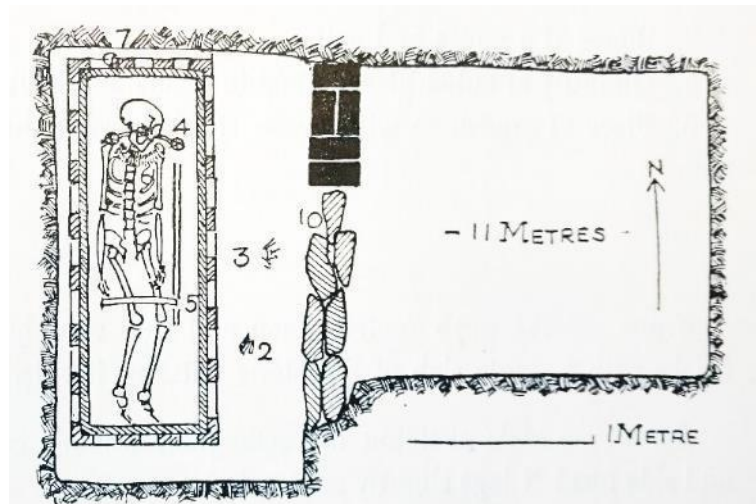


Figure 2-5 - Plan of burial in mastaba of Kaemsenu showing placement of copper lamp with wick remains (#1) (Firth & Gunn 1926: fig. 35)

There is one instance of a lamp with wick remains dating to the Middle Kingdom, which was found in the undisturbed 12<sup>th</sup> Dynasty burial of Nephthys at Meir (Kamal 1911: 11–15, figs 2, 3).<sup>8</sup> The lamp consists of a red ceramic dish measuring 25 cm in diameter with a smaller cup, approximately 12 cm in diameter, affixed to the center of the large dish. In the center of the small cup were the remains of a wick. The lamp was placed in front of the coffin of Nephthys, which was situated along the west wall of the burial chamber, adjacent to her head that faced east (Figure 2-6).

<sup>8</sup> No drawing or photograph of the lamp is included in Kamal's excavation report. A photograph is included in Müller's (2006) article, but is of insufficient quality to reproduce here.

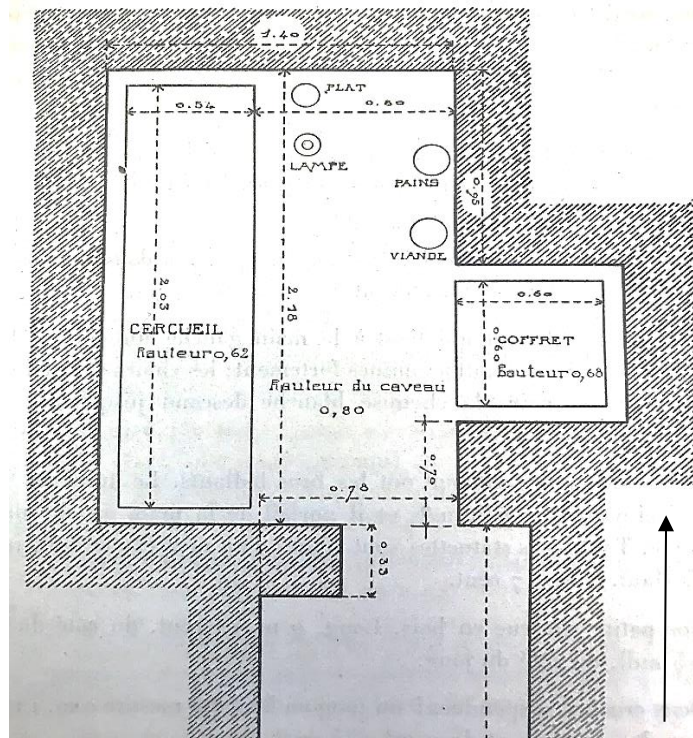


Figure 2-6 - Plan of burial chamber of Nephthys indicating placement of "lampe" next to the coffin (Kamal 1911: 15, fig. 3)

There is then a gap in the archaeological record for non-spouted open vessel lamps with wick remains until the New Kingdom. The majority of New Kingdom open vessel lamps come from the area in and around the village of Deir el-Medina. Early examples from the 18<sup>th</sup> Dynasty were found during Bruyère's 1933 excavations in the western hill of Qurnet Murai, referred to as the Eastern Cemetery—east in relation to Deir el-Medina (Bruyère 1937: plate 1). A small number of these are on display in the Louvre and each is comprised of a Nile B2, flat based, wheel-made bowl with red slip and a band of black paint around the flat rim (Andreu & Barbotin 2002: 107–8). The example presented below, which is 6.2 cm in height and 18 cm in diameter, contains a twisted wick of flax (E 14571) (Figure 2-7). Bruyère (1937: 136) remarks that lamps in the Qurnet Murai cemetery were usually found with a piece of white fat and a wick inside. As only the wicks remain today it is possible that the piece of fat was discarded during excavation. From photographs and Bruyère's reports, it appears that many of these lamps were discovered in Qurnet Murai tombs, although specific tomb numbers for each lamp are not provided in photographs (Bruyère 1937: 99, fig. 50). Inventories of each tomb's contents indicate that 2 bowls, presumably like E 14571, with one wick each were found in tombs 1370 (tomb of Madja), 1371, 1372, 1375 and 1381 (Bruyère 1937: 147–202). Tomb 1382 contained 3 bowls, each with their own wick and tomb 1388 only contained 1

bowl with a wick. Tomb 1365 contained a unique lamp in which a bowl (d: 14 cm) with a square hole in the base was placed inverted as a lid over another bowl. The bottom vessel contained fat and a twisted wick, which was threaded through the square hole in the lid. This is the only instance of this type of lamp not only in the Eastern Cemetery, but in all of the archaeological material that I examined, and provides a potential option for a wick anchor that would suspend the burning wick in the center of a non-spouted vessel. The vessel type used for the Qurnet Murai lamps with a black band of paint around the rim is restricted to use in the first half of the 18<sup>th</sup> Dynasty (Andreu & Barbotin 2002: 108). It appears that this type was used not only to hold a wick and serve as a lamp, but also to hold other funerary offerings. As an example, another Nile B2 wheel-made bowl (E 14574) (h: 12 cm, d: 12 cm) excavated in the same cemetery was found containing an assortment of fruit including pomegranates, dates and figs (Andreu & Barbotin 2002: 107–8, cat. 46).



*Figure 2-7 - Interior view of E 14571 from Qurnet Murai; Louvre Museum, Paris (Andreu & Barbotin 2002: 91, cat. 22)*

Interestingly, Bruyère notes that in tombs 1389, 1382 and 1371 of the Eastern Cemetery sherds of limestone were also used as lamps equipped with a piece of fat and a wick (Bruyère 1937: 136). These lamps were placed on the forehead of the mummy inside their coffin, while in tomb 1370 a limestone sherd lamp was placed outside the coffin, adjacent to the head of the mummy on a bier. This suggests that the practice of placing an artificial light near or even on the head of the mummy continued at least into the early 18<sup>th</sup> Dynasty. As with E 14571 above, it seems that the necessary lamp components of fuel and wick were placed in a vessel, or on a sherd of limestone, but were not lit prior to interment.

Perhaps two of the best known lamps in the archaeological record from ancient Egypt are two calcite (Egyptian alabaster) (Aston *et al.* 2000: 59–60) lamps from the tomb of Tutankhamun that were found in the burial chamber of the king, JE62111 (Carter 173) and JE62112 (Carter 174).<sup>9</sup> One (JE62112) placed just outside the doors of the elaborate gilded shrine that contained the sarcophagus of the young ruler, and the other (JE62111) found nearby in the southeast corner of the room. The more elaborate of the two, JE62111 (Figure 2-8), is composed of a central chalice flanked by an open fretwork design of the god of eternity, Heh, who rests above clusters of papyrus. In one hand Heh grasps the *mnpt*-sign, while in the other he supports an *ankh* and Tutankhamun's names, symbolically granting the king eternal life. This whole grouping is supported on a trellis pedestal. The central chalice of the lamp is composed of two cups nestled inside each other. When illuminated from within, they display a scene painted on the exterior wall of the inner cup: an enthroned Tutankhamun being presented with *mnpt*-signs by his wife, Ankhesenamun. The entire piece measures 51.5 cm high while the height of the central chalice is 33 cm. The width of the object, including the carved fretwork decoration, is 29.5 cm.

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<sup>9</sup> Carter's object cards, drawings of the pieces and diagrams indicating their placement in the burial chamber are accessible online through the Griffith Institute: <http://www.griffith.ox.ac.uk/discoveringTut/>



*Figure 2-8 - JE62111, lamp found in the southeast corner of the burial chamber of Tutankhamun; Egyptian Museum, Cairo (Global Egyptian Museum, [www.globalegyptianmuseum.org](http://www.globalegyptianmuseum.org))*

The other lamp, JE62112 (Figure 2-9), is elegantly carved from one piece of calcite displaying three lotus buds rising from the circular base. The central cup is larger and has the same chalice shape as JE62111, although it is only a single cup design, while the two side buds are smaller and more spherical. All three of the cups are decorated with an incised design of lotus petals, which rise above three discs meant to represent floating lotus leaves. The maximum height and width of the piece are both 27 cm.



*Figure 2-9 - JE62112, found in front of the doors of the golden shrine of Tutankhamun; Egyptian Museum, Cairo (Global Egyptian Museum, <http://www.globalegyptianmuseum.org>)*

In the original object cards written by Howard Carter, he notes that both objects are lamps and “contained traces of oil on the interior surfaces of the cups” when first found (Griffith Institute Archive: <http://www.griffith.ox.ac.uk/discoveringTut/>). Unfortunately, only one line later he remarks: “Cleaned with acetone, soap and warm water alternatively” (object card for JE62111). This was surely not an isolated incident. There are likely many other vessels which were found containing traces of oil or fat but on-site cleaning has rendered them indiscernible as lamps. Even without traces of oil, burning, or wick remains, JE62111 could still be identified as a lamp due to the fact that the painted scene of Tutankhamun and Ankhesenamun only becomes clearly visible when lit from the inside. If it were not for Carter’s detailed notes, however, the delicate lotus flower lamp (JE62112) could easily be misidentified as an offering vessel, a chalice or a decorative sculptural piece.

I was able to identify only two definitive Late Period lamps during my research, both of which contain wick remains. The first piece (25.3.180a, b) was excavated by the Metropolitan Museum of Art during their 1921-22 season in the South Assasif of Luxor (Figure 2-10) (Winlock 1921; 1922).<sup>10</sup> The flat based, Nile silt ware bowl, measuring 17 cm in diameter and 5.5 cm in height, was found

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<sup>10</sup> My thanks to Adela Oppenheim and her colleagues in the photography department at the Met for taking new color photographs of this lamp and others in their collection for this thesis.

in tomb MMA 1008, which is part of Cemetery 1000 (Porter & Moss 1964: 668, plate V, X). According to Winlock's reports, the cemetery is located near an unfinished royal temple of the 11<sup>th</sup> Dynasty and contains a number of reused tombs containing a mix of burial goods dating from the 11<sup>th</sup>–25<sup>th</sup> Dynasties. The tomb designated as MMA 1008 contained several burial pits, one of which contained the 21<sup>st</sup> Dynasty coffin set of Iotefamun (26.3.1a, b) (Winlock 1921: 35–36). There is no specific information about the pit in which the open vessel lamp was found.



*Figure 2-10 - Profile of Late Period(?) lamp 25.3.180a, b from MMA tomb 1008; Metropolitan Museum of Art, New York ([www.metmuseum.org](http://www.metmuseum.org))*

According to the Met's website, this lamp is dated to the Late Period. There is, however, no mention in the archaeological reports of material being found that was dated to the Late Period. Although this piece could very well have been excluded from published material. While badly abraded and charred, the rim of the vessel seems to bear the remains of a painted black band. This is particularly evident on the left side of Figure 2-10. As stated above, this type of vessel is restricted to the early 18<sup>th</sup> Dynasty. This date also fits with several burials found within Cemetery 1000 that date to this period, in addition to the discovery of a wooden dagger handle inscribed with the name of Thutmose I (Winlock 1922: 20). Based on this evidence, I would tentatively suggest that this vessel may date to the 18<sup>th</sup> Dynasty and not the Late Period. If the piece is an 18<sup>th</sup> Dynasty lamp, it then suggests that the use of this type of vessel for a lamp was not restricted to burials in Qurnet Murai.

The photograph of the vessel interior (Figure 2-11) does clearly exhibit the remains of the twisted linen wick in the base of the bowl, including one carbonized end visible under the extant wick

material. This suggests that the vessel was filled with illuminant and lit at some point prior to interment and that the flame only burnt for a short period of time as a majority of the linen wick is preserved. The sooty deposit in the base of the bowl, as well as blackening on the vessel sides and rim also indicate that this vessel may have been used more than once as a lamp prior to its deposition in the tomb. Additionally, under the leaf debris that has collected at the bottom of the vessel, a ball of mud, or perhaps dung, is visible. This may have served to anchor the wick to the base of the bowl—a practice that is evident in a lamp from Deir el-Medina and will be discussed in greater detail in Section 1.3 below (Figure 2-29).



*Figure 2-11 - Interior of lamp (25.3.180a,b) with charred end of wick visible along with possible mud anchor; Metropolitan Museum of Art, New York ([www.metmuseum.org](http://www.metmuseum.org))*

The other Late Period lamp comes from the collection of the Fitzwilliam Museum in Cambridge (E.13.1895) (Figure 2-12 and Figure 2-13).<sup>11</sup> It is particularly interesting because in addition to containing remnants of charred wick rest and/or wick material, the bowl of the lamp is still filled with the original illuminant. To my knowledge, this is the only Dynastic Period non-spouted open

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<sup>11</sup> The collections of the Fitzwilliam Museum are accessible online at: <http://www.fitzmuseum.cam.ac.uk>



vessel lamp found with its original illuminant and wick material.<sup>12</sup> The lamp was given to the Fitzwilliam by W.M. Flinders Petrie on behalf of the Egyptian Research Account in 1895. The piece most likely came from Petrie's excavations at Naqada in the same year, as Naqada/Ballas is the provenance listed on the Museum's original catalogue record. The piece was initially listed as dating to the Predynastic Period, but subsequent examination by Janine Bourriau suggests that the piece more likely dates to the Late Period. The lamp is made from a reused wheel-made, round-bottomed deep bowl with steep sides. The bowl measures 15 cm in diameter and 9.2 cm high and is composed of a thick, rough Nile silt fabric with inclusions of straw and sand. It appears that in antiquity the bowl broke resulting in the loss of more than half of the vessel body and rim. The vessel was then reused by tilting it to one side, allowing it to sit flat on the remaining side of the bowl. The bowl was subsequently filled with illuminant and a wick support, which seems to be formed of mud mixed with straw or other organic material was placed inside.



*Figure 2-12 - Profile of E.13.1895; Fitzwilliam Museum, Cambridge; photograph courtesy of Jennifer Marchant*

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<sup>12</sup> The lamp bowl from the tomb of Kha also was found with its illuminant and wick intact but I will address this piece in the spouted vessel section of this chapter. These are the only two lamps that I was able to identify in my research, which were found as they had been left by the ancient Egyptians themselves.



*Figure 2-13 - Interior of E.13.1895; Fitzwilliam Museum, Cambridge; photograph courtesy of Jennifer Marchant*

Initially, I thought that the charred organic material sticking out of the illuminant was the remains of the wick itself. However, x-rays of the entire lamp showed that the organic material does not extend down through the illuminant to the base of the bowl, as would be expected with a wick. Instead, the charred mix of mud and straw appears to have been formed into a flat disk shape that sits just at the surface of the illuminant (Figure 2-14). Based on this evidence, it seems more likely that this object served as a wick rest similar to that in the lamp from Kha's tomb (Figure 2-41). Additionally, as in Kha's lamp, there is a hole in the illuminant immediately in front of the wick rest indicating where one end of a reed may have originally been submerged into the fuel while the other end was propped up by the wick rest in order to burn.



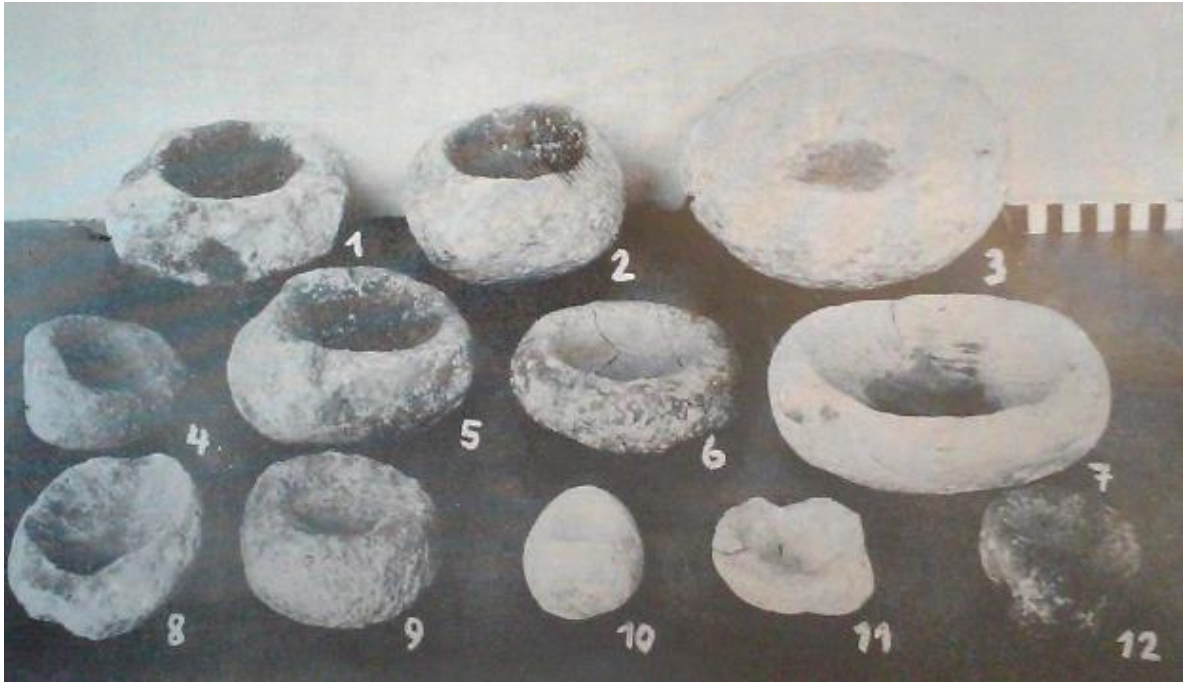
*Figure 2-14 - Side view x-ray of E.13.1895 displaying the flat disk of organic material (surrounded by yellow box) resting on the top of the illuminant; x-ray courtesy of Jennifer Marchant*

The discovery of this lamp in storage at the Fitzwilliam created a unique opportunity to examine the illuminants used by the ancient Egyptians, something which has only been minimally understood from textual references. Initial non-invasive testing was conducted utilizing fiber-optic reflection spectroscopy (FORS). This technique, commonly used for pigment analysis, measures the reflectance of materials in order to identify them. A reading of the FORS results by Assistant Keeper for Conservation, Jennifer Marchant (pers. comm.), indicated the presence of a saturated fat within the pale yellow material filling the bowl, but this was the extent of detail that could be extracted from the readings. Subsequently, two samples of this pale yellow substance were taken and analyzed with Fourier transform infrared spectroscopy (FTIR) by Dr. Paola Ricciardi, research scientist at the Fitzwilliam. A reading of the results by Dr. Ricciardi (pers. comm), along with an independent reading provided by Nelly von Aderkas (pers. comm), conservation scientist at the National Gallery, indicated the presence of a fatty acid and a plant or bee-derived wax in sample one and the presence of only a fatty acid in sample two. They both independently speculated that the source of the fatty acid could be a stearic or palmitic acid, but these are indistinguishable from each other with FTIR. Palmitic acid primarily derives from palm oil, but can also be found in meats, cheeses, butter and dairy products. Sources of stearic acid

include cocoa butter, mutton and beef tallow, lard and butter. Both Dr. Ricciardi and Ms. Aderkas suggested that GC-MS testing should be able to distinguish between these two fatty acids, correlating to Copley *et al's* (2005) study that utilized GC-MS to identify animal and vegetable fat illuminant sources in Christian period lamps from Qasr Ibrim. Unfortunately, it was not possible to conduct GC-MS analysis on E.13.1895 but it is hoped that this may be possible in the future. Nevertheless, the results corroborate with textual evidence, which will be presented in Chapter 3 and 4, that indicates that rendered animal fats were employed as an illuminant. The identification of wax is particularly intriguing as no mention is made in ancient texts for the use of wax as an illuminant. Its presence in only one sample may suggest that wax and fat were mixed to serve as fuel for the lamp by the Late Period, or that wax might have been applied to the surface of the illuminant as part of earlier conservation efforts. Further study is necessary to answer this question.

## 2.2 Probable non-spouted open vessel lamp examples with burn marks

The earliest evidence for lighting devices that I identified in my research dates to approximately 3900 BC. The probable non-spouted open bowls presented here were uncovered by Menghin and Amer (1932) along with other Neolithic objects at the settlement of Maadi. More than twelve roughly hollowed out pieces of limestone ranging in size from approximately 7 – 20 cm were identified as lamps due to their black, sooty interiors (Menghin & Amer 1932: 37, plate XLVIII) (Figure 2-15). The majority of the pieces have flat bases while the picked out depressions in the limestone range from spherical to elliptical in shape. While some vessel interiors are quite roughly hewn, others appear to have been smoothed either with ceramic or stone polishers (Menghin & Amer 1932: 34, 46). Complete elliptical limestone vessels and many fragments of the same, which all exhibit blackened interiors, were found frequently at the site (Menghin & Amer 1932: 37). They were mostly said to come from *sebakh*-holes but more precise locations of these holes or other find spots are not provided.



*Figure 2-15 - Limestone lamps from excavations at Maadi (Menghin and Amer 1932: plate XLVIII)*

Since the bowls were found out of context, it is difficult to suggest how they were used. However, these limestone bowl lamps were found within the settlement of Maadi, not in the nearby cemeteries at Wadi Degla (Tristant & Midant-Reynes 2011: 48–50). Unlike the majority of evidence presented in this chapter, which derives from mortuary contexts, these Neolithic lamps indicate that artificial light was used for purposes other than burials. It is not possible to speculate whether the lamps were used in a domestic or cultic space, but their presence on the site indicates that artificial lighting was being used in some capacity by the early inhabitants of Maadi.

Probable early examples of lamps found in a mortuary context include two Nile silt ware bowls mixed with straw, UC5767 (Figure 2-16 and Figure 2-17) and UC5771 (Figure 2-18 and Figure 2-19) from Predynastic burials at Naqada (3500–3200 BC), which exhibit signs of burning on the interior (Petrie & Quibell 1896).



Figure 2-16 - Interior of UC5767 from tomb 815; Petrie Museum of Egyptian Archaeology, London

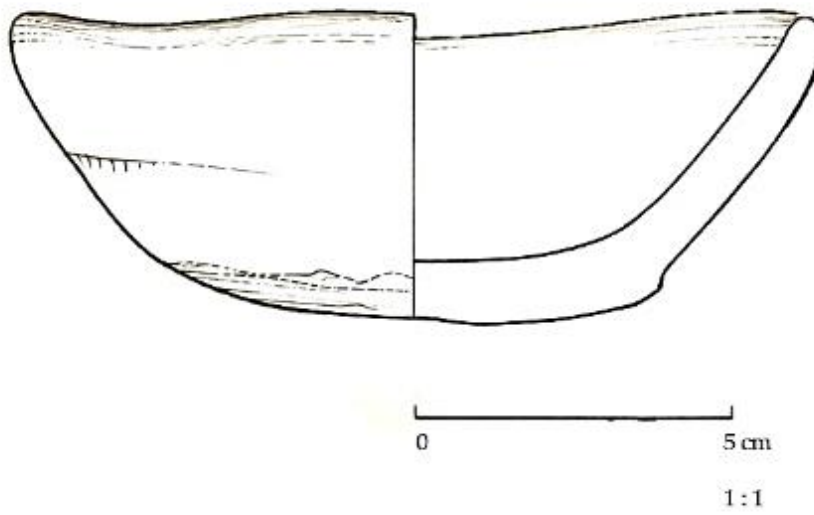


Figure 2-17 - Profile of UC5767; drawing by Will Schenck



Figure 2-18 - Interior of UC5771 from tomb 722; Petrie Museum of Egyptian Archaeology, London

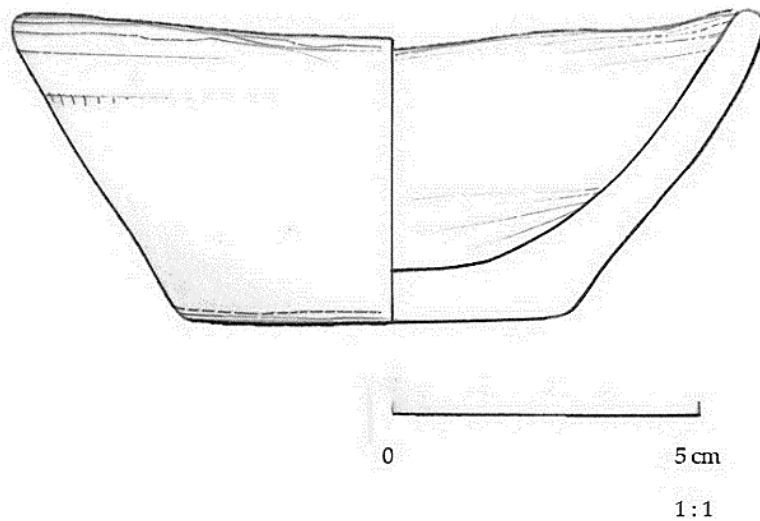


Figure 2-19 - Profile of UC5771; drawing by Will Schenck

The bowl found in tomb 815 (UC5767) is listed as type R21b in Petrie's publication, while the bowl found in tomb 772 (UC5771) is listed as type R34c, both of which are extremely common during the Predynastic period and likely served a multitude of purposes (Petrie & Quibell 1896: 11). Unfortunately, traces of burning on this type of vessel were not recorded in detail during excavations in the late 1800s and early 1900s, and so the potential to identify other lamps from

contemporaneous burials may be lost.<sup>13</sup> Petrie makes no specific mention of these bowls in his Naqada publication aside from assigning them to types R21b and R34c—“R” being the designation given to “rough” pottery (Petrie & Quibell 1896: 11, plate XXXVII). The tombs that they came from were not published, nor were any remarks on the placement of the vessels. The localized burn marks on the rim and sides of the bowl suggest not only that the bowl was indeed used as a lamp, but also indicates that the bowl might have been used more than once for lighting purposes prior to its interment with the deceased. There are only two traces of burning on the rims of each bowl, and then a larger patch of blackening either at the base or along one side of the vessel. If the bowls had been in common use as lamps prior to their burial there likely would have been far more blackening around the rim of the vessel where the wick would have rested. The larger patches of burning on the interior of the two bowls imply that the lamp was not tended properly because the wick was allowed to burn down from the edge of the bowl and presumably burn through all the fuel at the base of the vessel. This may suggest that the lamp was buried with the deceased while it was lit. The bowl from tomb 722 (UC5771) (Figure 2-18) is particularly intriguing since the burn mark at the base of the object seems to follow the pattern of a coiled up wick. During personal experiments of testing several lamp oils, it was quite common for the entire surface of the wick to catch fire. This created a coiled strip of flame within the lamp bowl and would have left a burn mark very similar to that of UC5771 if left to burn down completely.

A later group of objects labeled as lamps by their excavators based on the presence of soot deposits, burn marks, or greasy black interiors were uncovered in the 6<sup>th</sup> Dynasty mastaba of Isi at Edfu (Michalowski *et al.* 1950) (Figure 2-20). A total of twelve bowls/lamps are listed in the publication (although only eleven are photographed), all of which were made of copper and found in the central or southwest burial shafts of the tomb (Michalowski *et al.* 1950: 191–92). The objects range in size from 10 to 18 cm in diameter and all have rounded bases. The archaeologists suggest that 9

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<sup>13</sup> An exception is seven similar Nile silt ware bowls found in 1<sup>st</sup> and 2<sup>nd</sup> Dynasty burials at Helwan. These have tentatively been identified as lamps based on the presence of burn marks on the rims and vessel sides (Köhler 2014: 199, 62:2). The lamps are primarily found in burial chambers, but also in passages or antechambers of the tomb (pers. comm. Friederike Junge). Similar bowls have also been found in contemporaneous cemeteries at Hierakonpolis but no contextual information is available (pers. comm. Renée Friedman).



of the lamps were supported by small columnar stands, which were also found in the shafts (see nos. 4, 7–9, 11–14 and 18 in Figure 2-20).



Figure 2-20 - Lamps (nos. 1, 4, 7-9, 11-15 and 18) found during the excavation of the mastaba of Isi at Edfu (Michalowski et al. 1950: Plate XXI)

### 2.3 Probable non-spouted open vessel lamp examples with wick anchors

The association between lamps, or at least bowls containing a flame, and stands is also apparent in a collection of finds from Lahun. These pieces are particularly interesting because they indicate that wick anchors may have been used by the ancient Egyptians in order to hold a wick in the center of a vessel. Three ceramic disks from Lahun may provide evidence as to how reworked sherds, or purpose built disks, were utilized to anchor a wick near the bottom of a bowl. During William Flinders Petrie's 1914 excavations in the pyramid of Senuseret II, he uncovered two carved, limestone lamps in the debris of one of the corridors (Brunton 1920: 13). Inside each of these limestone lamps was a perforated ceramic disk and a third was found lying nearby. One limestone lamp is now in the Petrie Museum of Egyptian Archaeology at University College London (Figure 2-21 and Figure 2-22), while the other is part of the collection of the Metropolitan Museum of Art in New York (Figure 2-23).



Figure 2-21 - Interior of UC16794 without ceramic disk; Petrie Museum of Egyptian Archaeology, London

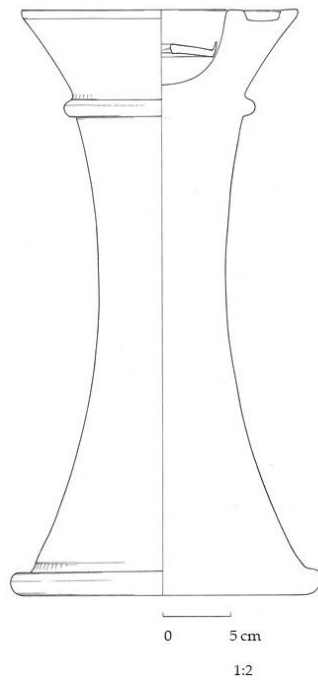


Figure 2-22 - Profile of UC16794 with ceramic disk in situ; drawing by Will Schenck



*Figure 2-23 - Interior of 15.4.3a, b; Metropolitan Museum of Art, New York ([www.metmuseum.org](http://www.metmuseum.org))*

The lamp in the Petrie Museum is particularly interesting because Petrie himself believed it still maintained charred remnants of the wick wrapped around the rim of the disk in the central well. However, after removal of the disk from the limestone vessel, it became apparent that what Petrie mistook for wick material is in fact a badly abraded rim around the disk (Figure 2-24). Due to the state of preservation of the ceramic it is not possible to tell how high the rim originally extended. Also, modern consolidation, likely by Petrie, has resulted in portions of the interior of the limestone bowl becoming affixed to the edge of the disk, concealing most of it. It does seem that the disk was purpose-made for the lamp vessel as it perfectly fits inside the interior's base. Additionally, a small ringed impression is visible around the perimeter of the central perforation presumably from where an implement was pushed through the wet clay to create the hole. This indicates that the hole was not drilled after the ceramic had been fired and that it is therefore not a reused sherd. The wick anchor in the Metropolitan Museum is an actual disk with no rim and also appears to have been purpose-made for its vessel.



*Figure 2-24 - Ceramic wick anchor from UC16794 showing remains of abraded rim;  
Petrie Museum of Egyptian Archaeology, London*

It would seem that in the Lahun lamps these disks were used as wick anchors. The wick would be threaded through the central perforation of the disk and then submerged into the fuel within the central well of the lamp. This would hold the wick upright in the fuel in the center of the lamp, negating the need for a wick spout or rest. As the oil was absorbed into the wick and burned, the level of fuel within the lamp would gradually decrease until the wick and fuel were used up, leaving only the disk and limestone lamp behind. In the case of the lamp at the Petrie Museum, removal of the disk showed that the bottom of the central well is rounded and this also appears to be the case for the lamp in the Metropolitan Museum. Additionally, the diameter of the disk in UC16794 meant that it would only reach about three-quarters of the way down the well before running into the sides (Figure 2-22). This would leave a large enough gap at the bottom of the well for a coiled wick and a small amount of fuel to be placed. The only thing that would be visible then once the lamp was lit would be the flame in the center of the disk and the surface of the disk in the central well of the limestone lamp.

The limestone piece from the Petrie Museum, UC16794, is unique because it represents a composite non-spouted lamp bowl and a stand. This is the only functional piece that I am aware of which combines these two elements. However, an offering table from the Vatican Museums (Inv. 22759) (Figure 2-25) and a section of frieze, from Hawara, suggests that this type of object may have been

a common form of lamp, or at least a vessel that would contain a flame, in the Middle Kingdom. I have found no published information for the Vatican piece, but according to the label for the object the calcite offering table originally dates to the Middle Kingdom, but it was reused and re-carved during the reign of Thutmose III. The only available provenance information states that the piece was found in Thebes. Across the front of the offering table are represented four bell-shaped columnar stands each supporting a conical bowl. Although less elongated than the limestone lamp found inside the pyramid of Senuseret II, the composition of the objects is very similar. Additionally, each of the four bowls has been hollowed out to form a rounded interior cavity, which also mimics the larger limestone lamp.



*Figure 2-25 - Front and top view of Middle Kingdom offering table (Inv. 22759) depicting four probable lamps; Vatican Museums, Vatican City*

The portion of temple frieze (UC16793) (Figure 2-26), referred to by Petrie as “fire altars”, was found in pieces amongst the rubble of the so-called labyrinth at Hawara next to the pyramid of Amenemhet III (Petrie *et al.* 1912: plate XXXII). The section of frieze, 54.5 cm high and 34.5 cm wide, was put together by Petrie himself out of hundreds of fragments found amidst a jumbled pile of offering vessels, model vases and other ceramic sherds located next to the north wall of a causeway leading to the labyrinth (Petrie *et al.* 1912: 33). In addition to representing a composite stand and bowl, each bowl contains a slightly curved, conical object rising from its center. The objects are painted white with a red tip, which Petrie believed, and I would agree, represented flames (Petrie *et al.* 1912: 34) (Figure 2-26). Petrie could only locate three full flames that joined with bowls and stands and these are the ones preserved in the Petrie Museum. The composition of the stands is again very similar to UC16794 exhibiting a round rim where the stand and bowl meet, a conical bowl with a thick exterior rim and a circular impression which surrounds a central well from which a flame rises. Based on the number of fragments present in the Labyrinth courtyard, Petrie theorized that over 100 of these “lamps” were placed in front of an altar of Sobek, who was known to be worshipped at the site, as a source of perpetual illumination and/or fumigation.



*Figure 2-26 - Tops of 'fire altars' reconstructed by Petrie (Petrie et al. 1912: plate XLVI)*

In addition to the Lahun lamps, a discovery of open vessels accompanied by ceramic disks was made by Legrain in the late 1800s (Figure 2-27). During exploration of Predynastic sites near Kharga Oasis, he uncovered two small, conical pottery vessels with three perforated clay disks near remnants of a cooking site at Gebel Rhanimeh (de Morgan 1897: 48, 50). Holes on the side of one bowl indicate where cracks in the vessel were repaired with rawhide or rope stitching. This would suggest that the bowl could not easily be replaced and that it was an important piece of equipment to the people inhabiting the site. Though they are much smaller, the form of these vessels is very similar to the limestone lamps from Lahun. It seems feasible that a twisted wick, threaded through one of the clay disks, could be fitted into the bottom of one of the bowls and then filled with oil to create a lamp. If the bowls from Kharga were used as lamps, they would also very closely resemble bowls with flame presented as offerings in ancient Egyptian art (Figure 2-28), as well as the “fire altars” from Hawara (Figure 2-26). In my research, the finds from Gebel Rhanimeh and Lahun are the only two examples in which ceramic disks and vessels that can likely be identified as lamps have been found together.



Figure 2-27 - Small bowls and pottery disks found by Legrain (de Morgan 1897: 50, figs 80–84)



*Figure 2-28 - Ramesses III offering a bowl with flame rising from the middle;  
tomb of Khaemwaset, Valley of the Queens, Luxor*

While the examples from Kharga and Lahun date to the Predynastic and Middle Kingdom periods respectively, a lamp from the New Kingdom western cemetery at Qurnet Murai suggests that there may have been a development in the method of wick anchoring, or that there was an alternative to using ceramic disks. The lamp, which is currently on display in the Louvre, comes from Bernard Bruyère's 1933 excavations (Figure 2-29). Similar to E 14571 presented earlier, it is composed of a wheel-made, Nile silt ware flat-based bowl with a painted black rim, inside of which a linen wick is placed. The twisted wick displays traces of burning and is affixed to the base of the bowl with a strip of mud. This cruder substitute for a finely finished ceramic disk still would serve just as well as a wick anchor, although it would have held the wick against the side of the vessel, as opposed to upright in the center. Perhaps the mud anchor was used for purposes of expediency, or, for economic reasons, a cheaper material was used. The use of mud for affixing a wick to the base of a vessel is also potentially evident in the New Kingdom lamp (25.3.180a, b) from tomb MMA 1008 mentioned in Section 2.1 (Figure 2-11).





Figure 2-29 - Interior view of E 14672; Louvre Museum, Paris

### 2.3.1 Origins of wick anchors

Enigmatic ceramic disks, commonly referred to as Clayton disks, may provide evidence as to the origins of wick anchors in Egypt. These ceramic objects are named in honor of Patrick Clayton who found two examples of them near the Sudanese border in 1930-31 during his South-Western Desert Survey. In the same year, G.W. Murray found a similar ring and disk on the opposite side of the Nile near Aswan as part of the Desert Survey of Egypt (Murray & Myers 1933).<sup>14</sup> Since then hundreds of Clayton rings and their accompanying disks have been uncovered at sites throughout the Eastern Sahara (Murray 1939; Murray & Myers 1933; Caton-Thompson 1952; Riemer & Kuper 2000; Gatto 2002; Riemer 2004; Riemer *et al.* 2006; Riemer *et al.* 2011). When found in situ, these conical, open-ended, clay rings are always found with perforated, thin ceramic disks (Riemer 2004: 979). The rings and disks are typically chaff ware (Nile B2 or C) with varying levels of sand and straw mixed into the clay, although examples made of shale tempered clay have also been found (Riemer & Kuper 2000: 96–97; Gatto 2002: 55). The mean diameter of the rings is 9 cm at the narrow end, which then widens to 12.5 cm at the opposite end (Riemer & Kuper 2000: 96–97, fig. 16). When the rings are not worn down by wind and sand, they stand on average about 7 cm tall. Slightly

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<sup>14</sup> Both of these pieces were donated by Murray to the Pitt Rivers Museum, Oxford in 1932. They are currently in storage with accession numbers: 1942.8.123.a (ring) and 1942.8.123.b (disk) and their object records are available online at: <https://www.prm.ox.ac.uk/databases>. Details of Murray's thoughts about the objects will be discussed later in this chapter.

more than half of the disks are made from reused potsherds and the rest are hand formed from clay lumps. They vary in width from 6.5–10 cm, with the central perforation ranging from 1.3–2 cm.

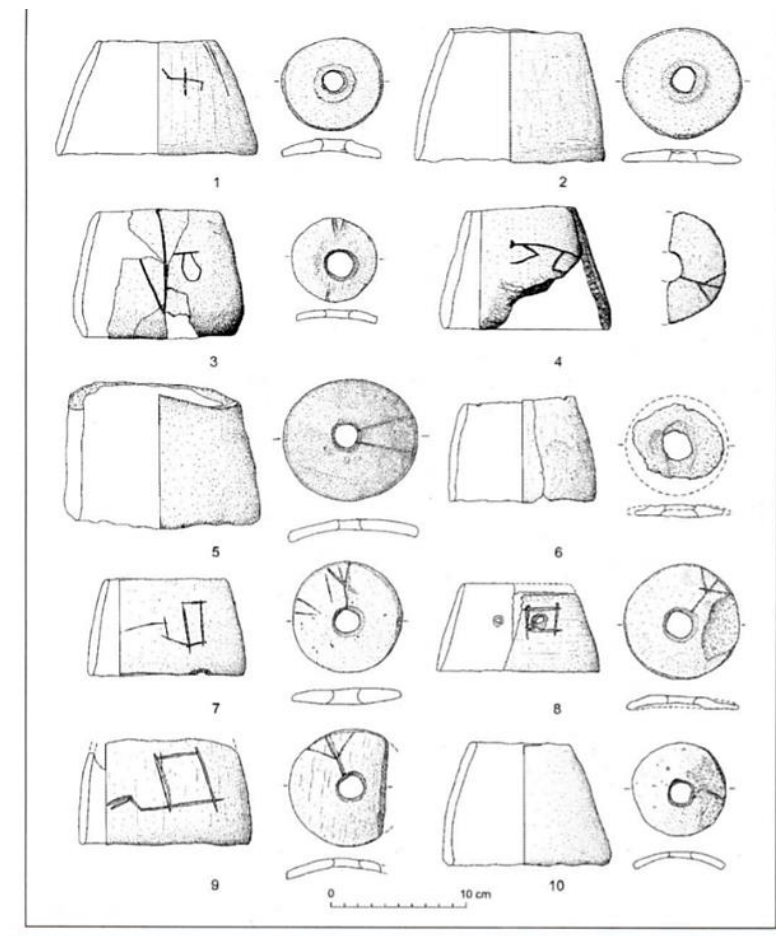
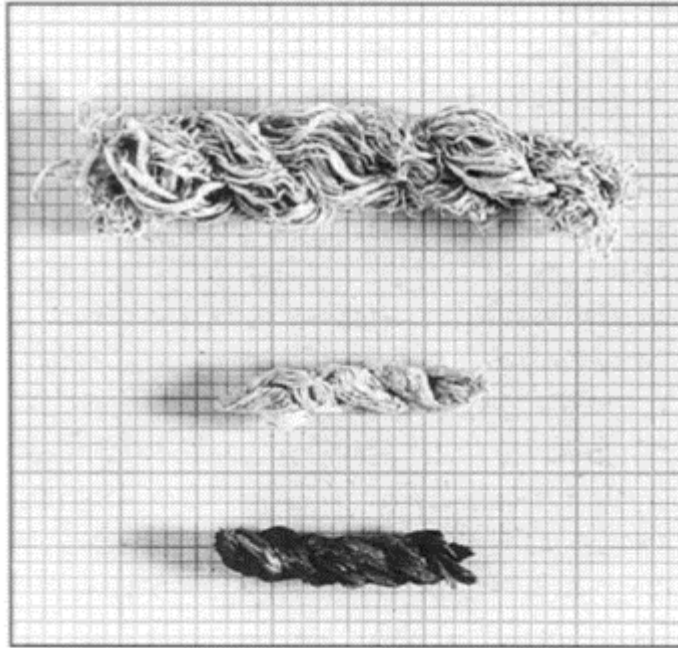


Figure 2-30 - Selection of Clayton rings and disks found in Western Desert (Riemer & Kuper 2000: 93, fig. 3)

At one site in the Western Desert, Eastpans 95/3, three pieces of string (Figure 2-31) were found amongst a cache of seven Clayton rings and disks that had been placed under a rock overhang (Riemer & Kuper 2000: 94). Pieces of the strings were used for radiocarbon dating, which suggested a date of ca. 3100-3000 BC (Riemer & Kuper 2000: 96). At Bir Sahara, two groups of Clayton rings and disks were buried in caches together with vessels of the Nubian A-Group and Naqada III period, which correlates to the radiocarbon dating from the strings (Gatto 2002). It appears that these rings and disks were used at least into the Old Kingdom as examples of them were found at Wadi Shaw 82/52, dated by radiocarbon samples to ca. 2500 BC, and Dakhla 99/38, where fragments of an Old Kingdom bowl or cup were found alongside fragments of a Clayton ring (Riemer & Kuper 2000: 96).



*Figure 2-31 - Twisted fiber strings or wicks from Eastpans 95/3 site in Western Desert (Riemer & Kuper 2000: 94, fig. 6)*

The purpose of the Clayton rings and disks has so far remained elusive. In P. Clayton's account of finding two rings and disks in the Western Desert he writes, "I have no clue as to their purpose" and that remains the opinion of most scholars to this day (Clayton 1937: 255). There have been a number of hypotheses put forward suggesting that the rings and disks were used for honey or salt collection, cheese production, or as traps for small animals. The latter theory, put forward by D. Darnell, is supported by H. Riemer, the scholar who has conducted the most extensive research on the Clayton rings and disks. However, he admits that all the theories are highly speculative and that while he supports the idea of the rings and disks being used as bird traps, he has no convincing argument as to how they would have functioned as such (Riemer 2013: 82).

While the usage of Clayton rings seems to die out in the Old Kingdom, the ceramic disks continue to appear in the archaeological record well into the New Kingdom. These include several unpublished examples from Amarna, as well as other pierced disks from the site published as spindle whorls (Stevens 2012: 283–90). While the function of Clayton rings and disks as a unit may remain elusive, I would suggest that the continuation of the Clayton disk beyond the Old Kingdom may result from its adaptation into a wick anchor. Significantly, the three ceramic wick anchors found at Lahun match the standard dimensions of Clayton disks with a diameter of approximately 7.5–9.5 cm and a central perforation measuring 1.5 cm. It also seems that the disks may have been

associated with fire and/or fumigation according to an account of G.W. Murray. In the accession files of a Clayton ring and disk donated to the Pitt Rivers Museum by Murray he reports: "The headman of a village in Dakhla Oasis says they are for burning incense". The discovery of a fire drill at el-Kharafish, also near Dakhla, along with a cache of rings and disks further substantiates the association with flame (Riemer *et al.* 2006; Riemer *et al.* 2008: 595–97), as does the charred appearance of one of the strings from Eastpans 95/3 (Figure 2-31). The presence of the three pieces of string, or perhaps even twisted wick, at Eastpans 95/3 may indicate that the Clayton disks were meant to be threaded onto a larger rope, or that individual disks would have small pieces of twisted fiber or fabric pulled through their central opening. Although the majority of these disks fall outside the chronological and cultural focus of the thesis, they are included here as a plausible explanation for the origin of wick anchors that appear in the Middle and New Kingdoms. Even if the Clayton disks were not originally associated with lamp wicks or lighting devices, it would not take a great amount of imagination to consider threading a flax wick through the disk's aperture. The use of Clayton disks in lamps would then be a plausible adaptation combining the links between threaded strings (or wicks) and flame.

#### *2.4 Possible non-spouted open vessel lamp examples*

It is important to note that flat-bottomed, conical limestone vessels similar to those from Lahun were found without ceramic anchors. As an example, several limestone vessels, like the lamps from Senuseret's pyramid (Figure 2-22, Figure 2-23) were found in 12<sup>th</sup> Dynasty pyramids at Lisht, Dashur and Mazghuneh (Petrie *et al.* 1912: 34, plate XXXV, XLVI).



Figure 2-32 - Interior of UC14791; Petrie Museum of Egyptian Archaeology, London

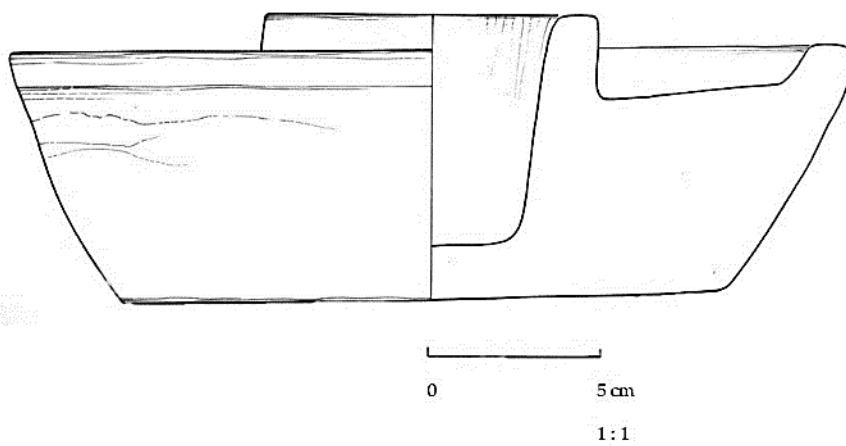


Figure 2-33 - Profile of UC14791; drawing by Will Schenck



Figure 2-34 - Interior of UC17250; Petrie Museum of Egyptian Archaeology, London

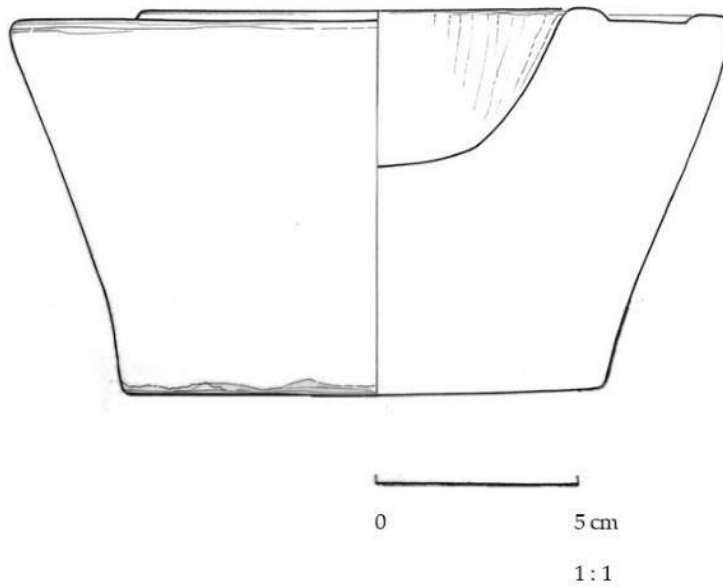


Figure 2-35 - Profile of UC17250; drawing by Will Schenck

UC14791 (d: 24 cm, h: 7.5 cm) (Figure 2-32 and Figure 2-33) was found in a false passage of the south pyramid of Mazguneh (Petrie *et al.* 1912: plate XLVI), while UC17250 (d: 18 cm, h. 9.5 cm) (Figure 2-34 and Figure 2-35) was found in Lahun. Both flat-based, conical bowls are roughly hewn from limestone and were identified by Petrie as lamps due to their similarity to the two limestone vessels that he found in the pyramid of Senuseret II at Lahun (Petrie *et al.* 1912: 34). None of these limestone vessels contained wick anchors and no mention was made of wick anchors being found near these pieces when they were excavated. This should not, however, exclude them from being seen as potential lighting devices. The use of wick anchors, for example, would have been a way of adapting any of these vessels for use as a lamp. All of these limestone bowls *could* have been used as lamps, but they could also have served as vessels to hold other funerary offerings or incense, or perhaps they could have been used as both at different points in time.

As mentioned previously, one particular difficulty in identifying other possible non-spouted lamps in the existing archaeological record is modern cleaning. In fact, I would argue that one particularly well known piece from Tutankhamun's burial goods may have been misidentified by Carter based on these grounds, JE62125 (Carter 14). This piece, commonly referred to as the "wishing cup", was one of the first pieces uncovered in the clearing of the tomb entrance (Figure 2-36). The central cup, supported on a flared pedestal, is carved with decoration imitating the whorl of sepals and petals of a lotus blossom. On either side of the cup are clusters of three smaller lotus blossoms surmounted by Heh resting on a *neb*-basket. In each of his hands he grasps an *ankh* and a *mnpt*-sign decorated with a tadpole perched on a *shen*-sign, a composite image representing millions of years of life. Around the top of the cup is an inscription that Carter used on his own tombstone, a desire that for eternity he would sit with his face to the north wind, his eyes beholding happiness.



Figure 2-36 - "Wishing cup" of Tutankhamun (JE62125); Egyptian Museum, Cairo  
(Global Egyptian Museum, <http://www.globalegyptianmuseum.org>)

This piece (JE62125) incorporates decorative elements from both of the calcite lamps from Tutankhamun's burial chamber, JE62111 and JE62112, in addition to being carved from the same material. According to Carter's notes on the piece, it was: "Washed with cold water to remove yellowish film deposit: removed patches of brown material from inside...". This may indicate that the interior of the cup contained remains of oil/fat and wick material just as the other two lamps. The lotus blossom decoration used on JE62111, JE62112 and JE62125, as well as the figures of Heh, which are present on JE62125 and JE62111 also suggest a similarity in these three pieces. It is possible that by the time Carter entered the burial chamber and found the lamps JE62111 and JE62112, he had completely forgotten about the parallels between these pieces and JE62125. However, I would suggest that based on the presence of oil and possible wick remains in all three vessels, as well as consistencies in decorative elements and construction material, that JE62125 should be considered as a non-spouted open vessel lamp.

## 2.5 Discussion

This selection of non-spouted open vessel lamps provides several parameters to consider when determining if a non-spouted open vessel was utilized as a lighting device. The use of round-bottomed copper bowls for lamps appears restricted to the Old Kingdom based on examples from the mastabas of Kaemsenu (p. 15-16) and Isi (p. 31-32), but this may reflect preservation bias. They vary in diameter from 10–18 cm and can be used with or without stands. Limestone lamps, both



with or without stands, are most prominent in the Middle Kingdom and may have been favored by elites as they were found in royal pyramids, and burials surrounding these pyramids, at Lahun and Mazguneh. The lamp bowls range in diameter from 17.7–29.5 cm and 7–12.5 cm in height. All known lamps from Tutankhamun's New Kingdom tomb are made of calcite, a beautiful translucent stone which would have allowed the glow of the lamp's flame to shine out through the vessel walls, as evidenced by JE62111. The presence of oil and potential wick material in these vessels suggests that they were filled and possibly lit at the time of Tutankhamun's burial, and/or that they may have been used in the palace initially and then interred with the king. These pieces are more sculptural in nature, combining the lamp bowl(s) within a larger piece. As a result they measure between 27–30 cm in width and 18–51.4 cm in height. Nile silt ware non-spouted open vessel lamps are present in the Predynastic, New Kingdom and Late Periods. Predynastic examples are hand-made with a large amount of straw inclusions and roughly conical in shape with flat bases. They are 12.3–13.5 cm in diameter and 4.9 cm high. While all New Kingdom non-spouted open vessel lamps presented here come from burials in Qurnet Murai, with the possible exception of the lamp from Cemetery 1000 in the Assasif, this is likely due to preservation of material and not a geographically isolated practice of burying lamps with the dead. The type of bowl used, however, is consistently a flat-bottomed hemispherical bowl made of Nile B2 fabric with red slip and a black band around the rim. These seem to be used for a variety of funerary offerings and are between 12–18 cm in diameter and 6–12 cm in height.

The presence of illuminant in E.13.1895 suggests that animal fats and possibly wax were utilized for lamp fuel at least in the Late Period, while extant wicks all seem to be made of twisted linen. The presence of an organic wick rest in E.13.1895 suggests a method by which Egyptians could keep one end of a wick suspended above a bowl of illuminant, while Nile silt ceramic wick anchors provide a potential answer for how a wick could be seen to "float" in the midst of a vessel (p. 32–35, 38 and Section 2.3.1). Although these disk anchors are only extant in lamps from the 12<sup>th</sup> Dynasty, the use of balls or strips of mud in Theban New Kingdom and Late Period lamps indicate that these may have been alternatives to ceramic wick anchors or that this was a development in technology between the Middle and New Kingdoms. The isolated instance of pulling a wick through a hole in the base of an inverted bowl from the Qurnet Murai cemetery also provides an example of an alternative form of wick anchor. A number of lamps do appear to have been lit and

used prior to their interment with the deceased, although lamps from Qurnet Murai burials indicate that this was not always the case. Consequently, the presence or absence of burn marks should not be considered definitive proof as to whether a vessel served as a lamp.

There are a few consistencies in this material—the use of copper in the Old Kingdom and the use of stone, particularly calcite and limestone, for royal burials, but limited evidence makes drawing any definitive conclusions difficult. As nearly all the evidence presented in this section derives from mortuary contexts, it does seem that lamps could be included in burials between the Predynastic and Late Periods. The placement of lamps next to the head, on the forehead or within the line of sight of the deceased does seem to be a trend that first appears in ca. 3000 BC and continues at least through the New Kingdom (p. 16-17, 19), although they are not always found in these locations. What is apparent from the evidence is that there is not a particular type of non-spouted open vessel that was used exclusively as a lighting device between ca. 3000–600 BC. All the examples presented in this section vary considerably in dimensions, shape and materials. Even when one type of bowl was used in several tombs as a lamp, such as the Nile B2 ware bowls from Qurnet Murai, there is a large variation in dimensions of these pieces and the same type of bowl was used to hold not only a wick and illuminant but also food offerings within the same cemetery. The same could be said for Predynastic bowls, such as UC5767 and UC5771, since these common Predynastic and Early Dynastic types, R21b and R34c, could have been used to hold incense, water and/or food offerings. It therefore seems appropriate to suggest that the objects presented in this section were employed because they were a suitable sized container to hold a small amount of fuel and a wick, not because they had been specifically made to serve as a lamp.

### **3. Spouted open vessel lamps**

From the extant archaeological evidence, the use of non-spouted open vessel lamps is evident from the Predynastic through to the Late Period. There is also sufficient archaeological material to suggest that the Egyptians were utilizing spouted vessel lamps at the same time. With the exception of a few objects, the spouted vessels do not exhibit tell-tale markers for use as a lamp — blackened spouts, wick remains, soot deposits, or traces of illuminant. However, given the extant examples, it seems appropriate to consider spouted vessels as potential lighting devices.

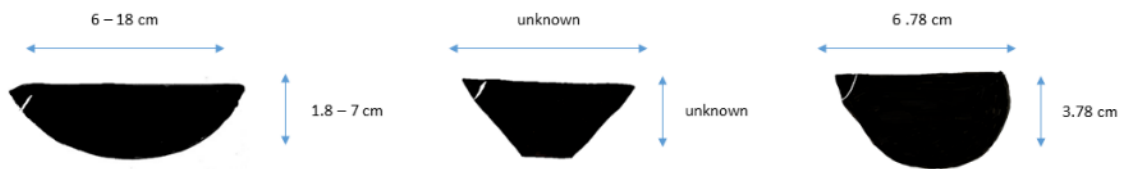


Figure 2-37 - Diagram of spouted open vessel lamp shapes with known dimension ranges

### 3.1 Definite spouted open vessel lamp examples with wick remains and/or traces of illuminant

The first known spouted open vessel lamp dates to the Badarian period (ca. 4400-4000 BC). This handmade Nile silt ware variant of the spouted vessel, which has three small, hemispherical handles attached at the sides of the bowl, was identified as a lamp by Brunton and Caton-Thompson (Figure 2-38). It was uncovered at the predynastic village site of Hemamieh and was identified as a lamp due to the remains of a “thick greasy black deposit” on its interior and the presence of a pinched spout for the wick (Brunton & Caton-Thompson 1928: 61). The vessel is approximately 8 cm in diameter, 10 cm including wick spout and 4 cm high.

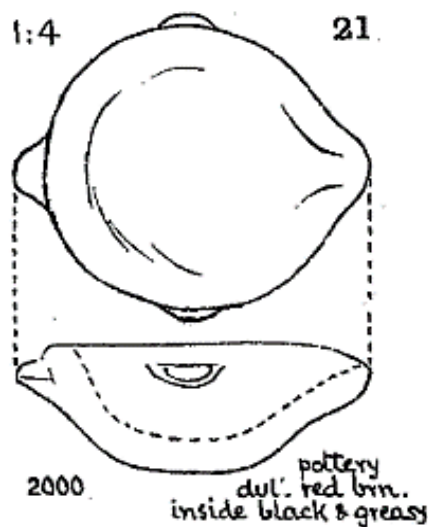
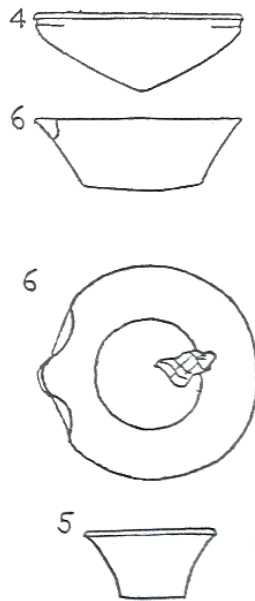


Figure 2-38 - Lamp from predynastic village of Hemamieh, Egypt (Brunton & Caton-Thompson 1928: plate LIV, no. 21)

One rare example of a spouted vessel lamp that still contained remnants of wick material was found in a mudbrick *serdab* at the 6<sup>th</sup> Dynasty mastaba of Kaemsenu (Firth & Gunn 1926: 31-32, figs 32, 33) (Figure 2-39). The lamp was one of three ceramic vessels, which had likely been placed in the chapel as offerings to three wooden statues that were placed beside them. It is a flat-based, conical ceramic vessel with flared walls and measures approximately 14 cm in diameter. Based on

the publication drawing, it appears that a remnant of wick material was found in the bottom of the vessel.

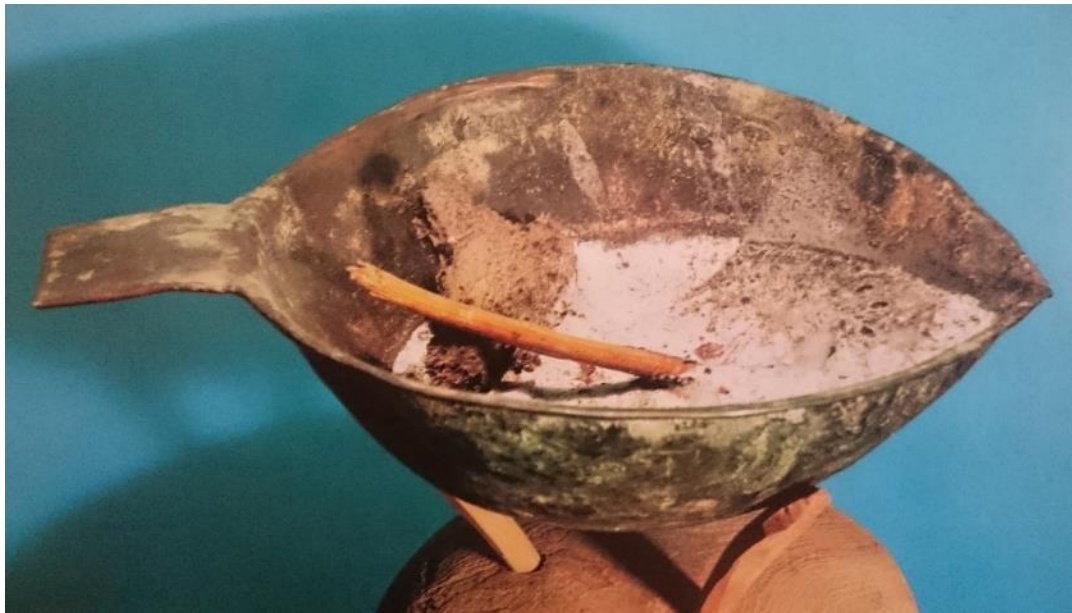


*Figure 2-39 - Spouted lamp (6) from serdab in mastaba of Kaemsenu (Firth & Gunn 1926: 31, fig. 32, no. 6)*

Single spouted vessel lamps continued in use into the New Kingdom as indicated by pieces found at Deir el-Medina, Amarna and Soleb. The objects from Deir el-Medina and Amarna also provide evidence for the use of lampstands with spouted vessel (and presumably also open vessel) lamps. One particularly well preserved piece was found in the 18<sup>th</sup> Dynasty tomb of Kha during Ernesto Schiaparelli's 1906 excavations (Schiaparelli 1937) (Figure 2-40). The composite lamp, which bears more than a passing resemblance to a modern floor lamp, is made of two pieces: a bronze spouted open vessel (JE38642) (d: 18.1 cm, h: 7 cm) formed in the shape of a lotus bud (although in the original publication it was described as a duck) and a 1.05 m high polychrome, papyriform, wooden column (Museo Egizio Turin, S. 8628) inserted into a painted, wooden hemispherical base. The bowl is filled with illuminant, and also contains remnants of a reed, which would have served as a wick, and a modeled organic object upon which the reed rests (Figure 2-41). Curiously, the reed is not placed in the spout of the bowl, which would usually be used for the wick of a lamp. The bowl appears quite stained and blackened, suggesting that this lamp was not merely used once for the burial. It was likely a piece of furniture in Kha's home, which was later included in the funerary assemblage. The lamp is remarkably well preserved due no doubt to the fact that the tomb was undisturbed until Schiaparelli's work.



*Figure 2-40 - Original lampstand and replica lamp bowl from the tomb of Kha on display at the Museo Egizio, Turin; photograph courtesy of Nigel Strudwick*



*Figure 2-41 - Interior of Kha's spouted open vessel lamp with remains of illuminant, wick rest and reed; Egyptian Museum, Cairo (Desroches Noblecourt 1976: XLIII)*

The lampstand is a particularly beautiful piece but is by no means unique to Kha's tomb. Another example from the British Museum (EA35763) measuring 88.6 cm high is also dated to the New Kingdom and may be contemporaneous with Kha's lampstand (Figure 2-42). It too consists of a polychrome, wooden papyriform column with sockets for three wooden prongs—only fragments of two remain—which would have extended from the top of the umbel and supported a lamp bowl. Like Kha's lampstand, the British Museum piece also has a carved wooden base into which the column is inserted, although it is square in shape as opposed to hemispherical. The two differ in color scheme, however, as Kha's lamp is primarily painted in a bright red with black and white banding, and the British Museum piece seems to have been covered mostly in a blue/green pigment more closely mimicking a stalk of papyrus. The top of the column does however contain remnants of black and red bands like Kha's stand.



*Figure 2-42 - Left: Detail of top of EA35763; Right: Profile of EA35763; British Museum, London*

During Bruyère's excavations of the workers' homes at Deir el-Medina in the 1930's he found many fragments of similar lampstands including painted papyriform columns, limestone bases and painted wooden umbels (Bruyère 1939) (Figure 2-43). An unspecified "très grand nombre" of bowls, which Bruyère suggests served as lamps, were also found in the large garbage pit outside the village and in many village houses (Bruyère 1939: 209). Within the homes, fragmentary

lampstands and bowls were found along with fragments of stelae, statuary and offering tables (Bruyère 1939: 193–211). A number of the lampstand bases are included in a photograph in Bruyère’s publication (Figure 2-43), but negligible mention is made of which houses the bases were found in (Bruyère 1939: 287, 323) and no indication is given of how many bases were found throughout the entire village. Based on the material the lampstand fragments were found with, I would agree with Bruyère’s hypothesis that this material relates to devotional shrines, which may indicate that lighting played a role in private, daily worship (Bruyère 1939: 208–9, fig. 98). As with the spouted vessel lamp and stand from Kha’s tomb, these pieces of furniture may have first been constructed and used in the home, before some were interred with family members for their use in the afterlife. The significant number of lamp bowls with wicks and fragmentary lampstands at Deir el-Medina certainly suggests that artificial lighting was used as part of ritual practice in some way within houses at the site.



*Figure 2-43 - Lampstand bases and column fragments from Deir el-Medina; (Bruyère 1939: 209, fig. 98)*

### *3.2 Probable spouted open vessel lamp examples with burn marks*

During Pendlebury’s excavations at Amarna, he uncovered many (unfortunately he does not specify how many) small “saucers” utilized as lamps (Peet & Woolley 1923: 137). Although he does not provide data on the number or provenance of these saucers, he does state that they should be considered as lamps due to burn marks around the rim of the vessel. While many lamps may have been uncovered during early excavations at Amarna, only three 18<sup>th</sup> Dynasty examples remain and are published (Rose 2007: 211) (Figure 2-44). They are described as small to medium sized Nile silt ware dishes, ranging in diameter from approximately 15–18 cm and from 5–7 cm in height. In

each of the dishes, a small portion of the rim has been manipulated to create a spout, closely resembling single-spouted lamps from the Levant (Rose 2007: 71).

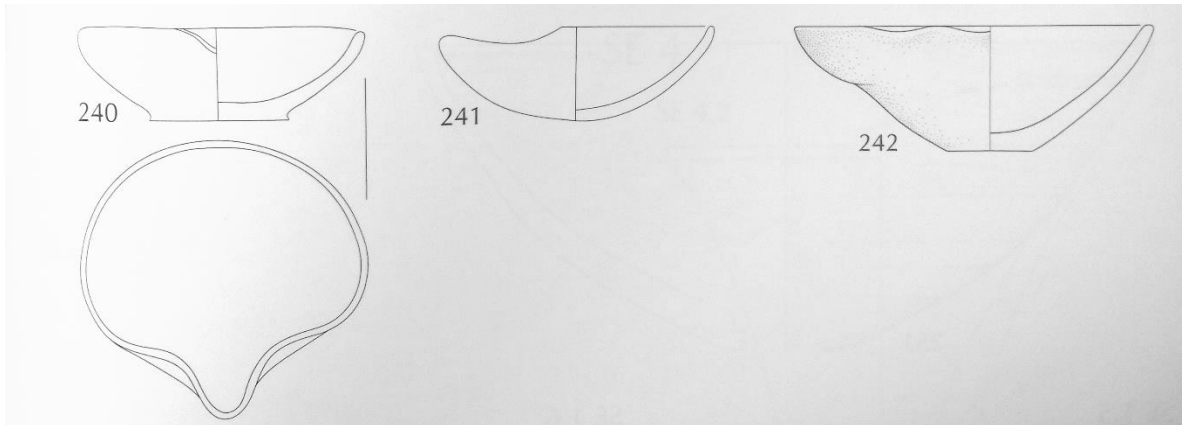


Figure 2-44 - Drawings of three spouted open vessel lamps from Amarna (Rose 2007: 211)

Pendlebury originally published this type (XXII) under the designation of “Lamps and tall stands” implying that these two objects were associated with one another when excavated (H. Frankfort & Pendlebury 1933: 113). Published details of these stands indicate that they were made of Nile B2 fabric with a papyriform shape, similar to the wooden lampstands in Turin and the British Museum (Rose 2007: 43–44, 189–90).

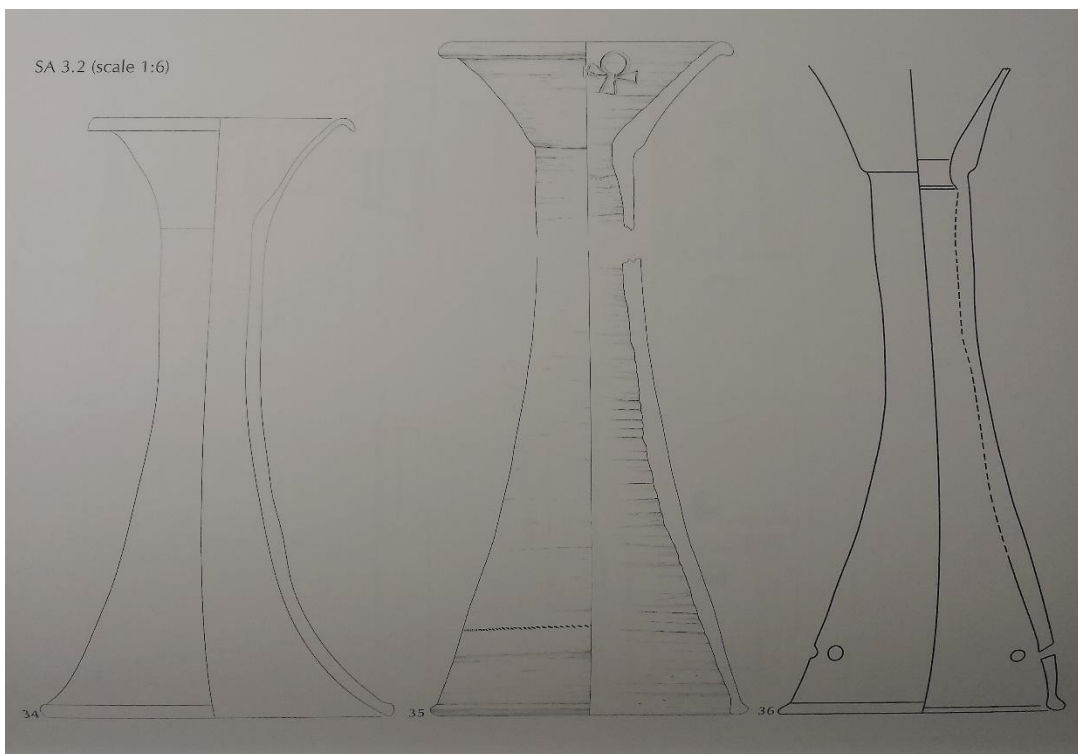


Figure 2-45 - Drawings of three tall stands from the Workmen's Village at Amarna (Rose 2007: 190)



They are separated into two groups based on height in Rose's publication with medium-tall stands measuring less than 50 cm and tall stands measuring greater than 50 cm (Figure 2-45). The measurements of the tall stands are particularly intriguing as they range from 85–93.5 cm, which is also about the same height as the wooden papyriform lampstands mentioned above. Additionally, the Amarna stands/lampstands are coated in a thick whitewash and found primarily within chapels at the Workmen's Village. This is another point of comparison between the lampstands found at Amarna and those from Deir el-Medina and may indicate that in both villages lamps and accompanying stands were utilized in private ritual practice.

Additional examples of spouted open vessel lamps were uncovered in tombs at the Nubian New Kingdom sites of Soleb and Aniba. Tomb contents from the south cemetery at Aniba (Steindorff 1935: 152–241) indicate that the burials are presumably linked to individuals residing at the nearby fort and include material from the late Middle Kingdom through the New Kingdom (Steindorff 1935: 1–13, 38). Three tombs from Aniba contained Nile silt ware lamps including tomb 57, which likely dates to the reign of Amenhotep III that contained 3 lamps and late 19<sup>th</sup>/early 20<sup>th</sup> Dynasty tombs 23 and 34 that each contained 1 lamp (Steindorff 1935: 130) (Figure 2-46). No detail is provided on body or base shape of these vessels, but from the photograph they appear to be wheel-made.



*Figure 2-46 - Three spouted open vessel lamps from tomb 57 at Aniba (top row); (Steindorff 1935: plate 77)*

The Soleb necropolis contains the tombs of elite officials and priests who were associated with the temple (Schiff Giorgini 1971: 79–314). Five tombs (12, 22, 26, 29 and 45) from the New Kingdom cemetery each contained one wheel-made Nile silt ware lamp (Schiff Giorgini 1971: 96, plate XIV). Three of the lamps were round bottomed while the other two had flat bases and ranged in diameter

from 12.5–16.2 cm and 4.5–5.2 cm in height. Each had one spout pinched into the rim, which all exhibited blackening suggesting that they had been used at least once prior to interment (Schiff Giorgini 1971: 175, 267, 330). No photographs or detailed drawings of these lamps are published.

### *3.3 Possible spouted open vessel lamp examples*

While the majority of lamps presented in this section are made of ceramic, similar single-spouted stone vessels were uncovered at sites dating from the Early Dynastic to the early Old Kingdom. The three examples below were all found by Petrie. Unfortunately the provenance is only known for the limestone example in the British Museum (EA14301), which was uncovered east of the pyramid of Khufu (Figure 2-47). This is also the only object identified by Petrie as a lamp based on the presence of a small spout, which could have served as a wick rest. The piece measures 6.78 cm in diameter and 3.78 cm in height. As discussed above, the lack of evident burn marks on the spout should not discount the possibility that this piece, or others like it, served as a lamp.



*Figure 2-47 - Single spouted limestone vessel, EA14301; British Museum, London*

Other examples of spouted stone vessels that could have served as lamps include a serpentine 1<sup>st</sup> Dynasty round-bottomed bowl (UC41260) which is 6 cm in diameter and 2.2 cm high (Figure 2-48 and Figure 2-49). Although smaller than other lamps presented in this chapter, the British Museum piece and UC41260 fit snugly in the palm of the hand due to their size. As a result, this piece would have made an easily portable lighting device.



Figure 2-48 - Interior of UC41260; Petrie Museum of Egyptian Archaeology, London

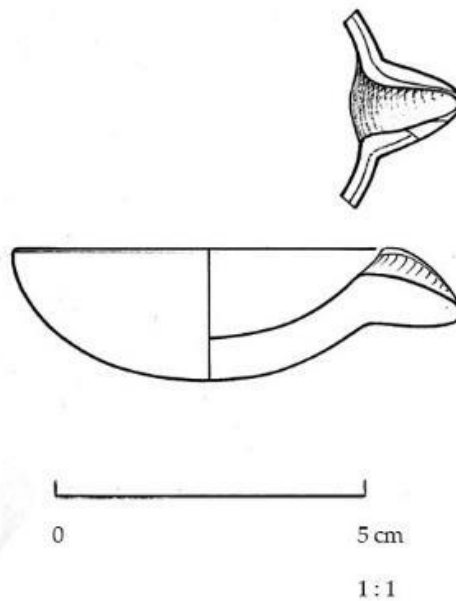


Figure 2-49 - Profile of UC41260 with detail of spout; drawing by Will Schenck

A 2<sup>nd</sup> Dynasty limestone vessel (UC41263), measuring 10.8 cm in diameter and 2.8 cm in height, has a distinctive spout (Figure 2-50 and Figure 2-51). Unlike other spouted vessels in this section, the walls of the spout have been carved so as to almost enclose the base. This forms a trough which may have been a convenient way of holding a wick in place and preventing it from slipping back into the bowl. It should be noted that these examples might equally well have been intended for ritual pouring of liquids.



Figure 2-50 - Interior of UC41263; Petrie Museum of Egyptian Archaeology, London

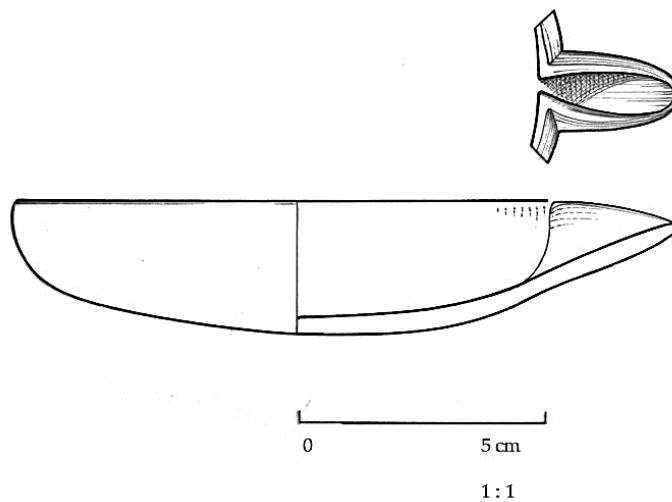
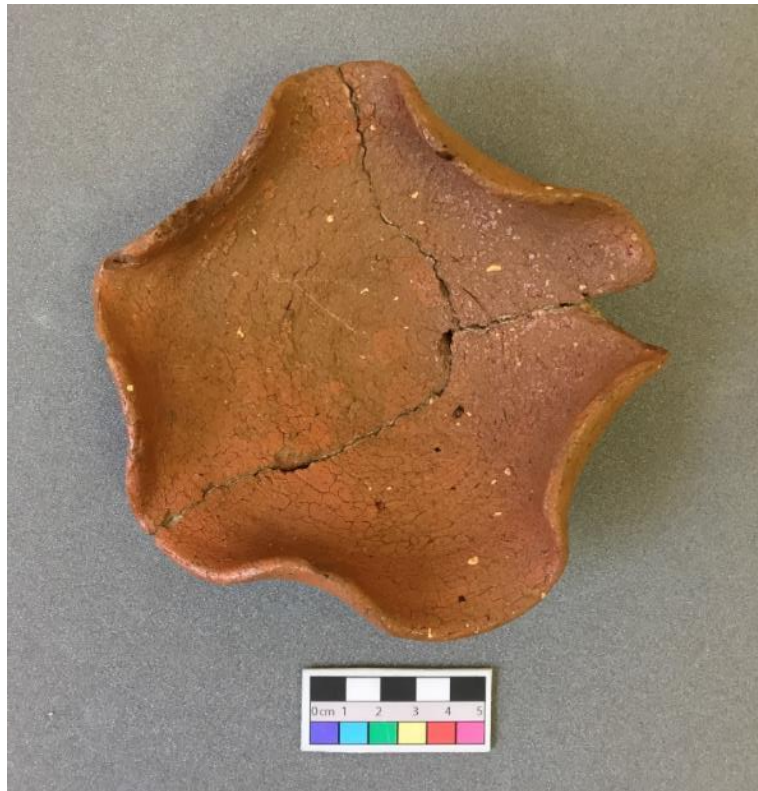


Figure 2-51 - Profile of UC41263 with detail of spout; drawing by Will Schenck

### 3.4 Possible multi-spouted open vessel lamp examples

Multi-spouted bowls made of ceramic and stone are also prevalent at several Early Dynastic, Old Kingdom and First Intermediate Period sites including: a five-spouted, ceramic bowl from Qau (UC18044, type 8Z, Dynasty 8), several four or five-spouted, ceramic bowls from Sedment (UC18199 as example, type 38, Dynasty 9-10) (Figure 2-52) and a five-spouted, diorite bowl from Giza (Reisner & Smith 1955) (Figure 2-53). Using multi-spouted bowls for illumination would

certainly make sense from a practical standpoint as they would provide exponentially more light from one vessel; unlike vessels with single spouts, multi-spouted vessels would not have functioned well for pouring liquids. They would have consumed more fuel, however, and would have required close attention to ensure that the wicks were well maintained so that the flames did not extinguish. These vessels were likely first made in stone, as evidenced by the 4<sup>th</sup> Dynasty diorite bowl from Giza and then later copied in ceramic.



*Figure 2-52 - Interior view of five-spout bowl from Sedment (UC18199); Petrie Museum of Egyptian Archaeology, London*



*Figure 2-53 – Five spouted bowl from Grave 1024, Giza; 6-19784, Hearst Museum of Anthropology, Berkeley*

### *3.5 Discussion*

While there are some very well preserved examples of spouted open vessel lamps, such as those from the tomb of Kha, they do seem less prevalent in comparison to non-spouted open vessel lamps. It appears that both forms of vessel were used as lamps from the Predynastic through the New Kingdom, but I have not found evidence for spouted vessel lamps in the Late Period. Spouted vessel lamps are also made in several materials including bronze and Nile silt, and possibly a variety of stones. Nile silt ware is most commonly used perhaps as an easier medium for forming a spout. The examples presented in this section range in diameter from 6–20 cm and from 1.8–7 cm in height. Spouted vessel lamps are found in mortuary and domestic contexts, although the majority were found in burial chambers. This type of lamp can be used with or without lampstands, and includes examples made of wood and stone from Deir el-Medina, as well as ceramic stands from Amarna. The undisturbed lamp from the tomb of Kha also suggests that spouted vessel lamps could be placed near the head of the deceased. Significantly, as with non-spouted open vessels, there does not seem to be one type consistently used as a spouted open vessel lamp. Therefore, the data presented in Sections 1 and 2 does seem to support Robins' hypothesis that ancient Egyptian lamps were derived from pre-existing household vessels. Instead of developing a separate and distinct vessel employed only for lighting, Egyptians adapted readily available, appropriately sized containers for lamps; exceptions would include the complex sculptural lamps from the tomb of Tutankhamun (Section 2.1). Although the lighting devices

themselves are incongruous, the deposition of lighting implements does seem consistent as a majority of lamps are placed in burial chambers, many in close proximity to the head of the deceased, or within devotional spaces, such as offering chapels and private, domestic shrines.

#### 4. Wick-on-stick devices

As noted at the beginning of this chapter, lamps were not the only type of artificial lighting device used by the ancient Egyptians. As an alternative to placing a wick and fuel into a bowl to create a lamp, the ancient Egyptians attached the wicks to a reed or stick, creating a rigid object that could be placed upright into a holder or carried in the hand. To my knowledge, the only extant example of this type of lighting device was found in the tomb of Tutankhamun (JE62356) (Figure 2-54). The wick is attached to a reed by a separate piece of cloth and then inserted into a small gilded tube, supported by a personified *ankh*. Two of these *ankh*-holders were found in the tomb, although only one of them retained its wick-on-stick device. The lighting implement measures approximately 38 cm high and the wick is roughly 1 cm in diameter.



Figure 2-54 - Front view of JE62356; Egyptian Museum, Cairo (Global Egyptian Museum, <http://www.globalegyptianmuseum.org>)

Similarly shaped objects also appear in offering scenes throughout the New Kingdom, suggesting that these reed-supported wicks could be carried by hand as part of a sacred celebration. Examples

of these depictions include vignettes from Book of the Dead spell 137A/B, commonly referred to as the “torch ritual” (Lapp 1997; Quirke 2013); scenes from Karnak Temple in Luxor depicting the daily offering ritual to the god, Amun (Nelson 1949b); a depiction of “illuminating the thrones” as part of the *sed*-festival in Soleb Temple (Schiff Giorgini 2002; Schiff Giorgini 1998), and multiple tomb paintings where twisted wicks are presented as part of cult offerings to the deceased (Davies & Gardiner 1915; Davies 1917: Plate XIV; Davies 1923: Plate XXXV).<sup>15</sup>

From the mid-Eighteenth Dynasty onwards, offering scenes in tombs begin to contain depictions of large, flaming conical, rhomboidal, or lump shaped objects included among the ritual goods (p. 156-58, 161-62, 171-73). These seem to be an elaboration upon the simpler twisted wicks attached to reeds as in some images a single, reed-supported wick can be distinguished in the core of the larger object. It is these objects to which Davies was referring as a form of “New Kingdom lamp” (N. de G. Davies 1924). At times, these objects are shown carried in the hand of offering bearers, but more often they are placed into a rack or shrine such as in the tombs of Tjay (TT23) (Porter & Moss 2004: 38–41) (Figure 2-57); Amenmose (TT254) (Strudwick 1996); and Hori (TT259) (Porter & Moss 2004: 342–43) (Figure 2-55).

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<sup>15</sup> The application of artificial lighting within these rituals will be discussed in Chapter 5.





*Figure 2-55 - Offering scene from the tomb of Hori (TT259) depicting a large, flaming pyramidal object flanked by two small twisted wicks installed in a shrine (Davies 1924: plate VII, fig. 12)*

I do not agree with Davies' assumption that these devices are lumps of tallow or wax, molded into various shapes, and supported with bands of fabric or copper (N. de G. Davies 1924: 10–11). To form such an implement exclusively from fat and/or wax would have been costly and cumbersome, as well as impractical for the Egyptian heat. Bands of fabric or copper would not have been enough to hold tallow or wax in any kind of shape under the glare of the sun or in a warm enclosed space. Additionally, to my knowledge, wax is never mentioned in ancient Egyptian texts as an illuminant source for lighting implements. Instead it seems more likely that these devices are produced by forming a framework of reeds and wrapping this underlying structure in linen. Once a sufficient amount of linen was wrapped around the reed framework to create a sturdy device, decorative bands of colored linen may have been applied. The linen could either have been pre-coated in illuminant or fat and/or oil could have been poured over the entire device.

#### *4.1 Wick-on-stick holders*

Interestingly, a limestone shrine, very closely resembling the one depicted in Figure 2-55, was included in the publication of finds from the valley temple of Snefru at Dahshur (Fakhry 1961: 63–69, plate LXVIII, LXIX) (Figure 2-56). The Middle Kingdom piece measures 61 cm high, 35.5 cm

wide and 35.5 cm deep. A niche (h: 49 cm, w: 15.5 cm, d: 15 cm) is carved into the front of the shrine and may have contained a statue, which was enclosed behind a door. Neither the door nor the object contained in the niche were found with the shrine. This shrine is dedicated to the sculptor, Seshenu and is inscribed across the top with a ritual text describing the offering of *tk3* (Chapter 4, Section 7) for Seshenu on the evening before the New Year (Fakhry 1961: 63, fig. 385). This text is also inscribed, in near identical format, in the New Kingdom tombs of Neferhotep (TT50) (Hari 1985: 41–44, plate XXVIII–XXX); and Tjay (TT23) (Haikal 1985). It is a very short permutation of this text that is sometimes included with scenes of offering light to deceased individuals in New Kingdom tomb paintings. On Seshenu's shrine, the inscribed text surrounds a square hole which is surrounded by three rows of three small, round holes (Figure 2-56). Fakhry theorized that the *tk3*, which he translated as "torch" in his publication, would have been placed into the larger square hole and then supported by copper rods, which would have been inserted into the nine smaller holes (Fakhry 1961: 63). Based on New Kingdom tomb scenes, such as those presented in Figure 2-55 and Figure 2-57, it seems more plausible that a large conical or mound-shaped wick-on-stick device would have been placed in the square hole and then smaller, thinner wick-on-stick implements would have been inserted into each of the surrounding circular holes. In this way, the shrine would very closely resemble the one depicted in Tjay's tomb, which is accompanied by an inscription of offering *tk3* for the tomb owner (Figure 2-57) (p. 171-73). In continuation of the theme of offering, the sides and back of Seshenu's shrine contain scenes of the sculptor receiving offerings of food, drink, flowers and various vessels from priests and family members.



Figure 2-56 - Front (left) and top (right) of Seshenu's altar (Fakhry 1961: plate LXVIII)

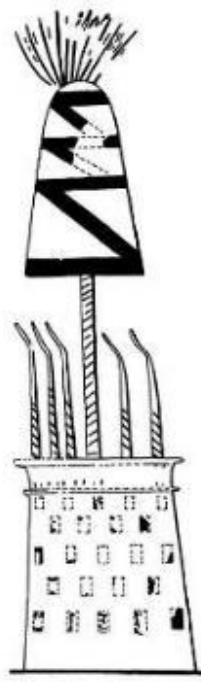


Figure 2-57 - Drawing of shrine with *tk3* from the tomb of Tjay (TT23) (Davies 1924: plate VII, fig. 14)

While archaeological evidence indicates that wick-on-stick lighting implements could be carried in the hand or placed in shrines, they may also have been placed into specially made holders as

suggested by the piece from Tutankhamun's tomb. Just as Tutankhamun's piece is one of a kind, so too is a painted, wooden holder from the Fayum, now in the collection of the Petrie Museum (Figure 2-58). The piece is made of turned wood that appears to have been originally painted in white with bands of red and black. The top of the holder contains a central drilled out hole which is approximately 2 cm deep. The surface surrounding the hole is charred and has burnt on encrustations of an unknown material.



*Figure 2-58 - Wick-on-stick holder, UC27995, with detail (right) of charred top;  
Petrie Museum of Egyptian Archaeology, London*

Petrie excavated this piece in 1888 from a burial at Hawara. He believed it to be a Roman piece, possibly dating to the latter part of the 3<sup>rd</sup> century AD (Petrie 1889: 11). Although it is outside of the time frame and cultural focus of this thesis, I have included it here because physical finds relating to wick-on-stick implements are rare and because the piece still contained remains of a “taper” when it was found. Additionally, this piece provides a point of comparison for wick-on-

stick holders depicted on Pharaonic Period monuments such as those in Figure 7-7. It seems plausible that like the Tutankhamun piece a wick-on-stick implement was placed into the hole at the top of the wooden holder. This would protect an offering bearer's hand from any dripping illuminant or falling pieces of charred wick. Since the hole is only approximately 2 cm deep, it would also allow for the majority of the wick-on-stick implement to be visible above the wooden holder and free to burn. The flammable nature of the wood used to make the holder and any residual oil or fat would explain the charred encrustations and blackening on the top of the holder.

## 5. Wick-in-stick devices

A variation on attaching a wick to a reed is placing the wick inside of one.<sup>16</sup> This still allowed the lighting device to stand upright, as in the example from the magic bricks of Henutmehyt (EA41544) in the British Museum (Figure 2-59). These bricks correspond to Book of the Dead spell 151, which lists the necessary components for four magic bricks that were meant to be placed in four separate niches, aligned to the cardinal points, in the walls of the burial chamber. According to the rubric of the spell, one of these four bricks, commonly referred to as the "torch brick", was to hold a reed that was soaked in *sft*-oil and placed standing upright in an unbaked clay brick. Examples of the "torch bricks" have been found in a number of tombs, including those of Tutankhamun (JE62357) and Henutmehyt (Régen 2010). Perhaps the reed itself was filled with oil, which would have served as a longer lasting fuel supply. However, as an alternative to the reed itself being soaked in oil and set alight, it appears that a twisted wick of linen could also be doused in oil and placed inside the hollow reed (Figure 2-60). Upon close inspection, the remnants of a twisted wick are still visible inside the reed from Henutmehyt's tomb. The purpose for this variation in Henutmehyt's brick is unclear, but the reed would have provided stability to the fabric wick as it burnt. By virtue of increased surface area, the consumption of a wick and a reed also would have produced a larger flame, which may have been desirable.

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<sup>16</sup> The fact that the reed has a large enough hollow on the inside to fit a wick suggests that it is an *Arundo donax* or "giant cane" which grows in the Mediterranean, parts of Africa and the Arabian Peninsula.



Figure 2-59 - Magic bricks of Henutmehyt, EA41544 – 41547; British Museum, London © Trustees of the British Museum



Figure 2-60 - Linen wick inside the reed of Henutmehyt's magic brick

## 6. Summary

This chapter illustrates the variety of lighting devices used from ca. 4000 BC–600 BC in ancient Egypt. Particularly, it highlights that, contrary to earlier publications, the Egyptians did not exclusively use one type of lighting device, namely a “floating wick” lamp. Instead it appears that non-spouted and spouted open vessel lamps are used concomitantly throughout the Pharaonic Period, although the open vessel lamps are more common. Additionally, this chapter demonstrates that while the presence of localized burn marks, wick or illuminant remains, soot

deposits and wick anchors can be used to identify lamps in the archaeological record, the lack of these features should not discount non-spouted or spouted open vessels from being viewed as potential lighting devices. Archaeological evidence for wick-on-stick and wick-in-stick devices is particularly minimal but this is likely due to the reed and linen used in their construction, which would either have been completely consumed during use or would subsequently have deteriorated. The shrine of Seshenu from Dashur suggests that these devices may have been used in connection with shrines at least by the 12<sup>th</sup> Dynasty and that this trend continued in the 18<sup>th</sup> Dynasty and Ramesside periods as evidenced by New Kingdom tomb scenes. The deposition of lighting implements in tombs and within the context of domestic shrines or chapels indicates that lighting was utilized in a ritual context. Additionally, the placement of a lamp, particularly a non-spouted open vessel lamp, near the head of the deceased is a practice utilized from at least the Old through the New Kingdoms. Although archaeological evidence for lighting devices is minimal, this chapter provides a working typology of the most consistent types of lighting implements used throughout the Pharaonic Period. It also provides types that can serve as points of comparison for the lexicographical terms for lighting devices presented in Chapter 4 and depictions of artificial light sources in Chapter 5. Before examining these connections, however, it is necessary to understand why there is so little recognizable archaeological material. Chapter 3 will therefore provide a broader contextualization of artificial lighting within ancient Egyptian culture.

### Chapter 3 – ARTIFICIAL LIGHTING IN CONTEXT

While the previous chapter highlighted the variety of lighting equipment used during the Pharaonic Period, it also draws attention to the dearth of archaeological remains from this 3,000 year span of time. The paucity of evidence for artificial lighting is put into stark relief when compared with contemporaneous cultures, such as those in Israel and Palestine. Altogether, museums around the globe may contain a few hundred Pharaonic Period lighting devices, including lamps, lampstands and wick-on-stick or wick-in-stick implements. The British Museum, Metropolitan Museum of Art and the Louvre, for example, contain up to 10 lighting devices each, the Petrie Museum holds about 10, and the Egyptian Museum in Cairo has approximately 10 – 15 known lighting implements. This accounts for objects that have been identified as lighting equipment and are on display, as well as those that may be in storage. Many museums with notable Egyptian collections, such as the Museum of Fine Arts Boston, the Ägyptisches Museum and the Cleveland Museum of Art, have no Pharaonic Period lighting paraphernalia listed in their online collections databases. In comparison, the British Museum holds more than 150 lamps from the city of Lachish alone from the same period. Although a majority of Bronze and Iron Age lighting implements from the Levant are found in burials, they are also evident in domestic (Loud 1948: Stratum IX, VIII, VIIB; Dever *et al.* 1970: Stratum VI; Yannai 2004: 1050–1146); cultic (Tufnell 1940: 38; Macalister 1912: figs 503, 504; Yadin 1958); and administrative contexts (Tufnell 1953: Locus 4014; Aharoni 1973: Stratum II). This suggests that lighting was a regular fixture in every sphere of daily life across the whole of the Levant, as evident at the sites of Megiddo, Lachish, Gezer and Be'er Sheva. Ancient Egypt, in comparison, has very little evidence from any of these contexts, albeit that there are few extant and/or excavated administrative or settlement sites in Egypt.

Some of the scarcity of archaeological evidence can be explained by the materials used to construct the lighting devices. Since wick-on-stick and wick-in-stick devices are made of such highly combustible, organic substances, it is no wonder that so very few examples survive in the archaeological record. If the lighting device had been ignited and presented as an offering during pharaonic times, it only would have lasted for a brief period before literally going up in smoke. However, based on surviving liturgical texts and temple relief illustrating these rites, it seems that



wick-on-stick implements would be offered on a daily basis to the cult statue of a god or goddess (Nelson 1949a; Nelson 1949b; Shafer *et al.* 1997: 1–30; Eaton 2013: 49–51). If this ritual was carried out in all temples across Egypt, that alone would account for hundreds of wick-on-stick devices used every day. The use of these light sources in funerary offerings and festival celebrations would account for many more—potentially thousands—of lights used throughout the year.

But where are the lamps? Presumably, lamps would be more commonly used on a daily basis since they were reusable and would last longer than wick-on-stick or wick-in-stick devices. As the typology of Chapter 2 emphasizes, many lamps may now be lost due to a lack of thorough publication or recognition by early excavators. Small, non-descript bowls, with or without patches of burning, would have aroused little interest. It is also possible that the nature of (re)use of lamp vessels in ancient Egypt is not conducive to archaeological preservation. As an example, lamps may have been used more frequently in chapels, as opposed to being interred—and thus preserved—with a deceased individual. The lamp from the *serdab* in the mastaba of Kaemsenu is a relevant example as it was found within the offering chapel of the tomb owner and had evidence of burning, as well as the charred remnants of a wick inside. If lamps were utilized as part of daily chapel offerings, they would eventually need to be cleaned up and taken away by the mortuary priest, to ensure that fresh food, drink, and other goods could be presented on a regular basis. In this way, an ancient Egyptian lamp within a tomb chapel may have functioned similarly to an offertory candle in a modern church. After a period of time, there is no candle left to burn and it can no longer function as a sacred implement. The remains of the candle are then cleared away before a brand new candle takes its place. A similar situation may have occurred in ancient chapels. After a certain amount of use as a lamp during daily offerings, a bowl would degrade or potentially crack from regular exposure to flame. The charred remains of the bowl would then be thrown away by the attending priest and a new bowl would be used. These blackened sherds would be quite difficult, if not impossible, to identify as part of a lamp during excavation. The lamps from the tomb of Tutankhamun also suggest that the application of modern cleaning may have permanently erased any traces of a vessel being used as a lighting device. As a result, there may be many lamps displayed and stored in collections that will never be recognized. All these issues are likely part of the problem in identifying Egyptian lamps. However, I think there are other factors at play here.

## 1. Where have all the lamps gone?

A contextualized analysis of the scant archaeological evidence for lighting equipment in the Pharaonic Period has not been done. Much like the conclusions of Robins and Davies in regard to the types of lighting equipment used (p. 10), the hypothesis that archaeologists have failed to recognize lamps in the material record persists, despite the fact that there has been no thorough explanation of why this is the case. My research indicates that there are a few factors that complicate the identification of lamps, namely: lack of standardization in lamp vessels, lack of settlement evidence, difficulty in distinguishing between a lamp and a censer and an analysis of the actual need for lamps in ancient Egypt.

### 1.1 *Lack of standardization*

Unlike their Mediterranean neighbors, I would argue that the ancient Egyptians took a much more utilitarian approach to lighting and never developed a standardized vessel that was used solely as an oil lamp. The survey of known lamps presented in the typology exhibits minimal similarity in vessel dimensions, shape or material. Nor do they present much evidence for development over time. As presented in Chapter 2, lamps throughout the Pharaonic Period range in diameter from 6–20 cm, and in height from approximately 5–33 cm. They are just as likely to be round bottomed as they are flat, and are similarly divided between spherical or conical body shape. The only consistency, is that a lamp bowl will most likely be made of ceramic, as opposed to calcite, limestone or copper, unless they are found in a royal burial in which case stone lamps are more prevalent. There are examples of distinctive vessel shapes used for lighting implements, such as the limestone lamps from the Middle Kingdom, but these are isolated. There is also the possibility that metal lamp vessels exhibited more standardization in shape and size, but these have been lost due to tomb looting or reuse of metal implements.

When compared to contemporaneous archaeological evidence for oil lamps from Israel and Palestine, Egypt's lack of standardization in lighting paraphernalia becomes strikingly apparent. Lighting technology appears in both regions at approximately the same time, with small, shallow bowls serving as oil lamps. From approximately 4000–2200 BC, lighting devices in Egypt do not differ wildly from those in the Levant. Bowls of ceramic or stone with a wick spout or patches of burning are also found in both areas. By 2200 BC however, oil lamps have become a standardized piece of equipment in Israel, and there is no longer evidence for multi-purpose use of bowls as

lamps in burials or domestic spaces (Sussman 2007: 20). Lamps also become increasingly frequent in settlements, such as Beth Yerah, Megiddo and Jerusalem, during this period but continue to be prevalent in funerary contexts. From Middle Bronze II (beginning in 2000 BC) onwards, almost all oil lamps are of standard manufacture: ceramic, wheel-made with 1 spout (Sussman 2007: 34; Bailey 1975: 12).<sup>17</sup> Although these lamps were not mold-made, they are remarkably similar in size throughout the entirety of Israel and Palestine. As an example, utilizing all 230 of Sussman's catalogue entries for Middle Bronze II (2000-1550 BC) the majority of lamps are 3-4 cm high, 11-12 cm wide and 12-13 cm long when taking into account the wick spout. This trend continues in the Late Bronze (1550-1200 BC) where the majority of the 483 examples illustrate that while the lamps get slightly bigger in this period (height: 3-5 cm, width: 13-14 cm, length: 14-15 cm), their standardization in material, size and shape remains the same.

Similarly to Egypt, the archaeological evidence for lighting in the Levant derives primarily from a mortuary context. The two regions differ because the evidence from ancient Egypt suggests that it was not so much important that a specific lamp was included with the burial goods. Instead, I would argue that it was necessary that all of the elements to create a lamp would have been included with the funerary provisions to provide illumination as needed. Offering lists from the Old Kingdom onwards frequently include provisions for jars of fat and oils along with various kinds of linen (Figure 3-1). These items are usually interpreted to be associated with mummification, but as such they would no longer be needed for this purpose after the burial. It is possible that the linen was intended to be used for clothing for the deceased, while the oils and fats could be employed as unguents. I would also suggest that these materials could have been used to create an oil lamp with any of the bowls included among the burial goods. Although the oils, fats and linen provided could have various potential uses, it seems reasonable that some of the linen could be twisted into wicks while a portion of the oil and fat could be utilized as illuminant.

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<sup>17</sup> An exception to this are the stone and ceramic "cup-and-saucer" lamps referenced in Müller's (2006) article that are discussed in Chapter 2.

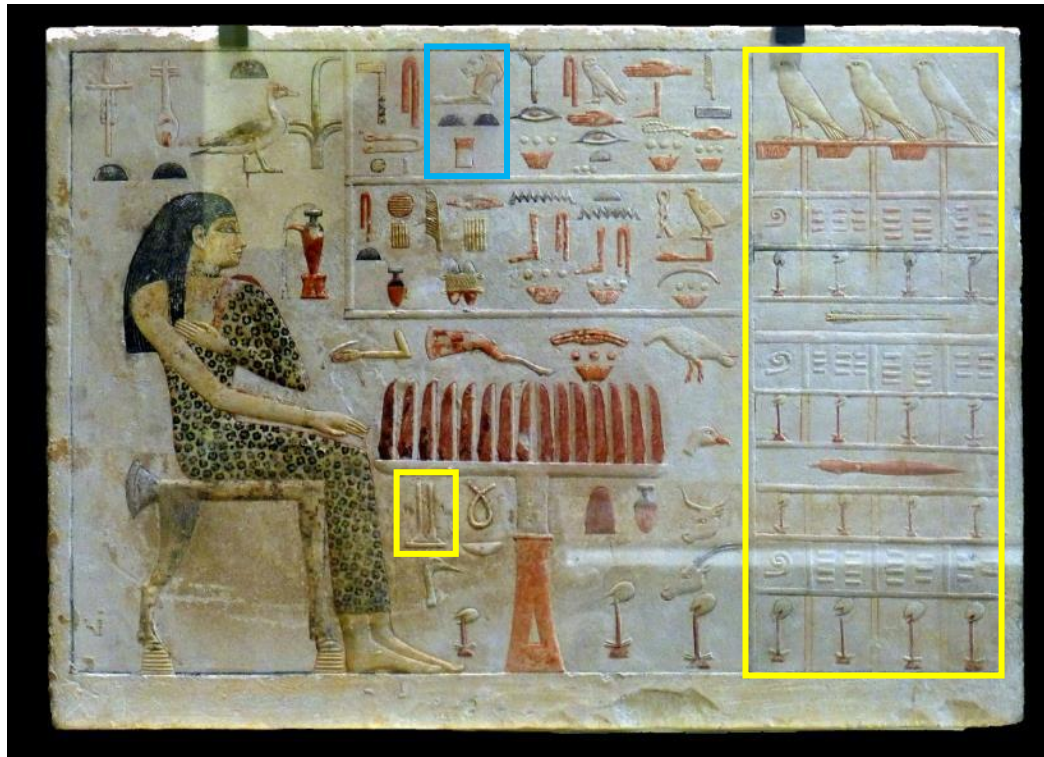


Figure 3-1 - Slab stela of Neferetiabet with offerings of linen (outlined in yellow) and oil (outlined in blue) The rectangular section on the right is commonly referred to as a "linen list"; Louvre Museum, Paris

This approach to artificial lighting equipment emphasizes the provision of wick material and fuel over the vessel in which they were utilized. It would appear that the Egyptians focused on the quality of the linen and the fats or oils, which were far more costly than a ceramic bowl, and were therefore much more valuable offerings to a deceased family member. In Israel and Palestine, lamps found in burials frequently have black spouts from when the lamp was left lit at the time of burial. In contrast, lamps from Egyptian burials, such as those from Qurnet Murai, suggest that it was not necessarily important that the lamps be lit upon interment of the body, but rather that all the essential supplies be provided for the deceased's use in the afterlife. Lamps that do exhibit evidence of use, such as those from the burial of Tutankhamun (p. 19-21) and Kha (p. 23-24, 51-52), may have been used as items of domestic furniture prior to their interment. The traces of burning are therefore not necessarily related to illumination at time of burial. The fact that the lamp vessel in Kha's tomb was still full of illuminant and wick material upon discovery supports this point (Figure 2-41). The lamp from tomb MMA 1008 (p. 21-23) clearly exhibits signs of burning, but this comes from a disturbed context. It is not possible to definitively state whether the lamp wick was lit and left as part of a particular burial assemblage, if it was a lamp that had been lit

subsequent to the burial as part of an offering, or if the lamp had been lit and placed outside the burial and had subsequently fallen in to one of the burial pits.

### *1.2 Lack of settlement evidence*

Some scholars may argue that a lack of settlement evidence, where lamps would have been used in domestic spaces, could account for the scarcity of lighting equipment in the material record. The poor preservation and resulting minimal information about settlements from ancient Egypt cannot be avoided. However, if artificial lighting was routinely utilized in domestic contexts, where it could provide illumination in the evening or in darkened interior rooms, it would presumably be found in the best recorded settlements—Lahun, Amarna and Deir el-Medina. Although few of the houses at these sites have been excavated with thorough recording, a review of the published material does not indicate that lighting was commonly used in ancient Egyptian households.<sup>18</sup>

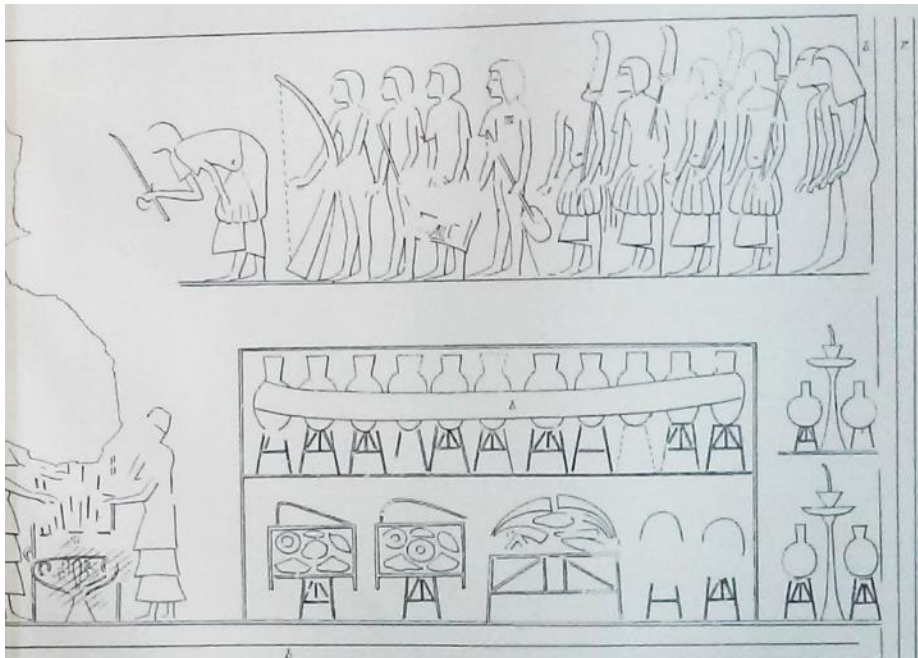
The Amarna small finds database lists only three lamps found within Eighteenth Dynasty homes.<sup>19</sup> As stated on p. 54, Pendlebury recorded that several saucers were found with blackened rims, indicating that they had been used as lamps. He, unfortunately, gives no indication of how many of these saucers were found, nor their location. Yet, despite the rarity of evidence for domestic lighting, Pendlebury suggested in his discussion of the “living room” space in Amarna homes that: “At night the room was lit by lamps either standing on the floor or set in small niches cut in the wall about a metre up from the ground, or on a bracket made by the simple expedient of driving two pegs side by side in to the mud brick and plastering them over with a daub of mud rounded off in front” (Peet & Woolley 1923: 63). Examples of blackened round-topped or rectangular niches do exist, primarily in interior rooms of homes in the Workmen’s Village (Stevens 2006: 246–47). However, no evidence for pegs serving as lamp brackets has been found in recent archaeological survey.

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<sup>18</sup> Recent excavations in House 55 at Elephantine have uncovered 3 potential lamp niches in a late 17<sup>th</sup>/early 18<sup>th</sup> Dynasty structure that likely served as a workshop. To my knowledge, this is the only evidence for lamp emplacements in this type of structure. The niches are all secondarily carved into the mudbrick walls of two rooms at a height of approximately 2 meters. They are quite small, measuring approximately 10 cm across and 7–8 cm high, and oval in shape suggesting that a round-bottomed bowl was placed into them. The tops of the niches are blackened and the bases are coated in oil or fat, which has seeped into the surrounding mud brick. My thanks to Dr. Cornelius von Pilgrim for sharing these unpublished findings with me.

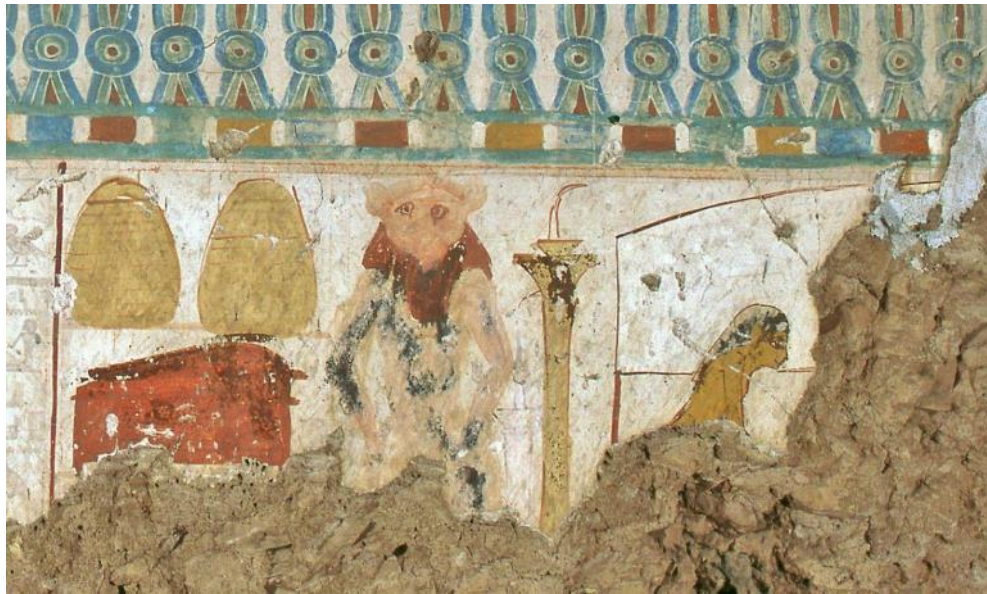
<sup>19</sup> Four other lamps and a lampstand also come from the site but are all Roman in date.

Representations of lighting used in a domestic setting are similarly rare and most of them are restricted to the Amarna period. The best example is a banquet scene from the tomb of Huya in which open vessel lamps are depicted (Figure 3-2). However, the identification of these implements as lamps is uncertain as they could also be interpreted as censers.



*Figure 3-2 - Banquet scene from the tomb of Huya depicting two potential lamps placed on stands in the bottom right corner (Davies 1905: plate VII)*

An additional scene from the tomb of Senneferi (TT99) depicts a similar style lamp next to a woman making a bed (Figure 3-3). While the scene may have connotations of eroticism and fecundity, as suggested by the adjacent figure of Bes, it does appear to be representing a domestic space—or perhaps a tomb functioning as an equivalent of domestic space—where lamps would provide illumination.



*Figure 3-3 - Scene from the west wall of the tomb chapel of Senneferi (TT99); photograph courtesy of Nigel Strudwick*

Deir el-Medina provides slightly more archaeological evidence for lighting implements, including many fragments of lampstands and an unspecified number of lamps found in the village. However, as mentioned in Chapter 2, Section 2.1, many lampstand fragments were found in the context of small devotional shrines within the houses. This may indicate that the lamps associated with these lampstands were not used primarily for every day illumination, but rather for ritual purposes. Bruyère unfortunately did not make a record of exactly how many of these lampstand bases he found, so it is impossible to say if every home would have been equipped with a lamp and stand or if it was something reserved for wealthier members of the community. The lack of evidence for daily lamp usage at Deir el-Medina may further be explained by the records of provisions given to the villagers as payment for their work in the Valley of the Kings. These records indicate that a group of men were specifically tasked with procuring fuel for the village in the form of wood and possibly dung (Janssen 1975: 481–85). This provision of fuel is particularly important not only because it provided the workmen with a fire to cook their meals on, and a source of heat in the winters, but it also would have given each home a free source of light. Beyond these fires, there was likely little need for additional illumination in ancient Egyptian homes. Before the advent of electricity, and indeed still in some parts of the world today, people rise with the sun and go to bed at sunset. The agrarian lifestyle of most ancient Egyptians would have likely followed this pattern. Windows within homes would let in sufficient light to navigate interior spaces during the day, while fires from a central hearth could provide illumination at night in

winter. Moonlight would provide ample light to navigate outside if needed—this is still possible today in Egyptian villages and rural communities. As a result, the average ancient Egyptian would likely have had little need for artificial lighting on a daily basis.

### 1.3 Differentiating between censers and lighting devices

Objects that are definitely censers have been found both in archaeological material and iconography, including the figure of a priest (Metropolitan Museum of Art, 47.105.3) (Figure 3-4) and a copper censer from the reign of Amasis in the Fitzwilliam Museum (E.13.1937) (Darracott 1979: 27–28). Objects that are definitely lighting implements, such as wick-on-stick and wick-in-stick implements are similarly identifiable in archaeology and iconography (Figure 2-54, Figure 2-59, Figure 5-6 and Figure 5-12).

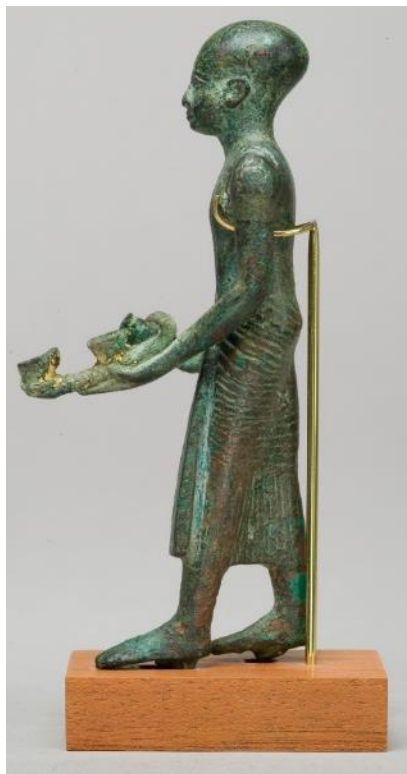


Figure 3-4 - Third Intermediate Period figure of a priest (47.105.3) holding a censer in his left hand; Metropolitan Museum of Art, New York ([www.metmuseum.org](http://www.metmuseum.org))

What is problematic is differentiating between censers and lamps when they both are depicted as bowls with flame rising from the center (as in Figure 3-2). As will be discussed in Chapter 4, terminology is not particularly helpful in settling this argument as some lighting implements, such as a *st3t* (p. 110), are perhaps best translated as “flame-holding device” or “burner”. Perfumed substances, such as *h3w* (p. 109-10), may also be added to these devices, which could have



simultaneously produced light and scented smoke. Additionally, the discovery of resin coated wicks at Amarna suggests that lamp wicks could simultaneously produce light and incense-laced smoke (Serpico 1983: 108, note 5, 183). As a result, lighting implements could provide fumigation and, if a wick was used in a censer, as opposed to pieces of charcoal, a censer could provide illumination. As Davies (1924: 12–13, note 3) discusses, in the absence of any identifying inscription, it is difficult to determine if a bowl with a flame represents burning incense or only a lamp. I would suggest, however, that fumigation and illumination do not need to be mutually exclusive and that scenes without an accompanying text, such as Figure 3-2, could be interpreted as a bowl on a stand producing light and a pleasant aroma at the same time.

## **2. Filling the archaeological gap**

The question of scarce lighting devices in ancient Egypt can at least partially be answered by the likelihood of misidentified or unidentified lamps, a lack of standardization and minimal settlement evidence. However, I would also suggest that Egyptologists have perhaps been looking for too much evidence of artificial lighting. The answer may not be that we are unable to recognize these devices, but rather that they simply are not often there to find.

Artificial lighting today is a universal commodity. Our streets are flooded with it, every home and public building glows because of it. There is so much artificial lighting in the world today that it has in fact become a pollutant. I would argue that this modern overabundance of light has become problematic when examining artificial lighting in ancient Egypt. The lack of lighting is not only incongruous with contemporaneous cultures of the eastern Mediterranean, but also with our own worldview. Earlier scholars assumed that light was as common in ancient history as it is today. Their reliance on the accounts of Classical authors supports this conclusion, as the writings of Herodotus, Pliny, Diodorus, and others all suggest that oil lamps were used quite extensively in Ptolemaic and Roman Egypt. Archaeological evidence from the 7<sup>th</sup> century BC onwards in Greece and Rome certainly supports these claims as thousands of lamps survive from this time period. However, just because Herodotus and others said there was a great use of lamps in the Greco-Roman Period, does not mean that this was the case for the 3,000 years of history that came before them. Additionally, projecting the practices experienced by the Greek and Roman authors back onto the ancient Egyptians is methodologically problematic.

The greatest difficulty in associating Greco-Roman lighting practices with ancient Egyptian is the availability of oil. Olive oil was widely available in the eastern Mediterranean, but not in Egypt. Other sources of oils seem to have been limited or restricted at certain time periods. This is illustrated quite clearly in the Revenue Laws of Ptolemy Philadelphus, who ruled Egypt from 283-246 BC (Grenfell 1896). These records indicate that the Ptolemies established a vast oil monopoly in Egypt in which private production of oil was forbidden. Instead, the Ptolemies ensured that oil, primarily castor and sesame, was grown, harvested, and processed under their supervision (Grenfell 1896: XXXIV–XXXVII; Sandy 1989: 3). Crucially, they ensured that enough oil was produced to supply the needs for cooking, medicine and lighting by the local population (Sandy 1989: 24–30). The oil was sold by government employees at a fixed price, and they would pass on the profits directly back to the Ptolemies. Prior to the Ptolemies, there is no evidence for a government run oil monopoly. In fact, there is no evidence for industrial production of oil at all (Serpico & White 2000: 390), suggesting that oil was produced on a smaller, local scale. Tellingly, where archaeological or iconographic evidence for lighting from the Pharaonic Period does survive, it is consistently in elite or royal contexts: temples of the gods, tombs of pharaohs, tombs of wealthy members of the royal court. This indicates that artificial light was not an item of necessity, or universal availability, rather it was a luxury good consumed primarily by the affluent. Given this evidence, it seems appropriate to examine the materials needed to produce an oil lamp and their relative cost to a member of ancient Egyptian society.

### **3. The cost of illumination**

The two primary components of a light source are a wick and an illuminant. Wicks in ancient Egypt could be made fairly inexpensively with twisted organic fibers or old fabric. Reeds for wicks-on-sticks and wicks-in-sticks could also be easily obtained from the fields or areas of vegetation near the Nile. Sources of fats and/or oils, however, were more difficult (and expensive) to obtain. Egypt was the horticultural outlier of the whole of the ancient, eastern Mediterranean because it did not possess a native supply of olive oil (Foxhall 2007). The presence of olive stones and wood at Chalcolithic Teleilat Ghassul in Israel points to cultivation of the crop as early as 3700 BC (Serpico & White 2000: 399; Zohary *et al.* 2012: 141). This also corresponds to the appearance of early oil lamps in Israel, Palestine and Jordan. Olive oil served as the primary oil for cooking, lighting and cosmetics in this region, with the surplus being traded to countries where olive trees

were not so prevalent, including Egypt. Egypt's climate is not conducive to olive tree growth, unless substantial irrigation is used. Minimal archaeological evidence for olives have been found at the sites of Memphis, Amarna and Luxor, but it has been generally accepted that olive oil was imported into Egypt from the southern Levant (Zohary *et al.* 2012: 120; Stager 1985).<sup>20</sup> Because Egypt did not have a native supply of olive oil, they had to rely on vegetable oils and animal fats for illuminants.

Identifying exactly what types of oils and fats were used during the Pharaonic Period, however, does have some methodological limitations. Previous studies on potential sources of oils relied heavily on Classical authors, which are problematic because they focus on illuminants available to the Greeks and Romans (Lucas 1962; Forbes 1958). Archaeobotanical evidence has made great contributions to our understanding of crop availability in ancient Egypt. However, if evidence for a crop on a Pharaonic Period site—castor for example—matches with Classical authors' descriptions of utilized illuminants, this does not necessarily imply that particular crop was utilized as an illuminant prior to the Greco-Roman period. Similarly, advances in archaeological science now allow us to definitively identify substances in ancient deposits and residues through GC/MS testing. This equipment has only been available since the 1990s, however, and minimal testing results have been published that specifically address illuminants in ancient lighting devices (Copley *et al.* 2005). Lexicographical issues also persist in identification of vegetable oils, which is compounded by a lack of iconographic evidence for oil sources, as well as oil production. As previously mentioned, there is also no archaeological evidence to explain how oils or fats were processed, nor is there any indication of oil processing facilities. It has also been suggested that beeswax may have been used as an illuminant, but there is no evidence to support this claim either (Crane 1999; Kritsky 2015).<sup>21</sup> Despite these challenges, it is still possible to identify vegetable oils and animal fats that were most likely employed as illuminants by the ancient Egyptians. In order

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<sup>20</sup> The presence of jars of olive oil and garlands of olive leaves in the tomb of Tutankhamun, for example, were all likely imported and buried with the king as a sign of wealth and importance.

<sup>21</sup> Crane proposes the use of beeswax by referencing a tomb scene in which a man presents a lighting device (Crane 1999: 524). She believes it is a coil of beeswax, but it is identical in representation to wick-on-stick implements in New Kingdom tomb scenes, such as those in the tomb of Amenemhet (TT82). There is also no textual reference to the use of beeswax in making lighting devices. I would therefore disagree with her interpretation and suggest that the lighting devices she has identified are of the wick-on-stick type and not coils of beeswax. It should be noted that one sample from the Fitzwilliam Museum lamp does indicate the presence of wax. However, as mentioned on p. 25-26, this could either be traces of an ancient illuminant or modern conservation. This one isolated example can not be used to draw definitive conclusions about the use of beeswax as an illuminant in ancient Egypt.

to examine the cost of artificial lighting, it is first necessary to identify the materials used in lighting implements. I will therefore provide a brief discussion of potential Pharaonic Period illuminants based on an examination of Classical accounts, published archaeobotanical evidence and results from lipid analyses. These include vegetable oil sources, namely castor, linseed, radish and sesame oils, as well as animal fats.<sup>22</sup>

#### 4.1 Vegetable oil sources

Castor seeds are first recorded in Predynastic graves at Badari and Maadi and still remain prevalent in Egypt today (Brunton & Caton-Thompson 1928: 38; Keimer 1924: 70–73). The seed has an oil content of about 47 percent, which is pale yellow and slightly viscous (Serpico & White 2000: 392). Harvesting the castor seeds would have required a certain amount of vigilance to ensure that the seed capsules did not fully ripen, open and violently expel the seeds from their pods. The leaves and the seeds are toxic, due to the presence of ricin and ricinine, suggesting that ancient Egyptians would not have used castor oil in cooking. Additionally, the seeds contain castor bean allergen (CBA) which can cause respiratory distress in some people. The majority of ancient textual references to castor oil, *dgm*, are in medical texts because of ricin's emetic properties (Wreszinski 1913; Leitz 1999). The first mention of castor oil as an illuminant does not appear until the early 9<sup>th</sup> century BC, when Osorkon stipulates that *dgm* should be provided for a lamp in Karnak temple (Caminos 1958: 61–62). Herodotus (*Histories II*: 94), Diodorus (*Library of History I*: 3) and Strabo (*Geography XVII*: 2, 5) also record its use as an illuminant. Based on my own lamp experiments (see Chapter 6), burning castor oil is not particularly pleasant due to a strong odor (slightly resembling burnt meat) and a fair amount of acrid, black smoke. While castor's toxic and purgative properties likely precluded it from being used as a cooking oil, it is possible that the ancient Egyptians utilized castor oil as an illuminant despite its unpleasant smell and smoke production. It certainly seems to have been employed as a fuel source for lamps by the reign of Osorkon in the 22<sup>nd</sup> Dynasty.

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<sup>22</sup> This list of illuminants is derived from ancient Egyptian sources, ancient Greek and Roman sources (Herodotus, Pliny, Strabo, Diodorus and Theophrastus) and those identified in the Copley *et al.* study. Although the Classical authors are recording lamp illuminants used from ca. 440 BC-1<sup>st</sup> century AD, they are still a valuable source of information for Egyptian fuel sources. The lamps used in the Copley article date from the Christian phases (600-1500 AD) at Qasr Ibrim, which is admittedly far later than the given time frame of this thesis. However, the findings do corroborate the ancient Egyptian and Classical sources. Additionally, this article is the only one, to my knowledge, which provides residue analysis for lamps in Egypt.

Linseed would seem a likely source of oil as the plant was widely harvested in ancient Egypt from the Neolithic onwards (Caton-Thompson & Gardner 1934: 46; Zohary *et al.* 2012: 105; Serpico & White 2000: 396). The seeds of the linseed plant can be eaten or processed for oil, while the stems produce fibers for linen (Eastwood 1985; Zohary *et al.* 2012: 101–6). However, the oil goes rancid quite quickly, has an unpleasant taste, and burns with an unpleasant odor and thick, black smoke (Serpico & White 2000: 396). This indicates that it would not serve well for cooking, cosmetic purposes or illumination. There is also no specific mention of linseed oil being used in connection with lighting devices in ancient Egypt. By Greco-Roman times there is minimal evidence for linseed oil being used as an illuminant, but it is definitely not a main source of lamp oil (Sandy 1989: 4–5). Radish oil is similarly problematic as an illuminant. Although it is recorded by Pliny (*Natural History* XV: 7) as a common oil source in Roman Egypt, and identified in Christian period lamps from Qasr Ibrim (Copley *et al.* 2005: 870), there is no evidence for the use of radish oil in Pharaonic Egypt (Serpico & White 2000: 402). Both radish and linseed oil also have a low oil yield. Linseed, for example, can produce 478 liters of oil per hectare, while olives produce 1,212 liters per hectare.<sup>23</sup> Although Classical sources may suggest that linseed and radish oil were used as illuminants from Ptolemaic or Roman Egypt onwards, it seems less likely that they were utilized during the Pharaonic Period (Zohary *et al.* 2012: 112).

The last potential vegetable oil source, sesame, is rarely attested in botanical evidence from ancient Egypt (Zohary *et al.* 2012: 113; Serpico & White 2000: 397). In addition to the scarcity of remains, the dating of the introduction of sesame into Egypt is contentious. Keimer (1924: 19) suggests that sesame oil was used from the New Kingdom onwards due to his correlation between sesame and the appearance of the word *nḥḥ* at that period of time. Others, however, would suggest that *nḥḥ* relates more closely to a foreign imported oil, such as olive oil. This is based on the proposed beginning of cultivation of sesame in Egypt during the Ptolemaic Period as evidenced by the presence of *σήσαμον* in Greek papyri (Sandy 1989: 62; Koura 1999: 229–32). In either case, *nḥḥ* seems to denote an oil that was rare in ancient Egypt. Baskets of sesame seeds were found in the tomb of Tutankhamun but these most likely represent a restricted, locally sourced commodity, or

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<sup>23</sup> Information reflects modern biofuel yields as compiled at: [https://journeytoforever.org/biodiesel\\_yield.html](https://journeytoforever.org/biodiesel_yield.html). Accessed 12 January 2017. Presumably oil yields in ancient Egypt would have been lower due to the lack of modern harvesting and extraction technology.


perhaps even an expensive imported product (Vartavan *et al.* 2010). These baskets of seeds are presumably a sign of wealth and power, not representative of a common crop. Even if access to sesame seeds was possible, processing them into oil would be difficult. Sesame oil can only be produced once the seeds are completely ripened and released from their protective pods, a process called dehiscence or an “open sesame” (Hwang 2005: 540). While a harvester can gain access to the seeds once the pod has split, it also means the seeds can fall to the ground—rendering them useless for oil production—or be eaten by animals. Even today harvest loss to dehiscence continues to keep sesame oil yields low. Still, sesame seeds have quite a high oil content—approximately 50%—and if the seeds can be harvested at the right time, a hectare of sesame plants can produce up to 696 liters/1,450 *hin* of oil.<sup>24</sup> The harvesting and production of sesame oil is very labor intensive, however, and though the oil is of good quality oil, with a high nutritional content and long, stable shelf life, there is generally minimal yield from sesame seeds (Hwang 2005: 540). If sesame is equated with *nhh*, then it does suggest that sesame oil was utilized from the 19<sup>th</sup> Dynasty onwards as an illuminant, as indicated by records from Deir el-Medina and Medinet Habu, which will be discussed below.

#### 4.2 *Animal fat sources*

Copley *et al.*'s study (2005) identified the presence of both ruminant and non-ruminant fats in lamps from Qasr Ibrim. Due to degradation of the fats, they were not able to identify individual sources aside from pig lard, which was present in four of the ten lamps that they examined. Archaeological material from several Pharaonic Period sites suggest that ruminant fat came from cattle, sheep and goats, while non-ruminant fat was procured from pigs and geese. Jars of goose fat have been found at Malqata (W.C. Hayes 1951a: 159) and Amarna (Pendlebury 1951), and the use of goose fat in medical texts is well attested. Similarly, jar docketts from Amarna and Deir el-Medina (Leahy 1985: 66–67) speak to the rendering and storage of pig fat, and it too was utilized for medicinal applications (W.R. Dawson 1928). While neither of these animal fats are specifically mentioned in correlation with lighting equipment, it seems plausible that they could have also served as illuminants during the Pharaonic Period.

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<sup>24</sup> 1 *hin* = .48 liters

The most commonly attested illuminant from Pharaonic Egypt is *ʿd* (*Wb I*, 239.8 – 16), generally translated as “animal fat”. Jar labels and medical texts provide evidence for the various types of *ʿd* available, such as *ʿd sr* (sheep fat), *ʿd srt* (goose fat), *ʿd š3j* (pig fat), and more commonly *ʿd k3* (bull/cow fat). Unfortunately, texts referencing the use of *ʿd* for illumination do not specify from what animal the fat originated. Instead it is frequently described as *ʿd w3d* or fresh fat. Additional animal fat illuminants include *mdt* (Chapter 4, p. 118-19), and *sgnn*. The term *sgnn* is usually translated as “oil”, “ointment” or “salve/unguent” (Koura 1999: 131–33). However, relation to the word *gnn* (*Wb V*, 176.8) or suet suggests that a more accurate translation may be tallow, or rendered animal fat. The writing of *gnn* uses F51  as a determinative, indicating that *gnn* is part of an animal. Attestations of *gnn* are rare and confined to the New Kingdom, but do provide some evidence for animals from which *gnn* could derive. Although not specifically related to lighting, the best source of information for *gnn* comes from a festival calendar of Merenptah at Gebel Silsila, where it is included twice in the list of offerings (LD Abth. III, Bl. 200d). According to this calendar, *gnn* could be procured from a cow, and is described as being of the highest quality (*h3tj*), or from a goose (*srj*). Presumably this raw fat or suet, once cut from the animal, could be stored in jars and transported, which is indicated by jars found by Pendlebury at Amarna labeled as ‘*gnn*’ (Pendlebury 1951: 169–74). I would suggest that *sgnn* is the resulting product of *gnn* becoming (literally ‘being caused to become’) something else. The term *gnn* refers to the raw material or animal fat that becomes *sgnn*, or tallow, through the process of rendering.

As with vegetable oils, the process of tallow production is minimally understood. However, it seems that cattle would provide the largest amount of useable fat for tallow production and, judging from textual evidence, this type of tallow was of the highest quality. The production of beef tallow, however, is quite labor intensive and can only be done after the slaughter of a cow or bull (Ikram 1995: 176). Slaughtering cattle purely for fuel would have been out of the question as they were of more value as a living animal since they could provide dairy and serve as draft animals. The tallow production from one cow would also have been quite minimal. In making my own tallow at home, 2kg of suet (fat traditionally taken from the kidney) produced about 800g of tallow. Comparing that yield to an adult cow, which can contain about 40kg of useable fat, suggests that 16kg or liters/33 *hin* of tallow could be produced from one animal. Fat production from sheep, pigs, goats and fowl would be considerably less than this. Therefore, while it is clear

that animal fats, especially those from cattle, were utilized as illuminants, they would have required a great number of hours to produce a low yield.

Overall, neither animal fats nor vegetable oils produced in ancient Egypt would have amounted to vast quantities of product. They are all rather low-yielding oil and fat sources, which required considerable labor to convert the raw materials into a useable, processed commodity. Significantly, none of these oil and fat sources was restricted to one use within Egyptian society. On the contrary, all of these products were utilized for culinary, medical, cosmetic and religious purposes. Thus oil or fat would have to be set aside to be burnt for illumination, draining resources that could otherwise have been consumed or applied to the skin. The limited yield of these potential illuminants likely also created a division between the elites who could attain all the fats and oils they wanted, to the poor who would have limited access. With all of these uses for such a limited resource, it begs the question of how attainable illuminants—*nḥḥ*, *mdt*, *ꜥd* and *sgnn*—would have been to the average ancient Egyptian and how much they would have cost.

## 5. The luxury of lighting

*[I have] found it a matter of complaint throughout the country that the light keepers have at various times been reduced to the necessity of eating the candles.*

John Smeaton, from his account of the building of Eddystone Lighthouse, Plymouth

Following on from identification of the illuminants in Pharaonic Egypt, it is possible to theorize about the cost of maintaining a lighting device. I will focus on textual evidence from Deir el-Medina as it provides valuable information as to how *nḥḥ*-oil, *ꜥd* and *sgnn* were used and distributed in the village. Ostraca from the site also offer detailed information about the rations of food and other necessities, which were given to the workmen on site. While workers at Deir el-Medina were exceptional and were likely better provided for than an average Egyptian citizen, these records at least provide a point of reference for examining the cost of artificial lighting. Every worker at Deir el-Medina would receive rations of bread and beer, as well as some fish and vegetables (Janssen 1975: 457).<sup>25</sup> As previously mentioned, they would also receive rations of fuel in the form of wood and dung. Any excess supplies that the workers were able to stockpile or produce themselves (i.e. furniture, garments, vegetables/fruits) were utilized as expendable

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<sup>25</sup> Costs for goods are all taken from Janssen's *Commodity Prices* and the sources listed therein.



income and traded to procure furniture, clothing, and livestock. Villagers would have understood the value of a good, which was generally expressed as a weight of copper (in *deben*), and would barter in order to obtain those goods. A goose, for example, would cost about .25 *deben*, a goat 1-3, and a wide range of basketry, boxes and leather goods between 1-5 *deben* (Janssen 1975: 525–26). One of the commonly referenced commodities in the list of provisions for Deir el-Medina was *nḥḥ*-oil (Keimer 1924: 18–19; Janssen 1975). This, along with *ꜥd*, *mrḥt* and *sgnn* were oils and fats mentioned in records from the village, all of which would have cost between .5 and 1 *deben* per *hin*. Considering a workman could obtain a living goat for 1-3 *deben*, which could provide a family with milk, fertilizer for fields, and serve as a waste disposal service—a jar of oil or fat was not cheap. These oils, *nḥḥ* in particular, were so highly prized that they were given out as rewards or bonuses on certain occasions (Janssen 1975: 489–90). The will of Naunakhte (P.Ashmolean 1945.47) also suggests that family members would take on the responsibility of providing rations to their elderly family members, including provisions of fat (*sgnn*). In the beginning of her will (I 3, 10), Naunakhte makes mention of an *oipe* of emmer and a *hin* of *sknn* that she receives from four of her children.<sup>26</sup> In his translation of the text, Černý suggests that this was a monthly provision which Naunakhte received from her four children in her old age (Černý 1945: 48–49). The expense of these four items was significant enough that Naunakhte mentioned them specifically in her will, and made sure that none of her other children would receive a portion of their costs after her death. The relative expense of these items is also implied by the fact that four people had to pool their resources every month to provide 1 *hin* of fat to their mother. Given the expense of oils and fats in the village, it seems very unlikely that they would often have been burned for lighting, particularly if the fuel for a fire was already provided. It seems much more likely that oils and fats were used for cooking and unguents for medical or cosmetic purposes.

The one source of lighting that was consistently used in Deir el-Medina were *ḥbs*, artificial lights used in the construction of the tombs in the Valley of the Kings. Lighting in the tombs would have been a necessity since sunlight would not penetrate very far into the underground chambers. Interestingly, these lighting devices were very closely monitored within the village. The supplies with which they were made—*ꜥd* and strips of fabric (*ḥbs*)—were sent to the village specifically for the manufacture of *ḥbs* (oToronto A 11). The workmen would make the *ḥbs* (Chapter 4, Section 4)

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<sup>26</sup> The terms *sknn* and *sgnn* are equivalent to each other as the ‘k’ is a phonetic variant for ‘g’.

under the supervision of an overseer before the objects were stored in a warehouse at Deir el-Medina. Numerous ostraca, commonly referred to as the “wick accounts”, provide detailed tallies of how many *hbs* were taken out of storage and distributed to the workmen every day (Černý 1973). A similar process was also followed for the distribution of their copper tools, which would have cost a considerable amount of money (4–7 *deben*) and therefore needed to be closely monitored (Janssen 1975: 314). Why though would the overseers be so watchful over the *hbs*? I would argue that they were concerned that the workers would smuggle the supplies back to their homes to actually “eat the candles”. Because fat was such a highly sought after, but relatively expensive, item, the workers would no doubt have been very eager to obtain as much as they could for their personal use. The fat, or possibly beef tallow, used to make the *hbs* must have been particularly tempting. Personal experiments burning sesame, linseed and castor oils indicated that they would produce a considerable amount of smoke and noxious odor — not desirable for work in a confined space like a tomb. Beef tallow however, made from the high quality suet from the kidney of a cow, produces a clean burning flame with little to no scent. This also would taste quite nice if used in cooking and I think the workers at Deir el-Medina would have much preferred to eat the tallow rather than burn it. Of course the workmen were also building their own elaborately decorated tombs and one has to wonder how many of the premium quality *hbs* were stolen from the royal construction site for work on funerary monuments in the village.

In addition to the monetary value of fats and oil, these products seem to have held quite high social currency. This is particularly evident in titles of individuals from the Old, Middle and New Kingdoms who were associated with the production, storage and distribution of fats, particularly beef tallow. The Old Kingdom butcher, Pehernefer, well-known from his statue in the Louvre (A 107), bears the titles of master butcher, overseer of butchers, and, most relevant to this discussion, overseer of the rendering house or overseer of the house of beef fat, *imy-r pr ʿd k3* (Fischer 1960).<sup>27</sup> A similar title, *hrp ʿd k3*, director or purveyor of beef fat, appears on a seal in the tomb of the Second Dynasty ruler, Khasekhemwy, which is the earliest reference to my knowledge of such a post (Petrie 1901: plate 23, no. 198). This title continues into the Middle Kingdom in variant forms including *jrj-ʿd/ʿnd*, keeper of fat/pieces of fat (Ward 1982: title 509) and *jrj-šhd*, which Fischer

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<sup>27</sup> It seems that this may be part of a series of titles inherited from Pehernefer’s grandfather, also named Pehernefer, who lived at the beginning of the Fourth Dynasty.

translated as keeper of lamp fat, although I would argue a more accurate translation would be keeper of illuminant (Ward 1982: title 543; Fischer 1985: 53). Jar labels from Malqata suggest a continued correlation between master butchers and *hrp ʿd/ hrp ʿd k3* (W.C. Hayes 1951b: 102). Interestingly, fifteen jar labels (type 130 and 131) refer to the purveyor of fat from *k3w n mšwš*, or Meshwesh bulls (Hayes 1951c: fig. 10; Hayes 1951b: 91). Perhaps this group of cattle represented a specific breed found in the land of Meshwesh, or maybe they were cattle gifted to Amenhotep III from this region. In either instance, tallow from imported Libyan cattle was likely a very expensive and rare product.

These titles suggest that all steps of the process of fat production were tightly controlled and prized. Presumably master butchers, such as Pehernefer, would oversee the butchery process and ensure that all usable fat was set aside and transported to the rendering house. The processing of the raw fat into a rendered tallow was then closely monitored by either the overseer of the rendering house or perhaps a director/purveyor of fat. These individuals also likely presided over the pouring of the rendered tallow into jars for storage. These jars would then have passed into the care of the keeper of fat, or keeper of illuminant, who would account for their distribution to the royal household or temples. The rarity and expense of animal fat would suggest that an individual with any of these titles must have held a relatively high social status. The fact that many of these individuals could afford, or were granted the resources, to make monuments bearing their titles support this hypothesis. Reference within these titles to fat specifically from bulls (*k3w*), animals of great importance and cost, further corroborates this assertion.

Given the cost and rarity of illuminants, it seems natural that their luxury status would extend to the artificial lighting devices themselves. Just as individuals associated with the production and distribution of oils and fats were granted high social status, so too were members of society who were given lighting implements that used these illuminants. Middle and New Kingdom textual sources indicate that artificial lighting was, in fact, a commodity that could be redistributed to certain (wealthy) individuals from the temple. The tomb contracts of Hepdjefa, for example, specify that the cult priests would need to go the temples of Anubis and Wepwawet in Asyut in order to obtain lighting devices (*gmḥt*) to offer to the cult state of Hepdjefa on certain festival occasions. These items were kept and distributed by the *šndty*, an officer in charge of expensive fabrics used in the temples, suggesting that these were high-quality, luxury items. Additionally, a

scene of “illuminating the thrones” from the temple of Soleb, illustrates that the king himself could distribute lighting implements (Wilson 1936; Schiff Giorgini 1998: plate 34-38).<sup>28</sup> The accompanying hieroglyphic text details that following the illumination of the thrones by Amenhotep III, the light is distributed to an assembly of priests with the invocation “...take a light from the *tk3* which illuminated the throne” (Wilson 1936: 295–96). Since these light sources were being used as part of the *sed*-festival celebrations, they were likely made of luxury materials, just as the lights from Asyut. Beyond their physical cost, these lighting implements would have also carried quite high social value. The ability to receive a light directly from the temple of a god or from the king would have been quite an honor, something likely reserved for the upper echelons of society.<sup>29</sup> Artificial lighting in ancient Egypt could therefore be regarded as a status symbol. The necessary illuminants were attainable by common citizens but were far too costly—and carried too high of a nutritional value—to be burned in normal circumstances. To use a large quantity of fat, and/or high quality linen, for a lighting device was nothing less than conspicuous consumption. The redistribution of these light sources from temples implies that even the wealthy could not afford to do this on a regular basis. The use of half-burnt lighting devices from a temple was not only a sign of status, but an indication that these resources were too expensive to be wasted.

## 6. Summary

There are undoubtedly lighting devices that have been lost in the archaeological record due to a lack of standardization, modern cleaning and paucity of settlement evidence. Additionally, wicks-and-sticks or wicks-on-sticks are unlikely to be found due to the combustible substances from which they are made and the organic nature of any remains. Ultimately however, artificial lighting devices seem to have been used sparingly in ancient Egypt society. In addition to artificial lighting not being truly necessary in a domestic space, the cost for artificial lighting devices would have made them unaffordable for most people. This is particularly due to the expense and limited supply of the illuminants.



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<sup>28</sup> The ritual significance of this scene will be discussed in Chapter 6.

<sup>29</sup> This practice of lighting redistribution continued well into the 19<sup>th</sup> century AD. Courtiers in the palaces of Louis XIV and Queen Victoria are reported to have resold partially burnt candles to local citizens because of their superior quality illuminant (wax) and social prestige (O’Dea 1958).

The vegetable oil sources available during the Pharaonic Period would have been labor intensive to produce and harvest, as well as low yielding. Similarly, fat production would have been a by-product of butchery, something which would have occurred on a regular basis in temples but not in the majority of Egyptian settlements. As a result, the fat produced would have been rare and expensive. The high value of these fats is further evidenced by the elite status of individuals associated with their production and distribution, as well as the redistribution of the lighting devices themselves. The next chapter will determine if the exclusivity and luxury of lighting implements is corroborated by textual material. It will also examine if particular lexemes correlate to archaeological evidence presented in Chapter 2.

## Chapter 4 – THE LANGUAGE OF LIGHT

To date there has been no lexicographical study of artificial lighting devices in Egypt. Outside of dictionaries, only the *Lexikon der Ägyptologie* and Forbes (1966: 128) have explicitly mentioned hieroglyphic words that seem to correlate with artificial lighting implements. Published translations of texts where these terms occur do cursorily discuss a possible meaning in order to facilitate a readable translation, but do not provide an in-depth analysis (Reisner 1918; Nelson 1949b; Caminos 1958; Černý 1973; D.C. Luft 2009). As a result, different translations of the same word have resulted in different meanings attributed to texts and have created a rather confusing foundation from which to examine the language of artificial light. Additionally, previous scholars' attempts to match specific terms with specific devices have rooted themselves in a Western 19<sup>th</sup> and 20<sup>th</sup> century understanding of lighting paraphernalia. This ignores any nuance in meaning which might be derived from the ancient Egyptian description of the light source. Therefore, this chapter will provide, as far as possible, a lexicographical analysis of artificial light from an emic perspective. The terms chosen for discussion in this chapter relate directly to some type of artificial lighting implement used in the Phaoronic Period. As a result, generic terms related to 'fire' or 'flame', such as *ht*  or *sdt* , which would account for well over 1,000 attestations, will not be included since fire served not only as a light source, but also for heating and cooking. Similarly, words related to "light" are omitted as light may be emitted from a natural or artificial source and a discussion of all words relating to light are far outside the scope of this thesis.

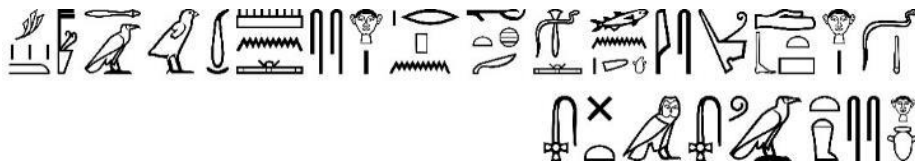
It is important to note, however, that this study faces some methodological limitations. Firstly, there are very few texts which specifically reference artificial light sources. Additionally, there may be only one text in the corpus of hieroglyphic writings that mentions a specific lighting device. In order to create as accurate a lexicographical study as possible, this chapter will therefore examine texts from all phases of the ancient Egyptian language. Where appropriate, it will link hieroglyphic terms with physical examples of lighting devices, and/or pictorial representations, in order to provide as full an understanding of the word as possible. As far as the data allows, each term will be discussed chronologically, geographically, and contextually with the aim of identifying dialectical differences and adaptations in terminology over time. The terms will be presented in

alphabetical order as opposed to arranging them by frequency of attestation. This is done to avoid erroneously prioritizing one word over another based on the preservation of textual material. Textual references within each section are presented because they speak to the materials a device is made from, the context within which a lighting implement is employed, and any potential symbolic significance of a particular light source.



### 1. w<sup>3</sup>

The term w<sup>3</sup> (*Wb I*, 280.1) is only found in New Kingdom texts, specifically within *Book of the Dead* spell 151. This spell references the provision of magic bricks to be placed in the four walls of the burial chamber of the deceased, one for each of the four cardinal points. The word w<sup>3</sup> is specifically mentioned in relation to what is commonly referred to as the torch brick. In each instance, w<sup>3</sup> is inscribed within the rubric, or directions, of the spell which stipulate how the w<sup>3</sup>-brick must be assembled. One example comes from the southern stela of Kasa at Saqqara, who had four stelae made to represent the four bricks (Neville 1880):



*dd-mdw hr dbt nt sjn w3d htj r pn hr=s smn w3 m hr-jb=s st3w m ht*

*A spell for a brick of fresh clay upon which this spell is inscribed; establish/plant a w<sup>3</sup> in the middle of it ignited with flame.*

A very similar inscription is also found in the papyri of Nu (EA10477) (Lapp 1997) and Yuya (CG 51189) (Munro 1994). Although the wording of the spell varies, the spelling of w<sup>3</sup> is consistent in all attestations:

*dd-mdw hr dbt nt sjn w3d htjw r pn hr=s smn w3 m hr-jb=s thbw m sft st3w m sdt*



*A spell for a brick of fresh clay upon which this spell is inscribed; establish/plant a w<sup>3</sup> in the middle of it, soaked in sft-oil and ignited with fire ; papyrus of Nu (EA10477)*

*dd.tw r3 pn hr dbt nt sjn w3d smn w3 st3w m sdt*

*One says this spell over a brick of fresh clay; establish/plant a w3 (in it) that is ignited with fire ;  
papyrus of Yuya (CG 51189)*

The attestations of *w3* in Nu and Yuya's *Book of the Dead* papyri date to the 18<sup>th</sup> Dynasty, specifically from the reigns of Hatshepsut/Amenhotep II and Amenhotep III respectively. They also both come from a mortuary context on the west bank of Luxor. The stela of Kasa also comes from a mortuary context, but from the Lower Egyptian cemetery of Saqqara. The stela is slightly later in date than the papyri, dating to the reign of Seti I in the 19<sup>th</sup> Dynasty when Kasa served as a general (Navelle 1880: 6).

### 1.1 Interpretation

The writing of *w3* includes the determinatives  T19, which is associated with tubular shaped objects such as a bone or harpoon, and  M2, which relates to plants or reeds. The writing then suggests that a *w3* would be a physical object composed of a tube-shaped reed which could be combined with an oil in order to be set alight. Indeed actual examples of *w3*-bricks found within the tombs of Tutankhamen (JE62357) (p. 233) and Henutmehyt (EA 41544) (Figure 2-59, Figure 2-60, Figure 4-1) corroborate this assertion. Just as the rubric of spell 151 describes, in the center of each of the bricks is placed a hollow reed, the *w3*, and the surface of the brick is inscribed with the appropriate spell. The brick of Henutmehyt also provides evidence as to how the *w3* was lit since the hollow reed contains a twisted linen wick that presumably would have been soaked in the appropriate oil and then ignited.

As is evident from the examples above, a *w3* was firmly implanted (*smn*) in the clay brick. This suggests that in order to manufacture a *w3*, the reed was not simply placed into a pre-cut hole in the brick, but was pressed into and through the wet clay, rooting it to the brick itself (Figure 4-1). The verb *smn* also denotes endurance and steadfastness, ensuring that the *w3* would serve its protective role for an extended period of time.





Figure 4-1 - Brick of Henutmehyt (EA 41544) showing where the w<sup>3</sup> was pressed into the clay brick

The excerpt from spell 151 is written in first person and, as the bricks from Tutankhamun and Henutmehyt illustrate, it is also oriented in the direction of the w<sup>3</sup> as if the object would look down onto the surface of the brick to which it was attached and recite the protective spell (Figure 4-2). This indicates that the w<sup>3</sup> was an active agent, the one who pronounced the invocation on the brick and served to protect the tomb through its light.

*jnk jh šꜥj r dbꜣ jmnt ḥsfꜥ m tkꜣw smyt... jw.j m sꜣ wsjr*

*I oppose/prevent the sand from blocking the secret place (the tomb) as a tkꜣ of the necropolis... I am the protection of Osiris N.*



Figure 4-2 - Spell inscribed onto the surface of the torch brick of Henutmehyt (EA 41544) viewed from the perspective of the *w*<sup>3</sup>



## 2. *h* / *h*<sup>c</sup>*t*

A thorough discussion of the word *h*<sup>c</sup>*t* (*Wb III*, 39.18) is somewhat problematic as there is only one attestation of this term in the entire literary corpus. It is inscribed on the northern half of the east wall of the Hypostyle Hall at Karnak within the context of Seti I extinguishing the daily *tk*<sup>3</sup> (discussed below in Section 7) before the cult statue of Amun as part of the reversion of offerings.

As discussed by Nelson (1949: 325), the insertion of the line:







*r*<sup>3</sup> *n* *sht* *h*<sup>c</sup>*t*

*Spell for weaving/forming a h*<sup>c</sup>*t*<sup>30</sup>

<sup>30</sup> The determinative for *h*<sup>c</sup>*t* in this text may be a variant of V28, listed as V84 or V84a. I have not found a font to render either V84 or V84a however, so have used a close approximation with V28.

into the inscription seems to have been a careless error on the part of the scribe as it does not fit in with the rest of the text of the scene. Nevertheless, Nelson goes on to explain that this may be part of a rubric for a lost preparatory component of the presentation and subsequent extinguishing of the daily *tk3* offering. This seems plausible as the construction of *tk3* from various types of linen and oil is well attested, and the *tk3* would have needed to be assembled before presentation before the god.

## 2.1 Interpretation

The *Wörterbuch*, Gardiner (1927: 525) and Nelson suggest that *h<sup>c</sup>t* is the nominalized form of the hieroglyph  “*h*” which represents a twisted linen wick. Further corroborated by the determinative in the writing of *h<sup>c</sup>t*, which appears to be a miniaturized version of  V28.<sup>31</sup> Identifying *h<sup>c</sup>t* as a wick seems logical, but it is also possible that the hieroglyph  could in and of itself stand for the word “wick”. As an example, the inventory lists from the sun temple of Neferirkara lists “*h*” within its accounting of linen (p. 117, fragment 49D). Posener-Krieger’s (1976: 354) proposed translation of “cordelette” seems unnecessarily complicated in this example considering the only hieroglyph given is . It appears more plausible to take the hieroglyph at face value and consider that the scribe is keeping an account of wicks, which certainly would have been used within the temple on a regular basis. Perhaps both *h* and *h<sup>c</sup>t* could be used interchangeably or there may have been a development in the term from the Old Kingdom to the New Kingdom. Unfortunately, with only one attestation of *h<sup>c</sup>t* it is difficult to draw definitive conclusions.

Interestingly, Meeks (1981: 240) cites an example of *h<sup>c</sup>wt* (78.2592)<sup>32</sup> used in the Coffin Texts in a description of a whip.






*nj jr htmw n h<sup>c</sup>wt=sn m N*

<sup>31</sup> The determinative may also be a variant of V28 listed as V84 or V84a.

<sup>32</sup> Of the six coffins that include this spell, two (B3L and Sq6C) contain *h<sup>c</sup>wt* for “whip lashes”. The others inscribe *dh<sup>c</sup>wt*, which Faulkner(1973: 206, no. 5) suggests derives from *dh<sup>c</sup>* meaning “leather, leather lacings”.

...the destroyers will not use their whip-lashes (*ḥꜥwt*) against N...; Coffin Texts, chapter 273 (De Buck 1951: Plate 12; Faulkner 1973: 206)

Remains of an ancient Egyptian whip were found in the tomb of Thutmoses IV (Nr. 46116) including five fragments of the end of a whip and a lash of red leather (Carter & Newberry 1904). Similarly, fragments of leather and a wooden whip handle from the tomb of Tutankhamun suggest that Egyptian whips were composed of braided thongs of leather attached to a handle. This is further supported by the use of  F27, suggesting the use of animal hide or leather, as a determinative in the writing of *ḥꜥwt* in the Coffin Texts. Since *ḥꜥt* or *ḥꜥwt* was a term applied to the thong(s) of a whip, perhaps *ḥꜥt* is more accurately associated with thin, twisted or braided pieces of material that resemble the hieroglyph .<sup>33</sup> In this way, the word *ḥꜥt/ḥꜥwt* may be more descriptive of an object's appearance as opposed to serving as an abstract term for the object itself. Since a twisted piece of material could be labeled as a string, rope, whip, wick, etc., a translation of *ḥꜥt* is very much dependent on context. However, the very use of the hieroglyph , which first appears on jar labels from the 1<sup>st</sup> Dynasty tombs at Abydos, including the ebony label of Den (EA32650), suggests that twisted pieces of material existed as distinctive objects and were common enough to be codified into the Egyptian language. Presumably then the word *ḥꜥt* existed quite early on in spoken Egyptian, even if it only survives in one text with the meaning of "wick".



### 3. *ḥꜥwt*

The earliest attestations of *ḥꜥwt* (*Wb III*, 213.23) are inscribed in the Chronicles of Prince Osorkon on the interior wall of the Bubastite Gate at the temple of Amun in Karnak (Oriental Institute Epigraphic Survey 1954: plates 18-22; Caminos 1958). In the earlier portion of the Chronicles, Osorkon provides an account of offerings given to the god, Amun along with his consort, Mut and their son, Khonsu. Included in the myriad benefactions are two *ḥꜥwt*:


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<sup>33</sup> This is also supported in Faulkner's translation of spell 273 (Faulkner 1973).



*hdwyt 2t jm w' nb mh 3*

...two *hdwyt* each one 3 cubits [in height] ; (Caminos 1958: 126; Oriental Institute Epigraphic Survey 1954: plate 22, line 31)

The determinative used for *hdwyt*,  Q7, implies that it is an implement related to fire. Additionally, it appears these *hdwyt* were made of gold, specifically “fine gold of *hnty-hn-nfr* (Caminos 1958: 126, 130–31)” as the weight of the two *hdwyt* and other gold offerings, which are no longer readable, amounts to 150 deben.

Other mentions of *hdwyt* include those found in the 19<sup>th</sup> Dynasty Leiden Magical Papyrus from Thebes (Massart 1954: 14):



*k3 'hmy=k mj 'hmw hdwyt n n3 nty hr hr mt*

*You will be extinguished just as the hdwyt of those who are dead are extinguished ; pLeiden 343, 5, 9-10 (Massart 1954)*

Also, the stela of Taharqa from years 2-8 of his reign located in the temple of Kawa (Macadam 1949), includes 3 *hdwy(t)* in a list of provisions given to the temple. Similarly, in years 8-10 of Taharqa’s reign, he records the gifts of 5 *hdww* of bronze in the same temple (Macadam 1949).

### 3.1 Interpretation

Given the writing of the word, it may be that *hdwyt* derives from the word *hd* with a meaning equivalent to “brightening thing” or, more generally, “an artificial light”. The inscriptions from Karnak and Kawa imply that *hdwyt* were items of temple equipment. However, given the limited evidence, it is possible that *hdwyt* were used in other settings. Judging from the height of the objects listed on the Bubastite Gate, approximately 157–158 cm, they were probably metal lampstands and accompanying bowls, which were placed in the sanctuaries of the gods to provide illumination. Although the inscriptions referencing *hdwyt* date from the 22<sup>nd</sup> Dynasty onwards, the context of the texts suggest that *hdwyt* was a Third Intermediate Period/ Late Period term related to much

older religious practices. Offering lighting devices as provisions to a god in a temple, for example, dates back at least to the 12<sup>th</sup> Dynasty. As will be discussed in Section 6 below, Contracts 5 and 7 from the 12<sup>th</sup> Dynasty tomb of Hepdjefa in Asyut suggest that private individuals would ensure that lighting devices were offered to gods for certain calendrical festivals, including New Year's eve, New Year's day and the *wag*-festival (Reisner 1918). Additionally, as I outline in Section 7.1 of this chapter, the provisioning of lighting devices by kings is explicitly stated in portions of the Abusir papyri (Posener-Kriéger 1976: plate 47, fragment B), as well as an endowment inscription of Thutmose III for the temple of Ptah at Karnak (*Urk. IV*, 772, 6). The inscription on the Bubastite Gate is the first instance that I am aware of in which the lighting device offered by an individual in a temple is referred to as a *ḥdwy*. This may be because a *ḥdwy* was a new type of lighting device or it may be that this is the first time that this term is written down. In either instance, the textual record suggests that this is the use of a later term within the context of an offering practice that dates back to at least the 5<sup>th</sup> Dynasty.



#### 4. *ḥbs* / *ḥ(3)b(w)s(3)* <sup>34</sup>

Based on the extant literary evidence, the word *ḥbs* (*Wb III*, 230.3) is the only term which seems to primarily describe a lighting device used in a secular context. The use of *ḥbs* first occurs in the 19<sup>th</sup> Dynasty and the majority of attestations are from this period. A few references to *ḥbs* are also found in the 20<sup>th</sup> and 26<sup>th</sup> Dynasties, and the word survives today in Coptic as “lamp”, **ⲚⲬⲐⲐⲥ**/**ⲚⲬⲐⲐⲐⲥ**. The term is restricted to Upper Egyptian texts and is most frequently found in records from Deir el-Medina as the light source used in the construction of the royal tombs in the Valley of the Kings (Černý 1973).<sup>35</sup> The *ḥbs* were made by the workmen at Deir el-Medina out of

<sup>34</sup> Although the group writing used in the first iteration, *ḥ3bws3* suggests that this may be a Semitic loan word, there is no evidence that this is the case. There is no record of *ḥ3bws3*, for example, in Hoch (1994). Gee (2007: 811) has suggested that *ḥ3bws3* may reflect a combining of the words *ḥ3w* (bowl) and *bsw* (flames) with a meaning equivalent to “lamp”. This is a possibility, but one of which I am not thoroughly convinced.

<sup>35</sup> In order to avoid redundancy I will not discuss the accounts of *ḥbs* and fuel consumption in great detail as they are the primary focus of Černý's 1973 article.

old clothes or yarn/cord and a fuel source (Černý 1973: 53–54). As in oToronto A 11, the scribe Inhertchau requests provisions for making *hbs*, including:

*ʿnd w3d r st3 hbs jss r hbs*

...fresh fat for lighting and old clothes for *hbs* ; letter from Inheretkhau to Userkai, oToronto A 11, line 11 (Kitchen 2000: 30, 43:1–44:4)

Once the raw materials reached the site, the fabric was twisted into a wick and then coated in illuminant, a process referred to as *sgnn* (Černý 1973: 45). This term may derive from *gnn* “fat”, which would suggest that a literal translation of *sgnn* as a verb is “to cause (to be coated) in fat”. As I discussed on p. 86, *sgnn* is also a substance, which I suggest is rendered animal fat or tallow. The material *sgnn* is mentioned as one of the illuminants used for the *hbs* along with *ʿd* and *nhh* (oCairo JE 72453). Interestingly, the fuel used for the *hbs* was not only received and guarded by the leaders of the site, but coating the *hbs* with this fuel was done *r h3ty n3* “before the leaders” (Gardiner 1948: 64, 1).

Many accounts of the number of *hbs* used per day in the tombs survive and are commonly referred to as “wick accounts”. They very diligently record the number of *hbs* used by the two gangs of workers on each side of the tomb for both the morning and afternoon sessions.

*wnmj hbs 8 smhj hbs 8 dmd 16*

Right side: 8 *hbs*; Left side: 8 *hbs*; Total: 16 ; pTurin 76, 4 and 5 (Pleyte & Rossi 1876: 112, plate LXXVI)

One record relating to *hbs* also suggests that copper was associated with these implements:

*jm ini.tw n=n hmt n n3 hbs*

Send us copper for the *hbs* ; EA 65933 (oNash, edge) (Černý & Gardiner 1957: plate CXV)





I (EA 10247, 4) (Fischer-Elfert 1983). One interesting anomalous phrase in the Turin ostraca is a metaphor in which Hori proclaims of Amenemope:



*ḥ3tj n d3mw=f nn twt n=f ... ḥbs pw ḥr w3t nt ḥmy*

*The commander of his generation (his troops?), there is no one like him...He is a ḥbs on the path of ignorance; oTurin CGT 57539 (Lopez 1984: 36–37)*

#### 4.1 Interpretation

Although none of the textual evidence for *ḥbs* elucidates the process for making this device, I agree with Černý's (1973: 45) hypothesis that to prepare the *ḥbs* the "old clothes" were twisted into wicks, coated in illuminant and then stored in a magazine until needed. As I stated in Chapter 2, these were the primary components of a light source—a wick and fuel. It was then up to the Egyptians to determine in which type of lighting device they would be utilized. In the instance of the tomb robbery account in pLeopold, the text states that *ḥbs* were portable, which suggests that, in this instance, *ḥbs* were attached to reeds or sticks so that they could be carried in the hands of the robbers. When lighting was required in the tombs during construction work, the *ḥbs* would be brought from the magazine and presumably placed into a container before being lit so as to keep the hands of the workers free. Perhaps the vessel would be filled with sand so that the *ḥbs* could be placed upright, or they may have been placed along the sides of a bowl. The numerous *ḥbs* accounts are therefore keeping track of not just wicks but wicks soaked or coated in fuel. In this way, the foreman was not only accounting for the amount of textile and illuminant used by the workmen, but was also keeping track of the most expensive parts of the lighting device, particularly the fat or oil. It is interesting to note that the illuminant soaked wicks, the *ḥbs*, were made in advance and under supervision of the village leaders. Perhaps this was a way of ensuring that valuable fat or oil would not surreptitiously go missing. While old clothes may not have been a particularly prized commodity by the villagers, fat or oil certainly would have been, as I argued



pLansing it is implied that a *hbs* is associated with weakness, suggesting that the light from a *hbs* can easily blow out (Gardiner 1937: 106). Perhaps the author of the Turin ostrakon purposefully chose to record the word *hbs* in place of *tk3* as a clever way of highlighting Amenemope's ineptitude. As will be discussed in Section 7, a *tk3* is a strong, potent, all consuming flame used in rituals and associated with the sacred fire of serpents and the sun god. The term is also used in texts discussing the king as a *tk3* before his troops in battle. Comparing the king to a *tk3* is an entirely appropriate metaphor in war inscriptions, and suggests that the king would burn up all those in his path. Of course a leader who could accomplish victory in this way would be an inspiration to his troops and guide them successfully through combat. In contrast, a *hbs* is an artificial light source employed in construction work and, as a result, may carry connotations of being common and/or not divine. The passage from pLansing also alludes to *hbs* as a light source that could be extinguished, and is linked with someone who is weak and lacking a metaphorical backbone. The latter association is particularly interesting because, as I will discuss in Chapter Five, a *tk3* typically takes the form of a wick-on-stick type device, which can be carried by an offering bearer or held upright in a shrine or rack. A *hbs* on the other hand is a wick coated in illuminant (p. 102), lacking any rigidity or means of supporting itself. In comparing Amenemope to a *hbs*, the scribe who wrote the Turin ostrakon may have been drawing a comparison between the weak, common characteristics of this lighting device with the ineffectual leadership of Amenemope.



### 5. *st3t*

Like the terms *h<sup>c</sup>t* (p. 97), *hdwyt* (p. 99) and *hbs* (p. 101), the term *st3t* (*Wb IV*, 333.14-16) is only found in Upper Egyptian contexts, specifically in relation to ritual equipment. The word may be related to *st3* another term used sparingly from the Middle Kingdom until the Roman period in reference to fire or flame (*Wb IV*, 333.12-13), as well as making heat or warmth with fire (*Wb IV*, 333.7) and kindling a lighting device (*Wb IV*, 333.8) (see *w<sup>c</sup>3* above and *tk3* below). The earliest reference to *st3t* dates to the Eleventh Dynasty and is inscribed on the limestone stela of Tjetji (EA614), overseer of the seal bearers during the reigns of Intef II and Intef III (Blackman 1931). The upper portion of the stela contains a biography of Tjetji inscribed in 14 horizontal lines. The lower portion contains an

offering formula along the right side of the stela. To the left of the offering formula is a depiction of a standing figure of Tjetji, dipping his fingers into a jar, accompanied by two attendants, Magegi and Tjeru, before a large pile of offerings (Blackman 1931: plate VIII). A row of eight jars of various oils are placed at the top of the provisions with the caption:



*wn mrḥt ḥft-ḥr n k3 n jm3ḥw ttj*

*Opening the oils in front of the ka of the revered one, Tjetji*

Near the bottom of the stack of gifts, above the offering table, is a small, kneeling male figure, identified as Ankhi, who grasps a round-bottomed vessel on a stand in his left hand. He lifts the vessel in presentation before an offering table bearing a duck. A flame extends out of the center of the bowl and above it the right hand of Ankhi holds a small pellet, presumably of incense (Figure 4-3). A single line of hieroglyphic text beneath Ankhi captions the scene as:



*rdjt ʿ r st3t wrt n k3 n jm3ḥw ttj*

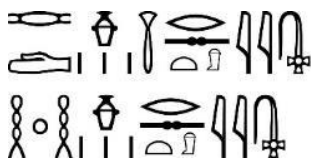
*Putting the hand to the great st3t for the ka of the revered one, Tjetji*



Figure 4-3 - Lower portion of the stela of Tjetji, EA614, with detail of Ankhi holding *st3t*; British Museum, London  
© Trustees of the British Museum

Blackman (1931: 61, no. 9) rightly points out that this caption labels the object in Ankhi's hand as a *st3t* and that the spelling correlates to *Wb IV*, 333.14-16, "lamp", which is said to not appear until Late Egyptian. Presumably due to the presence of the pellet in Ankhi's hand, Blackman theorizes that the *st3t* could serve both for fumigation and illumination.

All other references to *st3t* date to the New Kingdom onward. The first comes from the reign of Ramesses III during which time the festival calendar was inscribed on the exterior south wall at Medinet Habu. In List 6, *st3t* is mentioned in relation to offerings for the daily temple service (Oriental Institute Epigraphic Survey 1934):



*ḥd wd3 r st3t / nhḥ r st3t*

*Fresh fat for the st3t/nhḥ-oil for the st3t* ; List of offerings for the daily temple service (Oriental Institute Epigraphic Survey 1934: plate 146, lines 288, 290)


Similarly, Osorkon mentions the provisioning of three *st3t* within the temple of Karnak. In the 11<sup>th</sup> year of Takelot II (early 9<sup>th</sup> century BC), Osorkon issues a decree for the institution of a temple *st3t* and fuel for Amun:



*jrt wdt r hnw twy st3t dgm*

*Issuing a decree to provide a castor oil st3t; (Caminos 1958: 61–62; Oriental Institute Epigraphic Survey 1954: plate 19, line 46)*

Later in his life, in the inscription dating from year 12 of Takelot II to year 29 of Sheshonq III,

Osorkon also provides a lotus-shaped *st3t*  (Caminos 1958: 170; Oriental Institute Epigraphic Survey 1954: plate 22, line 19, 31) and a sesame oil *st3t* for Amun (Caminos 1958; Oriental Institute Epigraphic Survey 1954). Another item mentioned in connection with the


provisioning of the lotus *st3t* is *h3w*  (Wb III, 221.8-11) (Caminos 1958: 144-145):



*n3w h3w n t3 st3t s3n*

*The h3w for the lotus st3t; (Oriental Institute Epigraphic Survey 1954: plate 22, line 19)*

Other references to *h3w*, include the tomb of Petosiris in which two workers are seen *sh3m h3w*

“pounding *h3w*” (Lefebvre 1923). This substance seems to relate to *h3w*  (Wb III, 221.1-7)

which is first attested in the 18<sup>th</sup> Dynasty and is commonly translated as “plants” or “flowers”. It may also relate to *h3* (Wb III, 218.18), the word for “lotus leaf”. The term *h3w* also appears in Greco-Roman texts at Dendera and Philae temples, as well as in the ritual of embalming recorded in pBoulaq No. 3, as a perfumed substance used in the preparation of the head of the deceased (Sauneron 1952: XVII–XVIII, 21, 4). It therefore seems likely that *h3w* was an aromatic substance produced by processing, or perhaps “pounding”, sweet-smelling flowers or other fragrant plants. The correlation between *h3w* and a pleasing scent continues into later phases of Egyptian as it survives in Coptic as “perfume, incense” (Crum 1939: 601 a). The mention of *h3w* in the Chronicles

of Prince Osorkon, however, suggest that this aromatic substance could also be added to a device requiring a fuel source, in this instance a *st3t sšn*.

### 5.1 Interpretation

It is evident from these inscriptions that a *st3t* was a piece of ritual equipment, employed in both temples and tombs. These implements could be formed into different shapes, such as the lotus *st3t*, and therefore could be made out of ceramic, stone or metal. Given its associations to *st3*, this object may have simply been understood as an offering vessel that would hold flame, or a burner. Interestingly, most of the inscriptions specify the illuminant that should be used in the *st3t*. The exception to this is the inscription on the stela of Tjetji, although it may be that one of the many oils included in the offering list and opened in front of Tjetji could have served as a fuel source. This suggests that the fat or oil used for burning, not a specific vessel shape, is prioritized. The correlation of *st3t* with incense, which is suggested in Tjetji's stela, or with *h3w* as stated in the Osorkon inscription, begs the question of whether a *st3t* was intended to provide illumination or perfumed smoke. By virtue of the flame that the *st3t* contained, it would serve as a light source. However, the mention of *h3w* in association with a *st3t* suggests that this implement could also serve as a censer. From the isolated reference on the Bubastite Gate, it is unclear how exactly the *h3w* was used with the *st3t*. Perhaps the *h3w* was added in a dried or pellet form to the fuel within the lotus *st3t* or the *h3w* may have been mixed into an oil or fat, which would serve as an illuminant. In either instance the purpose behind using the *h3w* is presumably to add a pleasant aroma to the illuminant, perhaps to suggest the sweet smell of the lotus blossom by adding fragrance into a lotus-shaped *st3t*.

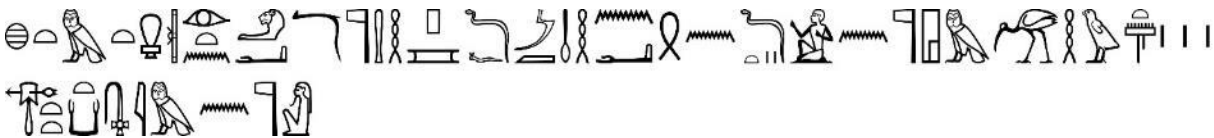
Unfortunately, it is not possible to extrapolate from the evidence whether the production of light was a primary or secondary function of a *st3t*. It is possible that, similar to modern aromatherapy or scented candles, the *st3t* could have served two concomitant functions by providing a light source within a temple or tomb chapel, but also filling the space it was in with a perfumed scent. The presence of resin coated wicks at Amarna suggests that a lamp wick could be utilized to provide scented smoke and light at the same time (Serpico 1983: 183–86). The association with flame and incense or perfumed substances, however, stretches back to the Old Kingdom. It is possible that *st3t* was a term that developed in the Egyptian language, at least by the 11<sup>th</sup> Dynasty, to describe a vessel which contained a flame, as well as an aromatic ingredient.



## 6. *gmḥt*

Similar to the term *ḥᶜt*, the word *gmḥt* (*Wb V*, 171.14) is found only in one text, the Middle Kingdom tomb contracts of Hepdjefa I (tomb 1) in Asyut (Griffith 1889; Reisner 1918; Kahl 2007; Kahl 2016). Thankfully, Hepdjefa's contracts are very detailed and provide valuable insight as to where the *gmḥt* were obtained and how they were used. From the reading of the text, it can be determined that: 1. The *gmḥt* were obtained from within the temple precinct from the *šndty* or the great *wᶜb*-priest; 2. The *gmḥt* needed to be portable; and, 3. The *gmḥt* were used to light the *tk3* (discussed in Section 7) within the temples of Wepwawet and Anubis, as well as the tomb chapel of Hepdjefa.

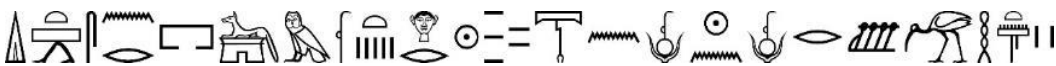
The first mention of *gmḥt* is in Contract 5 where it is stipulated that three *gmḥt* are to be provided to the *ka*-priest of Hepdjefa from the *šndty* of the temple of Wepwawet.<sup>39</sup> A similar arrangement is stipulated in Contract 7 with the great *wᶜb*-priest in the temple of Anubis. In Contracts 5 and 7 it is stated that one *gmḥt* is given to Hepdjefa's *ka*-priest for each of three festival days: New Year's Eve, New Year's Day, and the day of the *wag*-festival.



*ḥtmt jrt.n.ḥ3ty-ᶜ imy-r ḥpdf m3ᶜ-ḥrw ḥnᶜ šndty n ḥwt-ntr m gmḥt 3 stt tk3 jm n ntr*

*A contract which the vizier, overseer Hepdjefa made with the keeper of the wardrobe of the temple for 3 gmḥt used to kindle the tk3 for the god, [Wepwawet]; Contract 5, tomb of Hepdjefa (Griffith 1889: plate 7, line 296)*

The last mention of *gmḥt* is in Contract 9 in which Hepdjefa instructs the overseer of the cemetery workmen and guards:



*djt šm=sn r pr jnpw m rnpt 5 ḥr 5 grḥ n wp-rnpt ḥrw n wp-rnpt r šsp gmḥt 2*

<sup>39</sup> Excerpts from the tomb contracts are presented here vertically to conserve space. They are inscribed in columns in the tomb of Hepdjefa.



Causing them to go to the temple of Anubis on the 5<sup>th</sup> day of the year, New Year's eve, and on New Year's day in order to receive 2 *gmht* ; Contract 9, tomb of Hepdjefa (Griffith 1889: plate 8, line 312)

After receiving the *gmht*, the cemetery overseer and guards are to process with them in "glorification" (*s3ht*) to the tomb of Hepdjefa where they present one to the *ka*-priest of Hepdjefa:






*r s3ht=sn mj s3ht=sn s'ht=sn*

...for their glorification [of Hepdjefa] as they glorify their blessed dead ; Contract 9, tomb of Hepdjefa (Griffith 1889: plate 8, line 313)

The text goes on to state that the *gmht* should be given to Hepdjefa's *ka* priest after it has been used for his glorification.

### 6.1 Interpretation

Since in the temple of Wepwawet, the *gmht* were kept and distributed by the *šndty* (*Wb IV*, 522.8) or the "keeper of the wardrobe", it seems likely that they were composed, at least partially, of high quality fabric. The *šndty* would have been in charge of the material used to clothe the statue of the god on a daily basis, as well as any other fine cloth needed for important religious festivals. It would seem appropriate then that a *gmht*, which was used during the celebrations of New Year and the *wag*-festival, should be composed of a well-made textile. Additionally, the determinative used in the writing of *gmht*  is S28 , which represents a strip of cloth. As shown in

Chapter 2, twisted lengths of cloth or flax, resembling the hieroglyph , served as wicks for a number of artificial lighting devices (Kemp & Vogelsang-Eastwood 2001). It should be noted, however, that without attaching the wick to a reed or stick, or placing it in a bowl, the linen wick itself would not be a very portable object while alight.

The need for the *gmht* to be carried by hand is described in Contract 9, when the overseer of the cemetery and the necropolis guards must process with the *gmht* from the valley temple of Anubis to the tomb of Hepdjefa on New Year's Eve and New Year's Day. Since the contracts explicitly state that the New Year's Eve procession would take place during the *grh* or the night, it would seem reasonable that the *gmht* would be lit in order to allow the cemetery guards to navigate their

way through the dark necropolis. Additionally, the distance between the temple and the tomb of Hepdjefa is approximately 1.5km, the last 100m of which would involve trekking up the mountainside (Kahl 2007). This would require the *gmḥt* to be sturdy enough to be transported in the priests' hands with enough fuel to provide illumination for the entire journey. Upon reaching the tomb, the workmen would use the *gmḥt* to light a *tk3* in commemoration of Hepdjefa, before giving the *gmḥt* to the ka priest. Similarly, *gmḥt* are used to light a *tk3* for the gods Anubis and Wepwawet in their respective temples on New Year's Eve, New Year's Day and the *wag*-festival. Although the modern translations of *gmḥt* and *tk3* are intermingled, the fact that the *gmḥt* were used to light a *tk3*, would suggest that the two objects are in fact distinct from each other.

The physical parameters presented in the tomb contracts of Hepdjefa for *gmḥt*—made of high quality linen and portable in order to be carried by hand in procession—suggests that they would fit archaeologically either into the wick-on-stick or wick-in-stick type. There are no depictions of these devices within Hepdjefa's tomb, nor are there any illustrations of artificial lighting devices labeled as *gmḥt* with which to definitively confirm what they looked like. It seems unlikely, however, that a *gmḥt* would be a cumbersome lighting implement utilizing a large amount of linen as it would prove particularly unwieldy for priests to carry in a procession up a hillside at night. The fact that *gmḥt* were used to illuminate a *tk3* upon reaching a tomb or within a temple also suggests that *gmḥt* were smaller, more portable lighting implements used to light a larger, stationary lighting device. The shrine from Dahshur, which is contemporaneous with the tomb contracts, and depictions of similar shrines in New Kingdom Theban tombs seem to support this claim. Seshenu's shrine bears a large, central hole surrounded on three sides by nine small holes (Figure 2-56). As I stated on p. 65, Fakhry theorized that the *tk3* referenced in the shrine's text would have been inserted into the large, central hole. I would agree with this claim and suggest that the nine smaller holes were intended to hold small, portable lighting implements utilized to ignite the larger *tk3*, which may have been referred to as *gmḥt*. New Kingdom tomb paintings of similar shrines, such as in the tomb of Tjay and Userhat (Figure 4-4), clearly show that the objects surrounding the *tk3* are made of a twisted material that very closely resembles a wick. Additionally, where the color is preserved, the bases, if not the entirety of the object, is painted white and implies that they were made of linen or another white textile. This would meet the first

stipulation from the tomb contracts that the *gmḥt* would be made of fine fabric under the jurisdiction of the *šndty*.

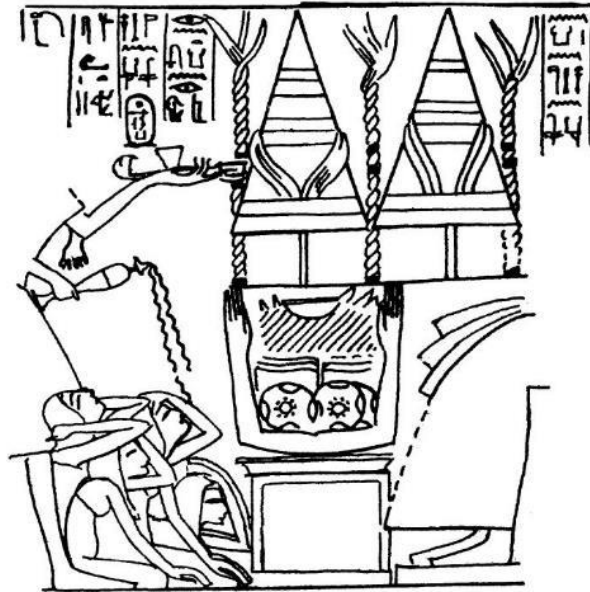


Figure 4-4 - Offering scene from the tomb of Userhat (TT51) depicting two *tk3* (identified by the caption to the left) surrounded by three items (possibly *gmḥt*) placed on a shrine (Davies 1924: plate V, fig. 1)

As for the necessity for the *gmḥt* to be portable, the tomb scenes all depict the objects surrounding the larger *tk3* as standing upright on a shrine or table. In some instances, such as in the tomb of Userhat, red bands are shown either intertwined with the white fabric or in bands around the center of the wick indicating that they are attaching the wick to a stick or reed to keep it upright. Interestingly, this depiction very closely matches the lighting implement found in Tutankhamun's tomb. This piece is made of a twisted linen wick attached with an additional piece of linen to a reed, which allows it to stand upright in its gilded holder. As the personified *ankh* demonstrates, it could have been carried in the hand and easily transported from one location (such as a temple) to another (a tomb).

Returning to the ritual described in the tomb contracts of Hepdjefa, it is easy then to imagine the priests obtaining the *gmḥt* from the *šndty* and processing from the valley temple, up the hillside and through the necropolis to the tomb chapel of Hepdjefa where perhaps a shrine, resembling the one found in Dahshur, would be waiting. The priests would enter the chapel, place the large *tk3* into the central niche of the shrine, light it with the *gmḥt*, and then place the *gmḥt* in the small circular slots surrounding the *tk3* (Figure 4-5).

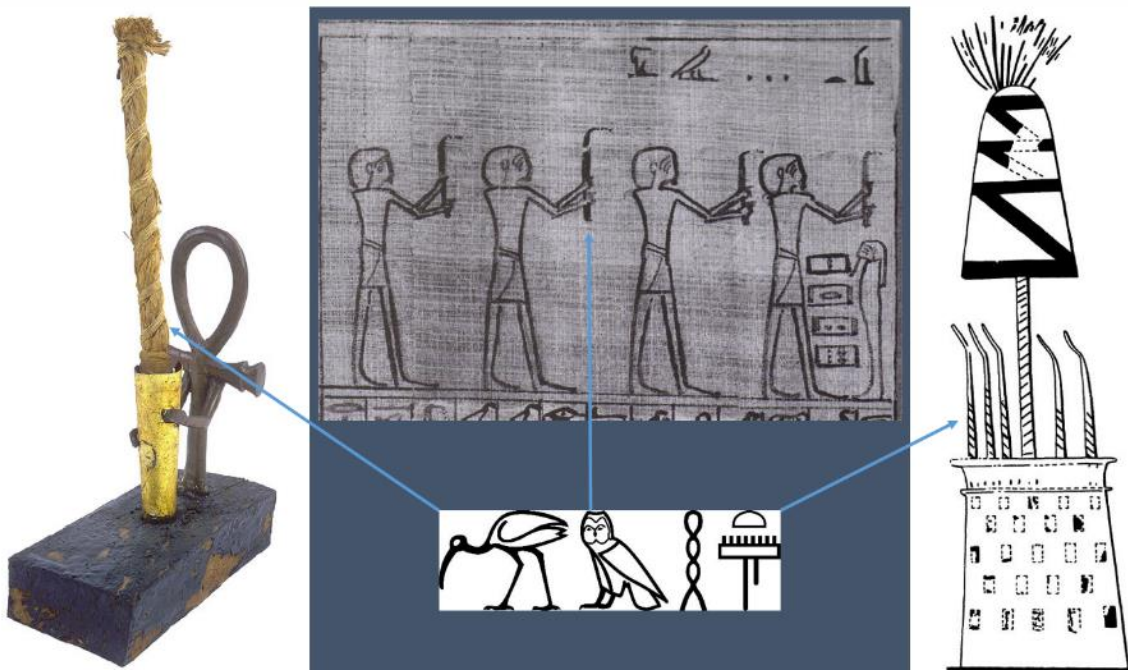





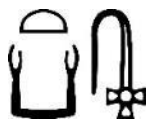
Figure 4-5 - Possible interpretation of what a *gmht* looked like and how they were used based on evidence from Hepdjefa's tomb contracts (Figure 2-54, Figure 5-20, Figure 2-57)

It is important to note that there are no illustrations or physical remains labeled as *gmht*. As a result, the evidence presented here for possible parallels all derives from a New Kingdom context. Although the word *gmht* is only mentioned in Hepdjefa's contracts, it seems unlikely that the use of this object vanished altogether from the ritual repertoire after the Middle Kingdom. It may be that texts containing the word *gmht* have simply not survived in the archaeological record, and/or that the word *gmht* is exclusive to a regional dialect from Middle Egypt, perhaps near Asyut. It is also possible that *gmht* was a term used only during the Middle Kingdom. It is likely that while the word *gmht* fell out of use in the Egyptian vernacular, its physical form persisted as offerings of light to gods and the deceased continued (Chapter Five) after the Middle Kingdom. Therefore, the New Kingdom iconography and lighting device from Tutankhamun's tomb that I have presented in Figure 4-5 reflect what I think a *gmht* looked like, even if they were called by a different name at the time of their creation.

Although not referenced in any of Hepdjefa's contracts, I would propose that a potential reason for using *gmht* as a ritual offering is alluded to in the root of the word itself, *gmh*, a verb meaning "to see, or behold" (Wb V, 170.8-171.11). From a practical standpoint, the *gmht* or "seeing thing" would allow the priests to navigate their way through the necropolis, in the dark, up to the tomb chapel of Hepdjefa. By providing light to the deceased Hepdjefa, his *ka*-priest may have ensured

that the tomb owner would be able to see in the afterlife, in addition to witnessing the festivities for the New Year. An added nuance to the meaning of *gmḥ* is “to spy” or “to catch sight of” someone. Perhaps in addition to their use as a source of illumination, the *gmḥt* also served as a tool for keeping a watchful eye on the priests to ensure that Hepdjefa’s cult was continuing in the manner prescribed by his tomb contracts.

Interestingly, a different *gmḥt*  appears in the New Kingdom (*Wb V*, 171.15) and translates as “braided lock of hair” or “curl/piece of hair”. This version of *gmḥt* is spelled exactly the same as the Middle Kingdom *gmḥt* except for the determinative, which changes from , a piece of cloth, to , a piece of hair. This suggests that *gmḥt* may secondarily relate to objects that were twisted or braided. As with the term *ḥṯ*, *gmḥt* could therefore be a descriptive word related to an object’s appearance, and in this case the haptic sensation of twisting, rather than an abstract term.



### 7. *tk3/tk3w*

Of all the terms relating to artificial light, *tk3* is by far the most frequently attested and the most complex in meaning. Use of *tk3* chronologically spans from the 5<sup>th</sup> Dynasty until today where it survives in Coptic as **ṬṬK/ṬṬK** meaning “to spark” or “to kindle”. Geographically the word is attested in texts found across the length and breadth of Egypt. From the texts it is clear that *tk3* functions as both a noun and a verb, although it is much more commonly used as a noun. As an implement used for artificial lighting, it is only ever mentioned in temple and funerary contexts, never in a domestic context. Translations in scholarly literature most commonly refer to *tk3* as a torch, although candle, lamp, taper and flame are also used.

Unlike all the other terms discussed in this chapter, while a *tk3* was a physical lighting implement used in tombs and temples, it also was a mythical, potent flame employed by gods and pharaohs for various purposes. Previous discussions have similarly divided the use of *tk3* into two categories: an object given as an offering to a deity or to a deceased individual, or a symbol of

protection for men and gods alike. An examination of the texts where *tk3* appears, however, suggests that the meaning of this lighting device was far more nuanced. In the following discussion, I will provide a thematic examination of *tk3* as an offering to both the gods and the deceased, an all-consuming fire meant to destroy enemies, and a physical manifestation of the light of Ra/Amun or the Aten.

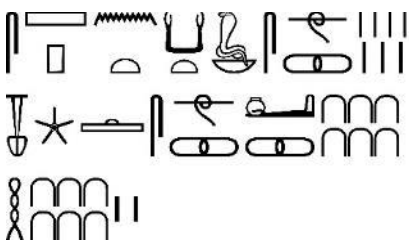
### 7.1 Offering a *tk3*

Before presenting the offering of a *tk3* to a god or a deceased individual, it had to be assembled. No text in the literary corpus gives explicit instructions as to how this was done. However, a few records indicate that a *tk3* was at least partially constructed of linen and an illuminant, typically tallow. The most detailed accounts of the types of linen used to make *tk3* are inscribed within the Abusir papyri. These texts contain several accounts of linen stored within the magazine for the sun temple of Neferirkare. Within these records, or “linen lists”, there are four mentions of *tk3* which indicate that *tk3* could be made of various types of linen including *šsp* or bright linen, *ssf*-quality linen and offering-quality (*hnk*) linen:



*tk3w hwt-ntr m 3bd pn 3*

*temple tk3 used this month: 3 ; pCairo 58063, frame 5 (Posener-Kriéger 1976: plate XLVII, fragment B)*



*šsp n tk3w[t] st3 7*

*dmd-zm3 3bd st3 hnk 60*

*h 62*

*šsp (bright white) linen for tk3w st3: 7 units / Monthly grand total of offering-quality st3: 60 units/ Wicks: 62; pLouvre E 25416a (Posener-Kriéger 1976: plate XLIX, XLIXA, fragment D)*



tk3w hnk

*offering-quality tk3w*



tk3w ssf

*ssf-quality tk3w* ; pCairo 58063 (Posener-Kriéger 1976: plate XLIX, XLIXA, fragment B and C)

The Abusir papyri are the earliest and most detailed sources about the types of linen used for the construction of tk3. From the Middle Kingdom onwards, the most typical formula for making a tk3 simply states:



*jw htp tk3 pn nfr n N. m ʕd m3wt m hbs rht*

*An offering, this beautiful tk3 for N. with fresh fat and clean clothes* ; tomb of Neferhotep (TT6)

As with the hbs used during the construction of the royal tombs, the most common illuminant used for making tk3 is ʕd or ʕd wd3. However, in some instances, such as in the tomb of Amenmehat (TT82) the fat source mdt is listed:



*rʕ n mswt nbt-hwt stt tk3<sup>40</sup> dw mdt*

*[For] the birthday of Nephthys: kindling a tk3 and giving mdt* ; tomb of Amenemhat (TT82) (Davies & Gardiner 1915: plate XXVII)

In contrast to ʕd, which was made from pure, rendered animal fat and would have been white in color, mdt may have been red in color as a result of mixing animal fat with red dye (Haikal 1985:

<sup>40</sup> The determinative seems to be a scribal error exchanging U33 for the more typical Q7.





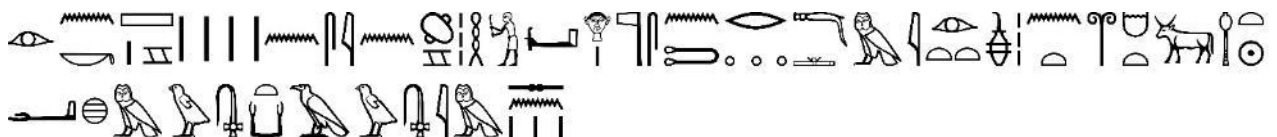
*Recitation over four tk3w of red linen<sup>42</sup>, coated in highest quality Libyan oil,...; pNu (EA 10477), lines 77–78 (D.C. Luft 2009: 280)*

Additionally, all painted depictions of *tk3* utilize the colors red and white (Figure 4-7). Typically, *tk3* are depicted as twisted, white, cylindrical or pyramidal shaped objects, with the twists in the fabric painted in red. Sometimes larger *tk3*, affixed to a pole and placed on top of shrines, are wrapped in strips of, presumably, red linen.



*Figure 4-7 - Anubis presenting red and white twisted lighting devices in the tomb of Nebenmaat (TT219); Deir el-Medina, Luxor*

After the *tk3* was made (*jrt*) and subsequently presented as an offering, it would then be extinguished (*ꜥhm*). This would be accomplished by rubbing it out on the ground, as depicted in the offering scenes of Seti I at Karnak (Nelson 1949b: fig. 31), or by plunging it into a basin of milk as described in *Book of the Dead* spell 137A.



<sup>42</sup> The term *jdmi* (*Wb I*, 153.14-18) is referenced as early as the Pyramid Texts and denotes a high-quality linen for ritual use, which is red in color.

š<sup>c</sup>ršjr n.k š 4 n sjn h<sup>wj</sup> hr sntr mh m jr<sup>tt</sup> nt jdt h<sup>dt</sup> hmw tk<sup>3w</sup> jm= sn

*Make 4 basins of clay beaten with incense and fill [them] with milk of a white cow. Extinguish the tk<sup>3w</sup> in them ; pNu, title lines 3–6 (Luft 2009: 235-36)*

### 7.1.1 – Offerings to the gods

The earliest reference to lighting a *tk<sup>3</sup>* for a god in his temple comes from the Asyut contracts of Hepdejfa. In Contract 2, Hepdejfa discusses provisions which are to be given for him on New Year's day which he describes as when:



*djt pr n nb=f m-h<sup>t</sup> stt tk<sup>3</sup> m hwt-ntr*

*...the house is given to its lord after kindling a tk<sup>3</sup> in the temple ; Contract 2, tomb of Hepdejfa (Griffith 1889: plate 6, line 278)*

Presumably, the lighting of the *tk<sup>3</sup>* played a role in renewing the temple to service of the god (in this case Wepwawet) at the beginning of a new year. In addition Hepdejfa ensures that *tk<sup>3</sup>* will also be lit for him on the occasions of New Year's Eve, New Year's Day and the *wag*-festival with the previously mentioned *gmht* lighting devices. These *tk<sup>3</sup>* are lit before statues of Hepdejfa which were situated within the temple precincts of Wepwawet and Anubis, as well as in his tomb chapel.

In addition to festival occasions, such as New Year, records of the daily offering ritual at Karnak temple suggest that *tk<sup>3</sup>* were offered to the god as part of the "reversion of offerings". These rites were performed after the god had absorbed the ritual calories from his/her daily meal so that the priest could "revert" the food back to the priests and other temple workers to be consumed. In the illustrations of this ritual in the Hypostyle Hall, Seti I is shown offering the *tk<sup>3</sup> r<sup>c</sup> nb*, the "torch of every day" to the cult statue of the god, Amun-Ra.<sup>43</sup> A slightly earlier inscription from the reign of Thutmose III implies that this was quite an essential offering. As recorded in the temple of Ptah at Karnak, the king requires that a *tk<sup>3</sup>* be lit for the god, Ptah every day as part of his endowment of the temple. Apparently, the temple was in such a state of neglect that:

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<sup>43</sup> These offering scenes in Karnak are drawn from the Ritual of Amenophis I recorded in pChester Beatty IX. The spell for the *tk<sup>3</sup> r<sup>c</sup> nb* is found in recto 7, starting at line 5.



*nfr pw m3<sup>c</sup> tk3 im*

*There was not [even] the offering of a tk3 there ; Urk. IV, 772, 6*

It seems from this inscription that the offering of a *tk3* within the temple of a god was the bare minimum for it to serve the deity properly.

#### 7.1.2 – Offerings to the deceased

The most common use of *tk3* is found in offering texts to the deceased. References to the offering of *tk3* first appear in the Old Kingdom, although there is only one instance of use from this time period. There are two references to *tk3* in the pyramid of Pepi I, both from lists of offerings given to the king's cult statue (and by extension the king himself) as part of the Insignia Ritual (Figure 4-8). In both instances the writing of *tk3* uses a determinative that is a simplified representation of a stand supporting a bowl with a flame rising from it.

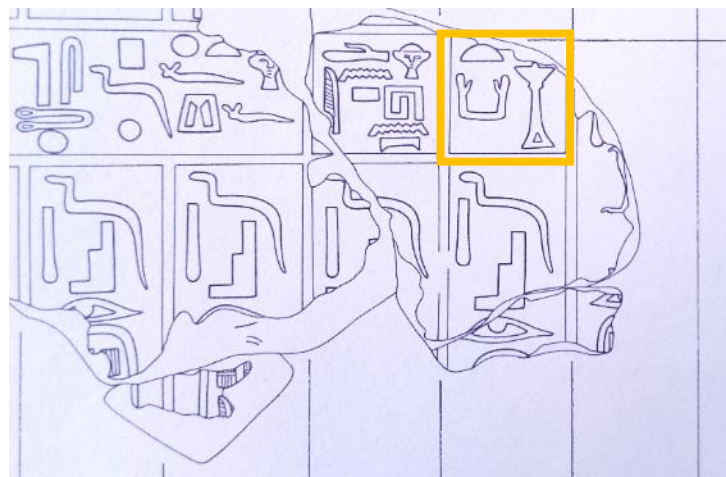




Figure 4-8 - Two rubrics from the north wall, east side of the burial chamber of Pepi; units 98 and 99-100 (Leclant et al. 2001)

Unfortunately, there is little information to gain from these two brief rubrics in Pepi I's pyramid. They do confirm, however, that *tk3* were objects used at the very beginning of recording ancient Egyptian mythology and religious practice.

There are several references to *tk3* in the Middle Kingdom, the majority of which come from locations in Middle Egypt. The first text dates to the reign of Amenemhat III of the 12<sup>th</sup> Dynasty and is inscribed with the collection of texts referred to as the Lahun Papyri (pBerlin 10031A) (Scharff 1924; U. Luft 1992: 63–66). Included amongst the many administrative texts is a letter sent from the priest Neferiu to Horemsaf. The details of the letter indicate that Horemsaf came to the temple of Sobek at Lahun with offerings of cloth and fat. The letter describes that during his visit:



*sti.n =k tk3 n snbnj r w3i sbk hr h3it =k*

*You kindled a tk3 for the deceased, Senebeni so that Sobek will come to praise you; line 6, pBerlin 10031A (U. Luft 1992: 63–66)*

This inscription speaks to the ability of the ancient Egyptians to leave votive light offerings for their deceased loved ones in temples. While this would presumably honor and benefit the deceased, the benefactor would also receive blessings from the god of the temple (in this case Sobek) for their act of piety. This is further corroborated by an inscription on the entrance to the tomb of Ahanakht at El Bersha (Newberry 1895). Although the façade is badly damaged, Ahanakht

includes a mention of *tk3* within his testament that he was pure in action and that he was pleasing to the gods because he offered great quantities of food in the temple.<sup>44</sup>

A graffito from the quarries of Hatnub, which Anthes (1928: plate 22) suggests was written in the early Middle Kingdom, provides evidence that there may have been a day of celebration centered around the *tk3*. The inscription, written by Sobekemhat, states:

*...as a child I was like a str-plant full of 3mt-flowers – the ones put to the nose on the day of lighting tk3 by all the people*

Contracts 8 and 9 in the tomb of Hepdjefa also mention a “day of lighting the *tk3*” that was a holiday of commemorating the dead. Specifically, the *r<sup>c</sup> n stt tk3* was celebrated on New Year’s eve as a contemporaneous fragment from the tomb of Nehy confirms:



*jrt tk3 n tp rnpt n s<sup>c</sup>h hr tp dw*

*Making a tk3 for the New Year for the blessed dead on the mountain ; Berlin 8815<sup>45</sup>, tomb of the vizier, Nehy<sup>46</sup>*

Intriguingly, the *tk3* shrine from Dahshur, which also dates to the 12<sup>th</sup> Dynasty, is inscribed on top with a text that is meant for the *tk3* of New Year’s Eve. The text has direct parallels in the New Kingdom tombs of Tjay and Neferhotep, as well as in the offering scenes of Seti I at Karnak (Haikal 1985). While definitive conclusions are difficult due to minimal textual preservation, this may indicate that this New Year’s Eve ritual started in Lower or Middle Egypt, during the Middle Kingdom, and slowly spread its way south to the capital of Thebes by the New Kingdom. The text is likely the closest reflection of the words that were spoken by the priests during the performance of this rite. The text from the Dahshur shrine is simultaneously addressed to Osiris and the deceased Seshenu for whom the shrine was made. After provisioning the *tk3* with fresh fat and

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<sup>44</sup> Newberry does not attempt a translation for this section of the text. While he records *tk3* in the hieroglyphs, he skips over any reference to it in the translation.

<sup>45</sup> Fragment of relief from tomb of Nehy, Berlin Ägyptisches Museum, 8815; in list of objects listed in PM and now in Berlin: <http://www.griffith.ox.ac.uk/gri/3berlin.pdf>.

<sup>46</sup> A stela dating to the reign of Ramesses IV from Abydos bears a similar phrase, but this is the only isolated reference I have found outside of the Middle Kingdom.

clean cloth, the text goes on to implore that the light might thrive for Seshenu as do the gods of the Ennead. The text also mentions that the same gods come to wash the face of Seshenu and to open his mouth, reminiscent of the Opening of the Mouth ritual that would have been performed at his funeral. The theme of the text very much focuses on renewal and rebirth, fitting for a New Year's Eve celebration.<sup>47</sup>

In the Middle Kingdom literary corpus of the Coffin Texts, there are 10 spells which reference *tk3*: 22, 49, 61, 76, 236, 336, 383, 414, 673 and 725. According to de Buck (1935-1961), there are 50 coffins which include these spells: 38 come from el-Bersha, 1 from Asyut, 5 from Thebes, 4 from Gebelein and 2 from Aswan. It is important to note that the majority (78%) of coffins containing spells that mention *tk3* come from Middle Egyptian sites. While many coffins used in de Buck's publications do come from this area (22 out of 57 coffins come from el-Bersha alone), this again highlights the use of artificial lighting terminology in Middle Egypt during the Middle Kingdom. While the texts themselves are not particularly useful in adding to the understanding of the meaning of *tk3*, the paleography is rather interesting (Figure 4-9). As with the case of the two writings of *tk3* in the tomb of Pepi I, it seems the Middle Kingdom scribes had not yet formalized the determinative used in the writing of *tk3*.

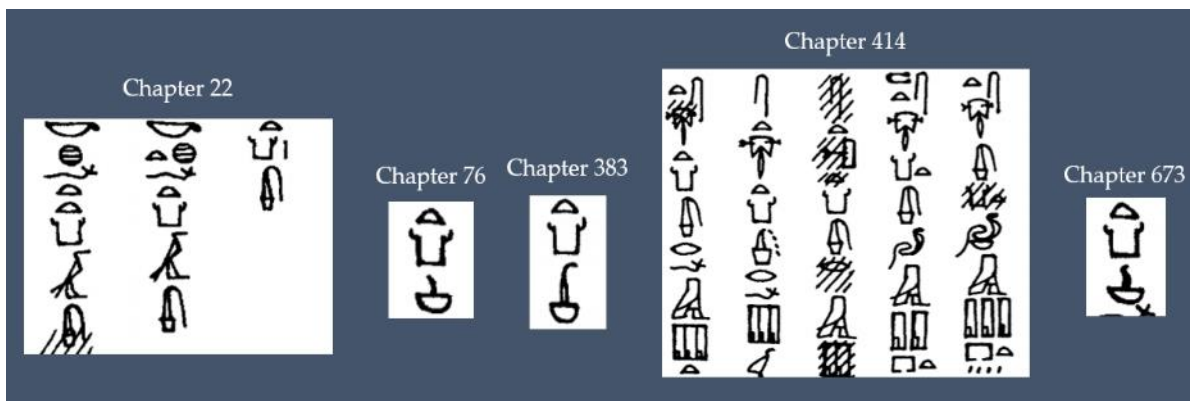


Figure 4-9 - Variant writings of *tk3* as exhibited in Coffin Texts recorded on Middle Kingdom coffins (from de Buck)

There are 9 different ways of writing *tk3* as exhibited in de Buck's publication of the Coffin Texts. The most common writing is exhibited in Chapter 22 with *t-k3-3*. The determinative represents a flat-based conical bowl with a tapered object rising from it and a stream of flame that falls forward

<sup>47</sup> This is in contrast to Haikal's interpretation that the text is meant only for protection of the deceased individual. These themes will be discussed in later chapters.

in the direction of the reading of the text. The spell which exhibits the most diversity in writing is 414 where 3 different ways of writing *tk3* are exhibited in the 5 coffins that bear the inscription, all of which come from el-Bersha.

The practice of presenting *tk3* to the deceased continues, and in fact becomes more prominent, in the New Kingdom. Expanding on the Middle Kingdom texts referencing *when* the offering of *tk3* would take place, the New Kingdom texts provide much more information as to *why* *tk3* would be offered. One rather poetic phrase, which first appears in the early 18<sup>th</sup> Dynasty during the reigns of Thutmose II and Hatshepsut, states:



*st.tw n=k tk3 m grh r wbnt šw hr šnbt=k*

*May a tk3 be lit for you at night until sunlight shines upon your chest ; tomb of Paheri, el-Kab (Tylor et al. 1894: 30)*

Near identical inscriptions are also found in the 18<sup>th</sup> Dynasty Theban tombs of Sennefer (TT96), Senemiah (TT217) and May (TT130). The only other attestation for this phrase is on a relief fragment from a tomb in Memphis dating to the reign of Ramesses II (Roeder 1924).

There are approximately 60 non-royal tombs scattered across Luxor's west bank that contain references to *tk3* either in text or iconography.<sup>48</sup> These attestations range in date from the early 18<sup>th</sup> Dynasty (Thutmose II/Hatshepsut) through the Ramesside period. The most common phrase used to describe this offering to the deceased is:



*st tk3 n wsr*

*Kindling a tk3 for Osiris N*

<sup>48</sup> According to PM (470) there are 51 tombs that contain scenes of offerings of “candles and torches”. There are tombs however, such as that of Neferhotep (TT6), which contain texts referencing *tk3* but no accompanying imagery. I have also identified additional tombs, such as TT217 and TT277, which contains scenes of *tk3* but were not included in the PM appendix. For this reason, I have therefore estimated that there are approximately 60 tombs in Luxor which reference *tk3*.

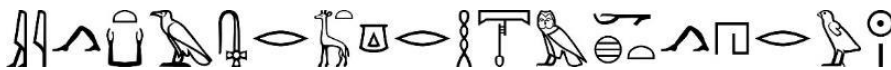
There are several variations on this theme including kindling the *tk3 m pr tk3* (TT6, Neferhotep), wishing that the lit *tk3* will flourish for the deceased as do the names of the Ennead (TT6, Neferhotep; TT23, Tjay), and kindling the *tk3* so that it will “illuminate/open the path of darkness” (TT82, Amenhotep; TT3, Pashed). Accompanying vignettes always show the *tk3* being presented either in the hand of an individual, usually one in each hand, or a *tk3* in one hand and a jar of fat in the other; or, the *tk3* are presented on an altar. It is clear from these representations that *tk3* were portable, ritual objects presumably prepared prior to the offering ritual at one location and then transported to the tomb chapel, or temple if offering to a god.

It also seems that the *tk3* itself was an active ritual agent. In the case of offering a *tk3* to the deceased or a god, the following phrases are frequently found:<sup>49</sup>



*jj tk3 n k3=k*

*The tk3 comes for your ka*



*jj tk3 srt grh m-ht hrw*

*The tk3 comes heralding night after day*

Lastly, *Book of the Dead* spell 169, the spell for setting up the mummy bier, addresses the role that the *tk3* had in the rebirth of the deceased. The text, which centers on the revival of the body, implores:



*m3n=k tk3 ssn=k f'w wb3-hr=k m pr kkw*

<sup>49</sup> These phrases are found in pChester Beatty IX (Ritual of Amenophis I), spell 137A in the *Book of the Dead*, and in various forms in private Theban tombs.





between the fire of the *tk3* and the numerous fire-spitting snake goddesses in the ancient Egyptian religion. In the case of text 242 in Unas' burial chamber, the connection is made a bit more explicit as it seems that since the flame of the *tk3* is extinguished, biting snakes may enter and hide in the house under the chaotic influence of Seth. The juxtaposition expressed in the use of the cobra determinative is very intriguing: the flame of the *tk3* can protect the king from evil as he is reborn in the afterlife, while at the same time the absence of the *tk3* allows a biting snake to conceal itself within a house, ready to strike.

The first reference to *tk3* as a destructive fire comes from a metaphor for a strong military leader that dates to the reign of Mentuhotep II in the Eleventh Dynasty. Within the epithets of Henu inscribed in Wadi Hammamat, Henu describes himself as a:



*tk3...m-h3t mnf3t*

*a tk3...in front of the army ; Wadi Hammamat no. 114 (Couyat & Montet 1913: 82)*

Presumably this is in reference to the army described later in the inscription that he leads on an expedition to Punt for the king. Not surprisingly, the great military commander Ramesses II stated multiple times in the temples of Abu Simbel, Amara West and Karnak that those Hittites who met him in battle felt:



*b3w=f jm=sn mj tk3 hr nbit*

*...his might was inside them like a burning tk3 ; stela 34 (Hittite marriage stela) from the south wall of the façade of the Great Temple, Abu Simbel (Kitchen 1996: 93, 244:1)*

Similarly, records of the battle of Qadesh in Luxor Temple describe the Hittites as proclaiming that:

*t3y=k h3ryt m tk3 m p3 t3 n ht*

*Fear of you is like a tk3 in the land of the Hatti (Kitchen 1996: 12, 90:1)*

It seems that the power of *tk3* was not reserved especially for foreign enemies but for native Egyptians as well. Interestingly, a *tk3* could function not only as a powerful burning object, but also as the act of complete consumption by fire. In an inscription from the temple of Seti I at

Redesiyeh, the king warns any official who persuades his master to hand over workers to another temple that:

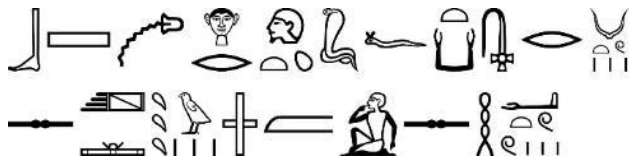


*jw=f n nsrt tk3=s h<sup>c</sup>w=f [jw=f] n 3ht <sup>c</sup>mw=s <sup>c</sup>tw=f*

*He belongs to the fire; it will consume (tk3) his body. [He belongs] to the 3ht (bright one or flame?); it will devour his limbs ; Seti I temple at Redesiyeh (Denkmäler III, 140c)*

A slightly more sinister reading of the use of *tk3* to consume enemies can be inferred considering that one of the primary fuel sources for a lighting device is animal fat. The Egyptians may have been alluding to the fact that those who offended the king or the state could in fact provide the fuel for their own fire by providing the “animal” fat needed for the *tk3*.

Perhaps the most interesting of all the texts referencing the power of the *tk3* against enemies of the king dates to the reign of Amenhotep III. In this inscription, the *tk3* is not used as a metaphor for the power of the ruler, but is described as the fire spit out from the uraeus on his brow.



*bš hr-tp=f tk3 r wptw s3 <sup>c</sup>wt wnm=s h<sup>c</sup>w*

*His uraeus spits tk3 on foreheads, she consumes bodies and devours limbs (Birch 1868)*

This association of the poison/fire spit from the mouth of a serpent is referenced again in a slightly later New Kingdom magical text (Leitz 1999). In pBM EA9997 and 10309 of the 19<sup>th</sup> Dynasty is recorded a spell against the poison from a snake bite. The spell is addressed to the snake and suggests that water is being used by the patient to put out the fire, i.e. wash away the poison, from the bite. Although the papyrus is badly damaged, part of the text directly parallels the same invocation from Text 8 on socle Behague, a magical statue base from the Museum of Antiquities in Leiden (Klasens 1952).

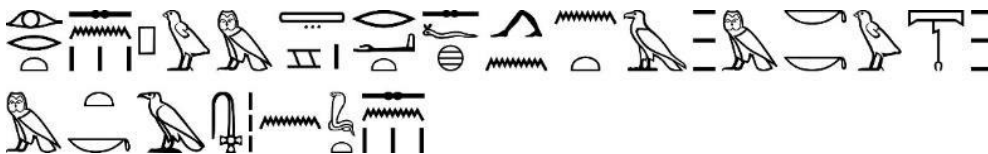
*“[Fire in the water. Fire in the water. Fire which has emerged from the water. The flame (nbyt) of my mouth] issues fire. I extinguish it, when it (the snake) makes a tk3w. It is the water that extinguishes the fire.”*

Although the fire is not being spit from the uraeus onto the enemies of the king, the *tk3w* in this instance is still clearly the poison being injected by the snake during the bite. It is not difficult to imagine that the searing pain inflicted by the bite would very much feel like a flame burning the afflicted limb. Interestingly, the mentions of the fire extinguished by the water uses the term *ht*, and the flame coming from the mouth of the patient is written with the term *nbyt*. Only the flame issued directly from the mouth of the snake is described as *tk3w*.

The destructive power of the *tk3* could also be turned against snakes, especially the serpentine god of chaos, Apophis. The earliest reference to this is found in Coffin Texts chapter 414 in which it is stated that:

*A tk3 has been kindled against him (Apophis) in the mansions of Sepa, his fetters have been made firm by the gods... May you (the deceased) be protected!*

Two other texts, the Amduat and the Book of Overthrowing Apep in the Bremner-Rhind papyrus, speak to *tk3* being used to defeat Apophis (Faulkner 1933). However, both texts are consistent in stating that various forms of snake-goddess would wield the flame of *tk3* to protect both the dead and the sun god, Ra from Apophis in the underworld. In the Amduat, *tk3* is used by various snake-goddesses to drive back Apophis, but also to give light to those in the underworld. This is particularly apparent in the Twelfth Hour as night draws to an end and Ra is reborn as Khepri in the eastern horizon.



*jrwt.sn pw m t3 rdjt sfh n ntjw m kkw m tk3w n jrwt.sn*

*What they do in the earth is to give release/freedom to those in the darkness with the tk3 of their uraei ; twelfth hour of the Amduat (Hornung & Abt 2007: 362)*

This association continues into the Third Intermediate Period/Late Period as is shown in the tomb of Panehsi at Heliopolis (25<sup>th</sup>–26<sup>th</sup> Dynasty) where the 9<sup>th</sup> hour of the Amduat includes a list of names of protective uraei, including *tkyt/tk(3)yt* (Sawi & Gomaa 1993).





*tk3 ʿnh pr m Nwn*

*Living tk3 emanating/issuing from Nun ; Urk. IV, 111 (Paheri), 495 (Senemiah)*

A similar sentiment is echoed in an invocation of Horus, which is to be recited at dawn as Ra rises in the eastern horizon. Among the twelve names of Horus listed in the text is:



*jw hpr ds=f ʿty m tk3w*

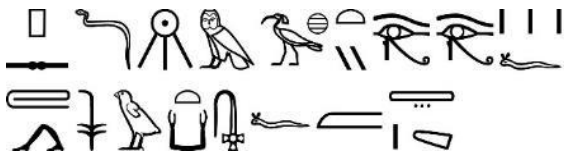
*O, you who created himself, who rises/flies up<sup>51</sup> from the tk3w ; pChester Beatty VIII (EA10688), verso 11, 5 (Gardiner 1935: plate 47)*

Later, within the five hymns to Amun recorded in the Hibis Temple, *tk3* becomes an attribute of the sun god (Klotz 2006). In these inscriptions, written during the reign of Darius I (ca. 550 BC), *tk3* seems to be a light source which Amun himself possesses:



*tk3=f r hr pt nsrt=[f] [s]hd t3*

*His tk3 is in the sky, his flame illuminates the land ; (Klotz 2006: 141)*



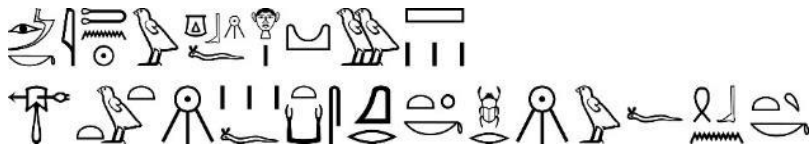
*...psd m ʿhty=f phr sw tk3=f m t3*

*...brightness is in his two eyes, his tk3 surrounds him on earth ; (Klotz 2006: 189)*

Although very rare, *tk3* is also used as a verb which describes an action of the rays of the sun. This seems to be a similar grammatical usage as the *tk3* wielded by the uraeus. While the uraeus could spit *tk3* onto the enemies of the king, this fire could also *tk3* (consume) the enemies. While I have

<sup>51</sup> Gardiner lists this as an unknown word in his publication of the text. He conjectures a meaning of “flies aloft” based on the determinative (Gardiner 1935: 76)

consciously avoided translating ancient Egyptian terminology into modern, Western vernacular up to this point, I will translate the verbal form of *tk3* in order to facilitate a readable translation. In keeping with the powerful attributes of *tk3*, I have chosen a more forceful, active verb of “burst” as opposed to other translations which use “illuminate” or “shine”. The implication being that a *tk3* is a “burst of light”. The earliest inscription that I have identified where *tk3* is used as a verb comes from the 18<sup>th</sup> Dynasty Cairo statue 583 (Varille 1968), which records wishes for the deceased Amenhotep as he rides in the *m<sup>c</sup>ndt* (day) barque of Ra<sup>52</sup>:



*m3=k jtn wgb=f hr dww stwt=f tk3=s krt=k hpr 3hw=f hr šnbt=k*

*You see the sun disk as it rises above the mountains. Its rays burst into your tomb chapel, its sunlight on your chest ; block statue of Amenhotep, son of Hapy (CG 583), line 10*

A similar expression is also found in the Third Intermediate Period text pSkrine No. 2 in which a manifestation of Ra is asked:



*di=k m3 stwt=k tk3=k krr*

*May you spread your rays so that you may burst into the tomb chapel ; (Blackman 1918: 27, plate III)*

A near identical inscription to this is also found in pSkrine No. 1, line 8 suggesting that this may have been a common phrase, which continued in use from the 18<sup>th</sup> through the 21<sup>st</sup>/22<sup>nd</sup> Dynasty (Blackman 1918: 27, no. 11). This may be a variant of the phrase first inscribed in Paheri’s tomb, where a request is made for a *tk3* to be lit in the night until the sun rises on the chest of the tomb owner (p. 126). Of course this is only speculation given such a limited number of examples of this phrase.

<sup>52</sup> A similar inscription is also found in pBerlin 3006, line 6, which dates to the end of the Third Intermediate Period.

Interestingly, the use of *tk3* as illumination emitted from the sun's rays continues in the Amarna period but the spelling of the word changes to *twk/tkw*. This is exhibited in the Short Hymn to the Aten inscribed in the tombs of Ipy (tomb 10) and Mahu (tomb 9) (N. de G. Davies 1906). Within the text it is said of the Aten:



*stwt=k twk/tkw=s<n><sup>53</sup> n hr nb*

*Your rays beam down for all people.*

#### 7.4 Interpretation

Many attestations of *tk3* state that it is a physical object, which can be made of linen and illuminant as exhibited in the Pyramid Texts of Pepi I, the Abusir papyri, and *Book of the Dead* spell 137A. Once made, the *tk3* could serve as an offering to a god (Chapter 5, Section 2.2, 6.3 and 6.4) or a deceased individual (Chapter 5, Section 2 – 4, 6.1 and 6.2) as described in several Coffin Text spells, Hepdjefa's tomb contracts, depictions of the daily temple ritual in Karnak (Figure 5-6, Figure 5-7) and numerous Theban tombs, amongst other references. From Old through New Kingdom textual and iconographic evidence it is apparent that *tk3* were made of red and/or white offering-quality or high-quality linen and formed into cylindrical or conical shapes (see images throughout Chapter 5). In all references to *tk3*, however, very little emphasis is placed on the materials needed for the construction of this device or the shape it is meant to take. Instead, I suggest that the emphasis is placed on the flame that a *tk3* produced. The fire of the *tk3* could provide light at night for the deceased in their tomb chapel, serve as a destructive flame spit at the enemies of the king from his uraeus, or be wielded by serpent goddesses against Apophis. During the Middle and New Kingdoms the power of the *tk3* is coopted by military leaders, including the king, to describe their might in battle. Similarly, the enemies of the king, and the sun god, are consumed by the *tk3*. Given the potency of this flame, it seems appropriate that Ra is described as ascending from a *tk3* out of Nun, and that he is a living manifestation of the fire that a *tk3* produces. The numerous

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<sup>53</sup> Following amendment in TLA. However, if *stwt* is taken as a collective than the singular feminine dependent pronoun "*sw*" or the singular feminine suffix pronoun "*s*" would be appropriate. The latter is indicated in the inscription from the block statue of Amenhotep.



attestations presented in this section therefore suggest that the construction of *tk3* as a lighting device was necessary, but that the power of a *tk3* came from its burning flame.

## 8. Summary

This lexicographical analysis of artificial light sources provides a richer understanding of how the ancient Egyptians described or labeled objects. Many of these terms are descriptive of an item's appearance or the material used to make it, such as a *wʿ3* which may have required the use of a tubular piece of reed or vegetal material. The term *st3t* may be more generic in meaning as a vessel which held a flame or *st3*. Similarly, the terms *hʿt* and *gmht* are both associated with the haptic sensation of twisting or braiding, albeit with *gmht* this may be secondary to its association with *gmh* "to see". This not only describes the physical process necessary to make these objects but also the appearance of the finished item. The only term which may be more abstract in nature is *tk3*. This term does not necessarily place an emphasis on appearance, material or construction method, but on the powerful, ritually affective flame that it produced.

As stated in the introduction of this chapter, drawing definitive conclusions about artificial lighting devices from textual evidence is difficult because it is very limited. As a result, all lighting terminology, aside from *tk3*, appears to originate from a Middle and Upper Egyptian context. This is likely due to the better preservation of monuments and texts in the southern Nile Valley and loss of textual material in the marshy conditions of the Delta. Additionally, as the term *gmht* demonstrates, certain terminology may have been part of a regional dialect or restricted to one particular time period. However, bearing in mind these limitations, it is possible to define the materials used in the construction of artificial lighting implements, as well as the contexts in which they were employed. The New Kingdom term *wʿ3* appears to be restricted to use in conjunction with *Book of the Dead* spell 151. Similarly, *hdwyt* is referenced primarily as an item donated to temples in the Third Intermediate Period, while *hbs* is likely an illuminant coated wick used primarily during construction of the tombs in the Valley of the Kings in the New Kingdom. Evidence also suggests that *st3t* may have served a dual function of fumigation and illumination. It is also clear from the extant literary record that *hdwyt*, *gmht*, *st3t* and *tk3* were used in a temple context, whereas *tk3*, *gmht* and *wʿ3* are mentioned in a funerary context. Only *hbs* is not referenced in either sacred space—aside from its use in tomb robbery. It therefore seems evident that lighting devices, with the exception of *hbs*, were primarily reserved for ritual performance, an assertion

supported by the archaeological, economic and social evidence as presented in Chapters 2 and 3. The next three chapters will therefore focus on the specific rituals for which artificial lighting was used, in addition to examining the reasons as to why ritual illumination was important.

## Chapter 5 – OFFERING LIGHT

Over the course of the last three chapters, it has become increasingly apparent that the evidence suggests that artificial lighting was reserved for use in ritual contexts by the wealthy, upper echelons of ancient Egyptian society. The cost of the linen and illuminants needed to make a lighting device classified artificial lighting as a luxury item. It is therefore not surprising that lighting implements are utilized in rituals to honor the gods and the dead. Previous examinations of the rituals involving artificial lighting are minimal and primarily date to the first half of the 20<sup>th</sup> century or earlier (Dümichen 1883; Reisner 1918; N. de G. Davies 1924; Wilson 1936; Schott 1937; Nelson 1949a; Gutbub 1961; Haikal 1985; D.C. Luft 2008; 2009). As a result of these studies, the ritual application of artificial lighting is generally divided into three sacred contexts: funerary, temple and royal ceremonies. In correspondence to these divisions, the offering of artificial light is thought to benefit the cult statue of the deceased, the cult statue of a god, or the thrones of the king. This compartmentalized approach applies not only to the rituals themselves but to the scholarship that examines them.

The majority of publications that discuss artificial lighting rituals focus on philological issues such as the origins of the texts that record the rites, the various literary corpora they draw from, or analysis of individual terms (Dümichen 1883; Wilson 1936; Nelson 1949a; Haikal 1985; D.C. Luft 2008; 2009). Unfortunately, this focus on textual evidence results in minimal discussion of the accompanying iconographic evidence and virtually no broader contextualization of the rituals.<sup>54</sup> Nelson's (1949a; 1949b) articles on the Ritual of Amenhotep I, for example, present the use of artificial lighting devices within the rites for the daily reversion of offerings, as well as the New Year's festival. Despite presenting vignettes of these scenes from the temple of Karnak, Nelson does not comment on them beyond a basic description of the individuals portrayed and the ritual action taking place in each scene. A similar approach is adopted by Haikal (1985) in her discussion of "the hymn to the light" for the New Year as recorded in the tomb of Tjay (TT23). She comments

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<sup>54</sup> An exception to this is Luft's (2009) publication in which she does briefly present her own suggestion for where spell 137A would have been performed, when it would have fitted into the sequence of the funeral ceremony, and the significance of presenting artificial light within this context. My own interpretation of this spell will follow later in the chapter.

that “One of the interesting scenes of the tomb of Thay is the offering of candles and of a big torch to the deceased and his wife (Haikal 1985: 362)” but does not provide an explanation as to why the scene is interesting, nor how it relates to similar scenes in other Theban tombs. Instead, like Nelson, she provides a description of the scene, albeit much more detailed than that of Nelson, before moving to a translation and commentary on the “hymn”.

In contrast, two articles, those of Davies (1924) and Schott (1937), focus primarily on iconographic evidence, but are extremely narrow in their focus. Davies only addresses one specific form of lighting device which appears in New Kingdom Theban tombs. His article serves as a very useful catalogue of the relevant scenes where these implements appear but does not provide an explanation for why these devices were developed, the specific rituals with which they are associated, or how they relate to lighting devices depicted in many other tombs. While Davies’ article centers on one type of lighting device, the wick-on-stick type, Schott’s piece addresses one aspect of a lighting ritual: extinguishing lighting implements in milk, as depicted in the sanctuary at Deir el-Bahari. Unlike Davies, and articles focusing on textual evidence, Schott does suggest his interpretation for where this ritual would have taken place, how it would have been carried out and the significance of performing this rite. While I disagree with Schott’s interpretation of this scene, his methodological framework is a welcome departure from a purely philological approach. By examining text, iconography and architecture together, Schott is able to posit his own explanation for how a ritual involving artificial light would be carried out, in addition to its religious significance. It is this type of multifaceted approach that I will use in this chapter.

Gutbub (1961) provides the most substantive overview of many of the ritual contexts in which artificial lighting is employed, but he does rely primarily on textual evidence. His overview is thorough but brief, as the primary focus of the article is a hymn to Hathor in the temple of Denderah. Within this hymn, the goddess Asbet is referred to as a possessor or carrier of the *tk3*. In order to understand the title of this deity, Gutbub provides a six page overview of “torch rituals” and the carriers of torches within the New Kingdom. While he acknowledges that textual references to *tk3* occur as early as the Pyramid Texts of the Old Kingdom, he discusses the ritual applications of *tk3* as if they are confined primarily to the New Kingdom. While his article is a valuable contribution to the ritual use of artificial lighting, it falls short of examining the practicalities of performing these rites, and what information can be gained from comparing and

contrasting all rites in which artificial lighting devices are utilized. However, Gutbub did recognize that there was more information to be gained from a comprehensive examination of these rituals, leaving him to comment, “L’étude des rituels de la torche est encore à faire” (Gutbub 1961: 41).

Following on from these publications, my examination of the ritual use of artificial lighting will first address the practicalities of these rites:

- What type and how many lighting implements are required for each ritual?
- How are the lighting devices obtained?
- Are these rites isolated events or are they part of larger rituals? If part of larger rituals, at what stage of the performance is artificial lighting employed?
- What time of day or night are the rites performed?
- What is the architectural and/or environmental setting for these rites?

Answering these questions will allow for a broader contextualization of these rituals, in addition to addressing potential origins of these rites and possible adaptations over time. In contrast to earlier studies, this chapter will not retain the division of artificial lighting use to temple, funerary and royal contexts. Instead, it will move beyond these divisions to determine to what extent these rituals are related by viewing them together as a group of rites of illumination. Additionally, this chapter will focus primarily on the iconographic record of artificial lighting rituals, which is found in temples, tombs and funerary papyri.<sup>55</sup> The majority of these images do not include accompanying inscriptions and, as a result, have been largely ignored in the examination of ritual lighting. This underutilized, rich body of evidence will provide a fresh perspective on the use of artificial lighting in ritual performance. Additionally, an iconographic analysis will avoid redundancy with previous scholarship, while at the same time allowing for connections to well published textual analyses of these rites.

Focusing on the iconographic evidence of lighting rituals does have a methodological drawback because all of the scenes, with the exception of those from the Saite tomb of Petamenophis, date to the New Kingdom. The scenes are also all geographically restricted to Thebes, except for one relief

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<sup>55</sup> A list of tombs known to contain scenes of artificial lighting rituals, the largest source of evidence for this chapter, is provided in Appendix 2.

from the temple of Soleb in modern day Sudan. Lastly, a majority of the iconographic material comes from a mortuary context. Previous scholarship has highlighted this prevalence of New Kingdom Theban tomb evidence and perhaps created a false impression that these rituals were not utilized until the Eighteenth Dynasty. The written record, however, states otherwise. The earliest descriptions of employing artificial light in ritual contexts dates back to the Twelfth Dynasty, namely in the tomb contracts of Hepdjefa (p. 111-12). Additionally, the earliest extant versions of texts which may have been recited during the performance of these illumination rites also date back to the Twelfth Dynasty. As previously mentioned in Chapter 4, the shrine of Seshenu records a text for offering a *tk3* on New Year's eve, which is repeated almost verbatim approximately 700 years later in the tomb of Tjay (TT23) (Haikal 1985) and in the Hypostyle Hall of Karnak (Nelson 1949b: 339); p. 65, 121). Additionally, a Twelfth Dynasty stela of Sarenput I (Aswan Museum 1372) from the sanctuary of Heqaib at Elephantine records the earliest known sections of both spell 137A and spell 137B from the Book of the Dead (Habachi 1985: 35; Franke 1994: 223; D.C. Luft 2009: 38–41). Spell 137A records a liturgical text commonly referred to as the "torch ritual", which was performed during the funeral and subsequent offerings to the deceased. Spell 137B is inscribed in variant lengths in four New Kingdom tombs, namely the 19<sup>th</sup> Dynasty tombs of Pashed (TT3) and Amennakht (TT218), and the 18<sup>th</sup> Dynasty tombs of Puiemre (TT39) and Senenmut (TT353) (Saleh 1984: 75). Therefore, the lack of iconography of illumination rites does not indicate that they did not exist in the Middle Kingdom, particularly as the textual record suggests otherwise.

While there is textual evidence to suggest that illumination rituals were taking place in the Middle Kingdom, to my knowledge, there are no depictions of them in Middle Kingdom monuments. This may be due to a lack of extant evidence, particularly in the case of temples, which were often subsumed by later building programs. In the case of tomb reliefs, unlike New Kingdom examples, Middle Kingdom funerary monuments were largely left undecorated. As a result, the absence of depictions of lighting rituals in Middle Kingdom tombs is likely to reflect a difference in approach to tomb decoration, not to provide evidence that these rites were not performed. Although an iconographic record from the Middle Kingdom may be lacking, this chapter will demonstrate that New Kingdom scenes seem to correlate, in part, with descriptions of Middle Kingdom illumination rituals. As a result, the New Kingdom depictions can be used to consider tentatively

how Middle Kingdom rites may have been performed. This comparison will also provide evidence as to how these Middle Kingdom rituals were implemented and developed in the New Kingdom.

### **1. Decorum and offering light**

Because so much of the iconographic evidence for the offering of light comes from a mortuary setting, it seems appropriate to examine the context within which these images were displayed and how they conformed to conventions of decorum (Gombrich 1985; Baines 1985: 277–305; Baines 2007). Between the Middle and New Kingdoms, there were subtle but significant shifts in the decorative program of tombs, which reflected evolving conceptions about the deceased after death. In the Middle Kingdom there was an emphasis on the depiction of mounds of food offerings, verdant fields and marshlands, and autobiographical scenes of productivity and wealth (Kamrin 1999; Kahlbacher 2011). All of these images were meant to display the status and importance of the individual while at the same time symbolically referencing the regeneration and renewal of the deceased through their funerary cult. The emphasis placed on provisions for the afterlife was particularly crucial as these would provide eternal sustenance, clothing, furniture, etc. for the tomb owner. In this context, it is not surprising to find artificial lighting referenced in tombs as an offering that needed to be provided to the deceased for particular festival occasions, as in the tomb of Hepdjefa, or even on a nightly basis as the tomb of Paheri indicates. In this way, artificial lighting, along with bread, beer, meat, unguents and cosmetics ensured the continuance of the deceased in the afterlife, while at the same time functioning as symbols of that perpetual rejuvenation.

New Kingdom tombs maintain the tradition of presenting artificial lighting as an offering to the deceased on a regular basis and for celebrations, such as the New Year. This is reflected in offering scenes of private individuals at Thebes and is particularly evident in depictions of the funeral procession of the deceased where artificial lighting devices sometimes appear. It is likely that these scenes were not meant to be an exact record of actions that occurred at the funeral, rather they were a distilled version of an ideal performance of death and mourning for the deceased (Riggs 2013: 158–59; Baines 2007: 14–30). As a result, sometimes artificial lighting is shown in these scenes, sometimes not. This does not indicate that lighting was seldom used, but is more a reflection of decorum dictating what scenes should be included and where they could be displayed within the tomb. This would have been further restricted by the size of the tomb itself.

Where scenes including lighting implements are evident, they provide interesting insight into the decorum of light offering, particularly when considering that the deceased increasingly becomes associated with Osiris and takes on more divine attributes. From a purely practical standpoint, depictions of artificial light are not found in areas that would receive direct sunlight. They are never seen on the façades of tombs or in doorways, nor are they included in scenes in the transverse hall of a tomb chapel immediately across from the entrance where sunlight would shine (Figure 5-11). This is in contrast to solar hymns and imagery of the solar disk in the horizon which appear over the entryway or on the exterior walls to the tomb where they would receive direct sunlight. While scenes of artificial light offerings are out of direct reach of the sun's rays, in many tombs they seem to be consciously placed just on the edge of these pools of natural light. In the 18<sup>th</sup> Dynasty chapels of Puiemre (TT39) (N. de G. Davies 1922; 1923b), Amenhotep-Sise (TT75) (N. de G. Davies 1923a) and Rekhmire (TT100) (N. de G. Davies 1943), for example, light offerings are depicted in the passage or central shrine. The scenes are far enough into the chapel that sunlight does not directly shine on them, but they are placed just on the edge of natural light. In the tomb chapels of Sennefer (TT96) (Porter & Moss 2004: 197–203) and Nakhtamun (TT335) (Porter & Moss 2004: 401–4), the artist has painted scenes of light offerings on the face of a pillar and a wall projection, respectively, which is opposite to the side illuminated by the sun. This phenomenon even extends to burial chambers as in the tombs of Amunemuia (TT356) (Porter & Moss 2004: 419–20) and Khawi (TT214) (Porter & Moss 2004: 310–11) where sunlight reaches to the base of the stairway and just into the entrance of the subterranean chamber. In both tombs a depiction of a personified emblem of the West is depicted holding offerings of artificial light just outside of this last sliver of sunlight (Figure 5-1). It therefore seems that it was inappropriate for natural and artificial light to mix in tombs and that depictions of artificial light were kept deliberately in the shadows to provide illumination where sunlight would not extend. However, this also might suggest a focus on artificial light providing a transition to darkness as lighting implements are not frequently depicted within complete blackness or the depths of the tomb.





Figure 5-1 - Partially collapsed tomb entrance of Khawi (TT214) with sunlight extending into the burial chamber and the personified West holding offerings of artificial light above; photograph courtesy of Cédric Gobeil

Depictions of artificial lighting implements are generally found on the western wall (either geographic or symbolic) of the tomb chapel or tomb, or accompanied by emblems/deities that are associated with the West—Anubis, personified western-emblem and/or the Theban hills (Figure 5-1). The exception to this, as will be discussed in more detail in Chapter 7, are scenes related to the New Year or the beginning of the *heb sed*. In these instances the images are located either on the eastern wall of a tomb or temple or they represent a ritual that would have been performed in the eastern portion of those spaces. With the exception of a few early 18<sup>th</sup> Dynasty scenes, the lighting implements are of the wick-on-stick type and the tip of the device is always bent in the direction of the beneficiary of the offering. Scenes in 18<sup>th</sup> Dynasty tombs favor a single wick on a reed, while Ramesside tombs feature larger wick-on-stick devices with pyramidal or mound shapes, frequently accompanied by single wick implements. Contrary to Davies' (1924: 9) opinion that the lighting devices are never seen lit, particularly in 18<sup>th</sup> Dynasty tombs, I would argue that the bend at the tip of the implement, along with the red color that is frequently used, indicates that the device is in fact on fire. Personal experimentation in making and igniting wick-on-stick type examples (see Chapter 6) suggest that the reed, which stands perfectly straight before being lit,

bends as the flame consumes the implement (Figure 5-2). Consequently, even if a flame is not painted in the scene, I suggest that the bend in the tip of the devices implies that they are lit when presented as offerings.



*Figure 5-2 - Wick-on-stick device with bent tip after being lit*

The parameters of who can present light offerings seem quite clearly defined. Only one series of scenes from Karnak depict the offering of light in a temple context. In each instance, only pharaoh, in his role as chief priest, is allowed to present light offerings before the cult statue of Amun. In tomb chapels or burial chambers, family members, both male and female (although predominantly male), as well as priests may present light before a cult statue of a deceased individual for festival occasions or as part of regular cultic offerings (Figure 5-3).



Figure 5-3 - Scene of a man and woman (right) offering conical-shaped lighting devices to the cult statues of deceased relatives (left); tomb of Penbuy and Kasa (TT10), Deir el-Medina, Luxor

Priests may present light to the cult statue of the deceased at the funeral and they may also carry lighting devices as part of the funerary procession, although depictions of the latter are restricted to 18<sup>th</sup> Dynasty tombs. Light is not offered by family members or priests to the deceased in mummified form in tombs, presumably because of their association with a god, in this case Osiris. The only exception to this that I have found is in a vignette of spell 137A from the papyrus of Nu (Figure 5-20). However, as will be discussed in more detail in Section 6.1, the priests presenting the light are playing the role of the four sons of Horus, divine figures, and the identification of the mummified figure as either the cult image or the mummified body of the deceased is slightly ambiguous. Only in the Ramesside tombs of Pashed (TT3) (Zivie 1979) and Amennakht (TT218) (Porter & Moss 2004: 317–20) at Deir el-Medina are there depictions of light offerings before a god and in each case the god shown as the focus of light offerings is Osiris. Again, the light is not presented by a human but rather an unidentified deity, or *genius*, and a personified *udjat*-eye. The tombs at Deir el-Medina also contain more scenes of light being offered before the mummified form of the deceased in comparison to 18<sup>th</sup> Dynasty tombs (Figure 5-15). Here too, however, principles of decorum are maintained as the light is only presented by a divine figure such as *dt* and/or *nhh*, Anubis or a personified emblem of the West (Figure 5-4). The significance of these deities presenting light before the mummified deceased will be discussed in Chapter 7.



Figure 5-4 - Male deity associated with *dt* and *nḥh* presents light offerings in the tomb of Neferabet (TT5); Deir el-Medina, Luxor

## 2. Offering the light of every day

Based on iconographic and textual (when possible) analysis, these scenes suggest that lighting was ideally offered to the cult statues of the deceased and the gods on a daily basis in tomb chapels and temples. Depictions of this offering as part of the *ḥtp di nsw* first appear in the 18<sup>th</sup> Dynasty and are restricted to a mortuary context. This continues into the 19<sup>th</sup> Dynasty with the addition of a scene in the temple of Karnak that illustrates the offering of the *tk3 r<sup>c</sup> nb*, the daily *tk3* to Amun.

### 2.1 Lighting for the *ḥtp di nsw* in the 18<sup>th</sup> Dynasty


Scenes which include the offering of artificial light as part of the *ḥtp di nsw* are found in three tombs: Senenmut (TT353) including some text of spell 137B, Amenemhet (TT82) with an excerpt of text from the funeral liturgy, and Puiemre (TT39) with a portion of spell 137B. All three scenes are from tombs dated to the early part of the 18<sup>th</sup> Dynasty, during the reigns of Hatshepsut and Thutmose III. To my knowledge, the scene on the false door of Senenmut is the earliest depiction of an offering of artificial light in the New Kingdom Theban tombs. The scene is located on the bottom left corner of the pedestal that supports the false door, which is carved into the center of the west wall of the burial chamber (Dorman 1991: 137–38). The scene depicts a kneeling male figure holding a wick-on-stick type lighting device in his hand (Dorman 1991). The caption above the figure's head labels the scene as "Lighting/illuminating a *tk3*". The man faces two horizontal lines of text, which are oriented as if the figure is reciting the invocation. The text records a portion of



spell 137B which correlates the lit *tk3* to the eye of Horus, an offering for the deceased, which hides (*sdg*) the power of Seth.<sup>56</sup> As with other offerings, Senenmut is encouraged to consume/take the eye of Horus for himself so that it will rejuvenate him as it did Osiris. Adjacent to this scene, on the right side of the false door, a small figure of Senenmut's brother, Amenemhat, kneels before two horizontal lines of text recording the *hṭp di nsw* formula (Dorman 1991: 138, plate 70). These parallel scenes, which extend across the entire base of the false door of Senenmut, together ensure continual offerings of food, drink, light and "every good and pure thing" for the benefit of the deceased. The tomb of Amenemhet (TT82), which dates to the reign of Thutmose III contains a similar scene within the burial chamber of the tomb owner (N.M. Davies & Gardiner 1915: plate XLVI). The small, kneeling figure of a priest is depicted holding up a wick-on-stick lighting device along with a jar of fat under a niche in the west wall. The accompanying text, however, does not relate to spell 137B.

Another comparable scene in the contemporaneous tomb of Puiemre (TT39) depicts a standing priest offering a lit *tk3* in one hand and a jar of *mdt* in the other, as indicated by the caption (Figure 5-5). The scene is located in the central of three tomb chapels on the right side of the entrance to a shrine, which is carved into the rear wall of the chapel (Davies 1922: plate LVII). The text that frames the scene is nearly identical to that in the tomb of Senenmut and as in that tomb, the priest faces in the direction of the text as if he is reciting this offering for Puiemre. The *tk3* is again referred to as an eye of Horus/offering "shining like Ra in the horizon" that hides the power of Seth and fills the belly of the deceased (N. de G. Davies 1923b: 29).<sup>57</sup> The remainder of the scenes at the entrance and within the shrine itself depict offering bearers bringing gifts to Puiemre, again paralleling the tomb of Senenmut where the lighting and presentation of a *tk3* is included as part of the *hṭp di nsw*.

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<sup>56</sup> A text which seems to reflect similar concepts is located to the left of the false door of Rekhmire (Davies 1943: 10, plate CXIII A). This portion of text is badly damaged but does refer to something, presumably a lighting device, which shines like Ra and hides (*sdg*) the power of Seth. Davies theorizes that the opening line of the text could be

reconstructed as *jj [tk3 ...]* "the *tk3* comes". However, only the hieroglyph  is still present on the wall, so this reading is not certain.

<sup>57</sup> Davies translates this line as "repels" (*dr*) the power of Seth. However, I believe this is a misreading. This portion of wall is damaged and obscures the text except for a "d" and the determinative . The term "dr", however, is determined with . Based on Davies' drawing, there is space for an "s" and "g" within the line of text. Reconstructing the term as "*sdg*" would also correlate to all other instances of this phrase, including the earliest from the stela of Sarenput (p. 140).

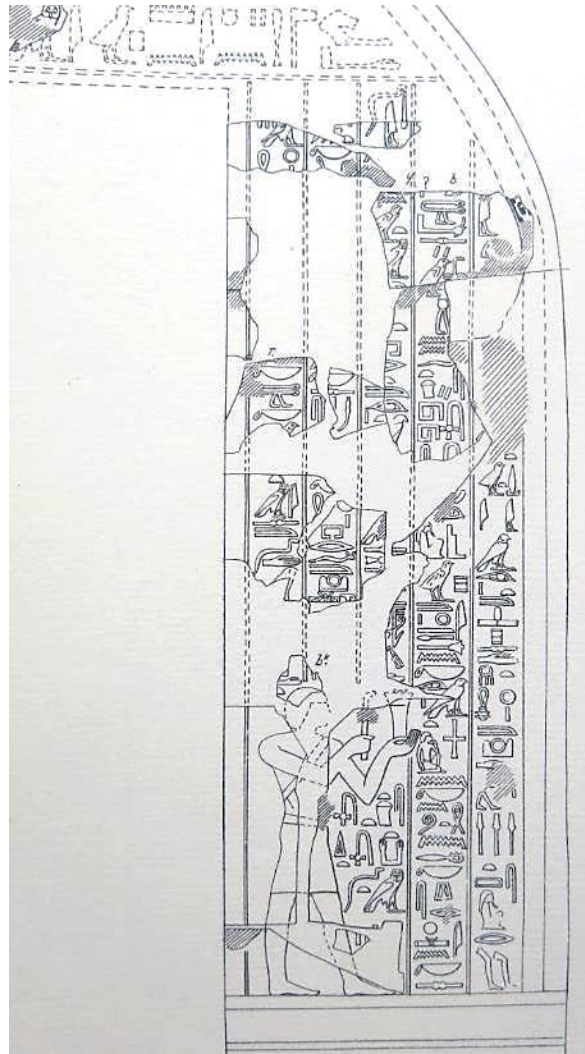


Figure 5-5 - Scene depicting the offering of a *tk3* from the entrance to the cult shrine in the tomb of Puiemre (Davies 1922: plate LVII)

Interestingly, not only do the three scenes in the tombs of Amenemhet, Senenmut and Puiemre parallel each other, the accompanying texts in the tombs of Senenmut and Puiemre are identical to portions of an inscription found on a stela of Sarenput I from the shrine of Heqaib at Elephantine (Franke 1994: 223). Both Luft and Franke have successfully argued that this Middle Kingdom stela contains portions of what would become two distinct texts in the New Kingdom: spell 137A and spell 137B (Franke 1994: 232; D.C. Luft 2009: 38–41). With regards to spell 137B, which is inscribed in the tombs of Senenmut and Puiemre, the Sarenput stela references the offering of a *tk3* as an eye of Horus which shines like Ra in the horizon and hides the powers of Seth. The repetition of these phrases indicate that knowledge of the text for the ritual offering of artificial light to the deceased continued over the 500 years between Sarenput I and the reigns of Hatshepsut/Thutmose III. I think similar conclusions could also be drawn for the practical aspects of performing the ritual as

well. Unfortunately, there is no depiction of the offering of a *tk3* on the stela of Sarenput. However, the near identical depictions of this act in the tombs of Senenmut, Puiemre and Amenemhet suggest the provisions that were necessary: one male priest presents a single wick-on-stick type lighting device, a *tk3*, for the benefit of the deceased, as part of the regular offerings recorded in the *hꜥp di nsw*. This likely took place in the tomb chapel in front of the cult statue, as indicated by the tomb of Puiemre, or in front of the false door, as in the tomb of Senenmut. As the scene from Senenmut's tomb illustrates, only a single *tk3* is offered and because this is the earliest representation of the rite, perhaps that was all that was originally intended for the fulfillment of the ritual.

The scenes in the tombs of Puiemre and Amenemhet, however, also depict the offering of a jar of fat, which is labeled as *mdt* in the scene from Puiemre's chapel. This may reflect a development in the performance of the ritual, perhaps as a way of ensuring the *tk3* would last longer by providing an accompanying jar of illuminant. As will be shown in later sections of this chapter, the offering of *tk3* and a jar of illuminant becomes common in the iconographic program of lighting rituals throughout the remainder of the 18<sup>th</sup> Dynasty. As a result, the scenes in the tombs of Puiemre and Amenemhet mark the first time that this convention is depicted. However, I would also speculate that this 18<sup>th</sup> Dynasty practice of offering a linen-based lighting device and *mdt* might relate back to the Old Kingdom practice of offering *šs* "linen" and *mdt* or other fats and oils. These items frequently appear on Old Kingdom offering stelae (see Figure 3-1) and the provision of copious amounts of textile is recorded in "linen lists" that commonly appear on offering stelae and in mastabas of Early Dynastic and Old Kingdom elites (J. Jones 2010). The way in which these items were meant to be employed by the deceased is not stipulated in these texts, but the assumption is that they could make use of these items however they wished (Riggs 2014: 126–28). As I stated on p. 74, it does not seem unreasonable to assume that some of the linen could be employed to make wicks, while a portion of the oil or fat could serve as an illuminant for a lighting device. One isolated reference from spell 725 of the Coffin Texts might indicate that by the Middle Kingdom the offering of pre-made lighting devices was more common as a coffin from el-Bersha lists offerings of *t*, *tk3*, *mw*, "bread, *tk3* and water" for the deceased.

## 2.2 Lighting for the *ḥtp di nsw* in the Ramesside Period

In contrast to the 18<sup>th</sup> Dynasty, the one instance in which the offering of *tk3* is shown as part of the *ḥtp di nsw* is found not in a tomb but in the Hypostyle Hall of the temple of Karnak. Here the offering of light is included in the illustration of the daily temple liturgy and is composed of two scenes: the presentation of two wick-on-stick lighting devices before Amun-Min (Figure 5-6) and their subsequent extinguishing. As in the 18<sup>th</sup> Dynasty offering scenes, the *tk3* is referred to as the eye of Horus which comes for the benefit of the *k3* of Amun. Although this is the only depiction of an offering of a daily *tk3*, a list of endowments (*Urk. IV 772, 6*) from the temple of Ptah at Karnak indicates that *tk3* were offered to the god as part of the *ḥtp di nsw* from at least as early as the reign of Thutmose III—roughly the same time that scenes of offering *tk3* appear in the tombs of Amenemhet, Puiemre and Senenmut.



Figure 5-6 - Seti I presenting *tk3* to Amun-Min as part of the daily offering ritual; (Nelson 1949b: fig. 30)

Interestingly, while two *tk3* are presented before the cult statue only one of them is extinguished (Figure 5-7). The accompanying text again parallels the 18<sup>th</sup> Dynasty tombs as the *tk3* is referred to



as the eye of Horus that is eaten by the god and through which he is nourished. There is unfortunately no explanation for what is done with the second *tk3*, although the implication is that it remained lit within the chapel. It should also be noted that a considerable portion of the *tk3* that is extinguished remains intact. This is consistent with other offerings provided to the god, such as food, which is only magically consumed by the god before being redistributed to temple staff to actually be eaten. Preserving a large portion of one of the *tk3* would allow it to be reused elsewhere.



Figure 5-7 - Seti I extinguishing one of the daily *tk3* before Amun; (Nelson 1949b: fig. 31)

Decorative programs of 19<sup>th</sup> Dynasty tombs do not seem to include depictions of artificial light offerings as part of the *hṭp di nsw*. Instead, they include lighting implements among the offerings for festival occasions, particularly the New Year and the Beautiful Feast of the Valley, which will be discussed in further detail later in the chapter.

### 2.3 Discussion

Although there is minimal iconographic evidence for the offering of light as part of the *ḥtp di nsw*, the extant material is sufficient to suggest that it is a practice rooted in the Middle Kingdom, and possibly the Old Kingdom through the offering of linen and fat. Although depictions of the daily offering of light first appear in the tombs of Senenmut, Puiemre and Amenemhet (p. 147), the inclusion of portions of spell 137B with these images, as well as in the temple of Karnak, can be linked back to the 12<sup>th</sup> Dynasty inscription of Sarenput I at Elephantine (p. 141). Comparing all these scenes together also provides insight as to how the offering of light may have evolved over time as part of the *ḥtp di nsw*, as well as evidence for where the lighting devices may have been obtained. Significantly, in the temple of Karnak, Seti I is shown offering two *tk3* before the cult statue of Amun. In the next scene he is shown extinguishing only one of these devices before proceeding with the reversion of offerings from the god's altar. If the implication is that the *tk3* was included among the redistributed goods from the daily ritual, where did it go? It is possible that the *tk3* was used as an offering to a different god in Karnak, or the *tk3* may have been given to a priest for use elsewhere. As the tomb contracts of Hepdjefa state, the *ka*-priest had to go to the temple to procure lighting devices. It is possible that these lighting implements were used first as an offering to the god, and then the remainder was redistributed to priests for use in private funerary cults. As with the other offerings provided as part of the *ḥtp di nsw* to the deceased, the presentation of one *tk3* was likely a way of sharing in the offerings that were originally presented to a god.

### 3. Offering light in the West

The majority of scenes that include offerings of light depict rites for the benefit of the deceased. In the 18<sup>th</sup> Dynasty, lighting is included in scenes illustrating aspects of the funeral performance, primarily in tomb chapels. Three artificial lights are sometimes included in depictions of the funeral procession (Figure 5-8, Figure 5-9), while other scenes suggest that 2 lights (or multiples of 2) were presented as offerings subsequent to the burial for festival occasions (p. 158-59). By the 19<sup>th</sup> Dynasty, scenes depicting artificial light are found more frequently in the burial chamber either flanking the mummified body of the deceased on a funerary bier or presented by deities associated with the West (p. 163-64). The inclusion of artificial light with offerings to the cult statue of the

deceased continues, but these are distinctly funerary in character and related to the performance of rites at the tomb.

### *3.1 Lighting for the dead in the 18<sup>th</sup> Dynasty*

The collection of scenes that depict offering artificial light to the deceased have minimal to no accompanying text to link them back to earlier ritual practice, as with spell 137B in the *hꜣtp di nsw* depictions. However, the constancy of elements within these scenes suggest that they are part of a well-established, well-understood religious tradition. Five tomb chapels dating to the reigns of Thutmose III to Thutmose IV illustrate an interesting development in the types of lighting equipment used as part of the funeral. The earliest scene comes from the right side of the entrance to the North Chapel in the tomb of Puiemre (Figure 5-8). On the tympanum above the doorway inside the chapel is a scene of the deceased making his journey to Abydos, while scenes flanking the doorway show a selection of rituals from the funeral of Puiemre including men dragging the *tekenu*, *muu* dancers, women pouring libations into four basins, a large shrine-like structure and men processing with sticks (N. de G. Davies 1923b: 7–8). Included amongst these scenes, in the bottom right corner of the right side of the entrance, are three stationary lampstands with either very exaggerated depictions of flaming wicks rising from the center of the bowl or three wick-on-stick devices that have been affixed to the base of the bowl (N. de G. Davies 1923b: plate XLVI).

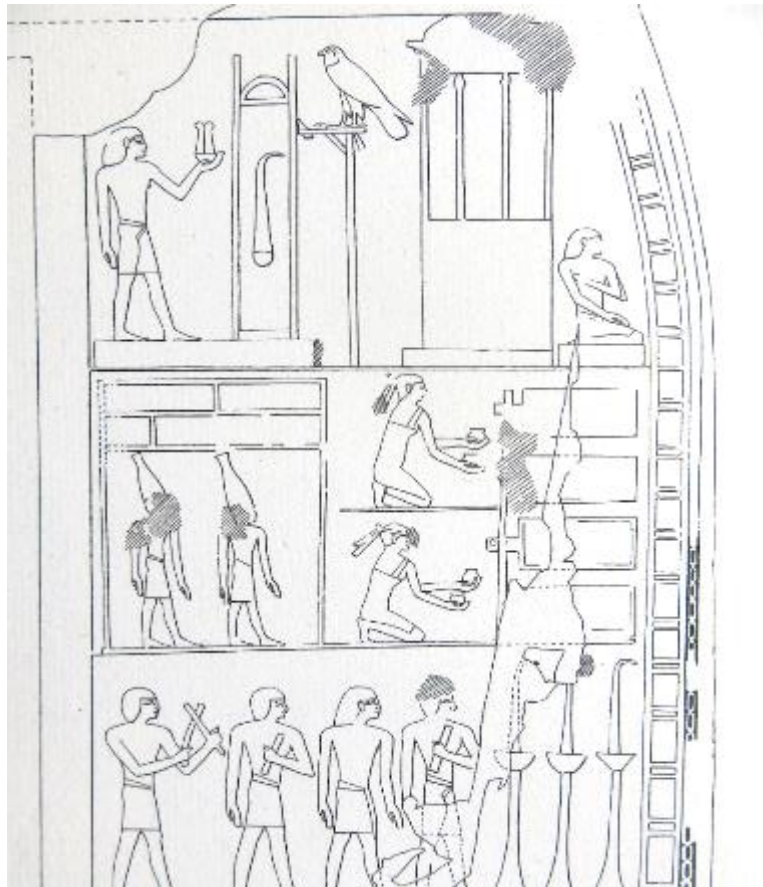


Figure 5-8 - Scene from right side of the inner doorway of the North Chapel in the tomb of Puimre; three lamps are depicted in the bottom right corner (N. de G. Davies 1923b: plate XLVI)

A very similar depiction is included in the much more detailed representation of the funeral rites found in the tomb of Rekhmire (TT100), dating to the reigns of Thutmose III to Amenhotep II. Within the passage of the tomb, at the symbolic west end near the false door, is a collection of 68 scenes that illustrate various funeral acts performed before Anubis, Osiris and the goddess of the West (N. de G. Davies 1943: 70–74). At the top of the wall, amongst rituals carried out before Osiris, is a depiction of the *tekenu* on a couch, a shrine labeled as the “three times great house”, and two women offering incense (N. de G. Davies 1943: plate V, LXXXIII). Between the *tekenu* and the “great house” are three lampstands again with three elongated wicks or wick-on-stick devices rising from the center of the bowl (Figure 5-9). Unlike the other four tomb chapels where light is depicted as part of the funeral rites, the scene in Rekhmire’s tomb labels these three lamps as “*tk3*”. The tomb of Amenemipet (TT276) also shows three lamps on stands presented before the Western goddess on the west wall of the chapel’s inner room (Porter & Moss 2004: 353). As in Rekhmire’s tomb chapel, the lamps are presented next to the *tekenu* on a bed.

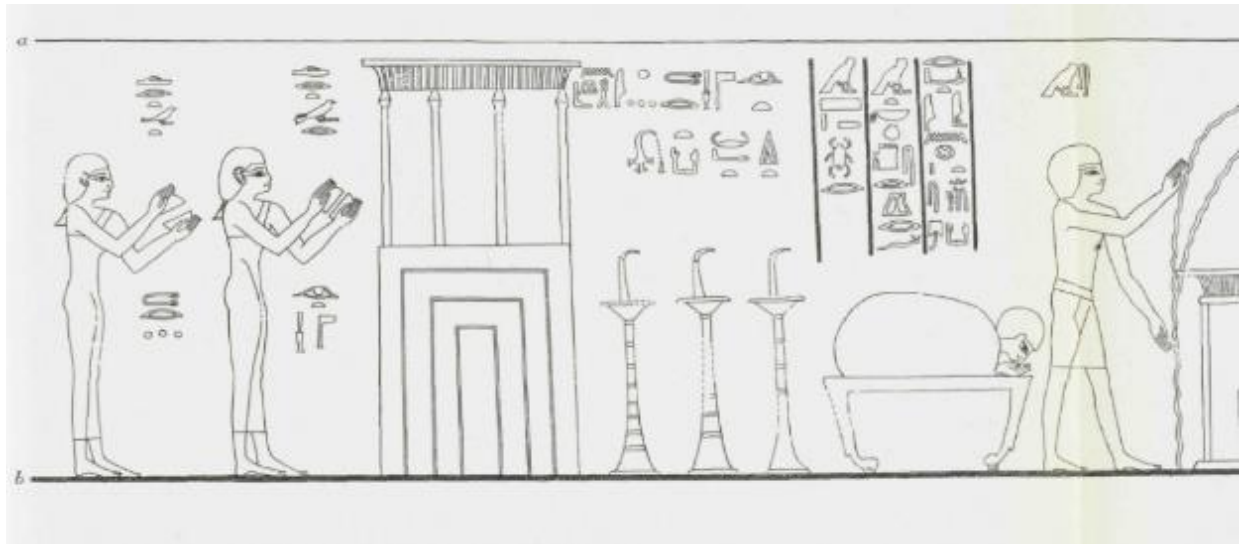


Figure 5-9 - Scene from tomb of Rekhmire showing three *tk3* in front of the "great house" and behind the *tekenu*  
(Davies 1943: plate LXXXIII)

The contemporaneous tomb of Amenmose (TT42) exhibits an even greater variation in the type of lighting device used in these scenes. At the end of the chapel passage, which leads to an undecorated inner room, three men present a wick-on-stick lighting device and a jar of fat before the Western goddess (Porter & Moss 2004: 83). As with the previously discussed scenes, the men are included within a procession of priests, *muu* dancers and the *tekenu*. This scene represents a development in the presentation of lighting as part of the funerary rites from a stationary lamp to a mobile implement that can be carried in the hand. This trend seems to have been further developed as evidenced in the tomb of Amenhotep-Sise (TT75) dating to the reign of Thutmose IV (N. de G. Davies 1923a). On the west wall of the chapel's shrine, two men process with large, diamond-shaped wick-on-stick devices painted red with white stripes (Figure 5-10). The scene likely included three men originally, but sadly all that remains on the wall are the toes of one foot of the third individual. The men process with their lighting devices towards the deceased along with a group of priests bearing red sticks and libation vessels, and a group of mourning women. Above this register is a depiction of the deceased sailing north on his mythical journey to Abydos.



Figure 5-10 - Depictions of two priests carrying diamond-shaped lighting devices (far right) as part of the funeral procession of Amenhotep-Sise; (Davies 1923: plate XVII)

All of these scenes incorporate various aspects of the funeral rites, which included the journey to the West, procession to/from the embalming hall, and ultimately the procession to the tomb where the Opening of the Mouth would be performed and the deceased would finally be buried (Assmann 2005: 304–29; Hays 2010). It is not necessary to go into the detail of each of these rituals as many of them remain enigmatic (the nature of *tekenu* for example). What is important is that the context in which the offering of three artificial lights appears is the same. They are frequently incorporated into processions with priests carrying sticks, mourning women and *muu* dancers. The pouring of libations is common and performed either by priests carrying *hs*-vases or by women pouring water into basins. The three lights in either lamp or wick-on-stick form (labeled as *tk3* in the chapel of Rekhmire) are commonly placed next to the *tekenu* and/or a large shrine. The placement of these scenes near the symbolic western portion of chapel shrines or passages is also common and further links them to the funeral performance, as does the inclusion of the journey of the deceased to Abydos (Figure 5-11).

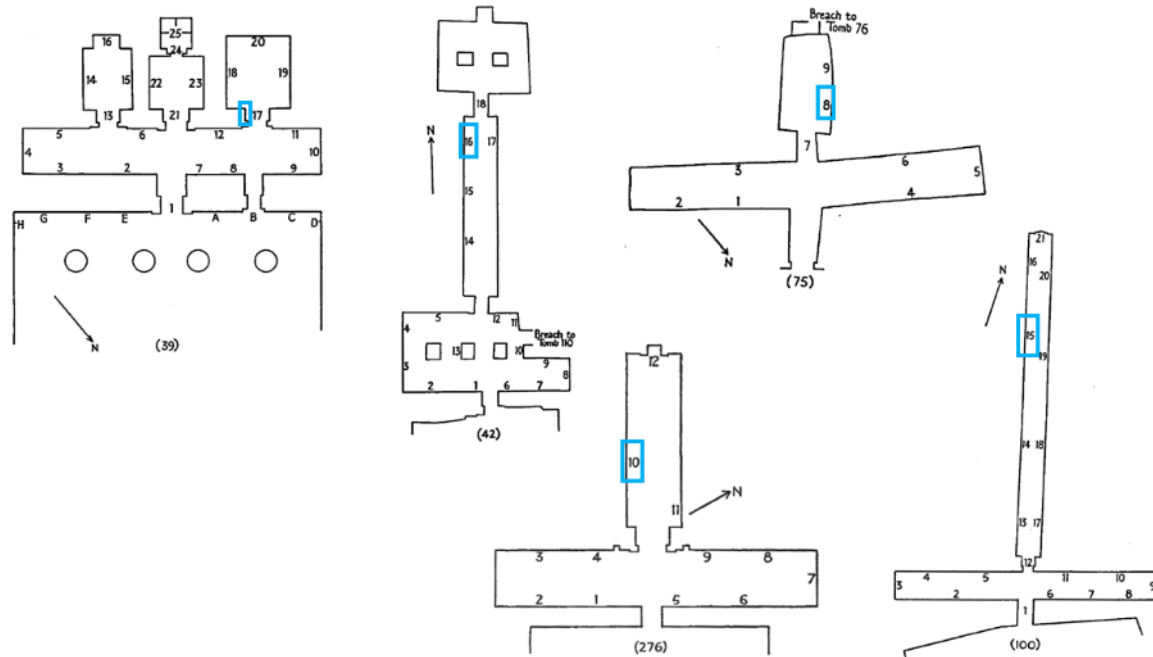


Figure 5-11 - Plans of 18th Dynasty tomb chapels with scenes of light offerings indicated in blue; plans from (Porter & Moss 2004)

Interestingly, over this brief period of time between the reigns of Thutmose III and Thutmose IV the light sources are adapted from three stationary lamps on stands to mobile wick-on-stick devices to elaborated diamond-shaped versions of this type with red and white striping. Moving forward, it seems that mobile, wick-on-stick lighting devices become the preferred form of artificial lighting for rituals as depictions of lamps, such as those in the tombs of Puiemre and Rekhmire, no longer appear in these contexts.

Although depictions of lighting devices as part of the funeral performance first appear in these early 18<sup>th</sup> Dynasty tombs, accompanying elements such as the *tekenu* and *muu* dancers appear in Old Kingdom tombs (Seyfried 2003; Delgado 2011). The New Kingdom tomb depictions may be the first time that all these elements are depicted together, but that does not suggest that it was the first instance that lighting was used in the funeral rites. If the inclusion of lighting devices had been an 18<sup>th</sup> Dynasty invention, it seems very unlikely that they would be represented with such constancy. As demonstrated in Chapter 3, a lack of standardization in lighting device shape implies that it was not a common item of equipment. The lighting devices in these five tomb scenes do vary in shape between the reigns of Thutmose III and IV, but I would argue that this reflects a natural development in device preference over an approximate 100-year span of time. Crucially,

the figures (*tekenu*, *muu* dancers, female mourners, priests with sticks/rattles, personifications of the West) and architectural elements (great house, shrines for various divinities, pools of water) are, for the most part, quite uniform in their representation and draw on the Butic ceremonial traditions that stretch back to the Old Kingdom (Altenmüller 1972; Altenmüller 1975). I would therefore suggest that three lighting devices formed a part of the ideal funeral rites long before they are first depicted in the early 18<sup>th</sup> Dynasty. As a result, these scenes are not illustrating a new ritual practice, but rather incorporating elements of an existing religious tradition into the New Kingdom iconographic program.

Several other 18<sup>th</sup> Dynasty tomb chapels, which date to the reigns of Thutmose IV to Amenhotep III, incorporate scenes of light offerings to the deceased, including the chapels of Menna (TT69) (Hartwig 2013), Nakht (TT52) (N. de G. Davies 1917), Nebamun (TT90) (N. de G. Davies 1923a) and Senemiah (TT127) (Porter & Moss 2004: 241–43). These are less specific in context and may have been presented either as part of the initial funeral banquet or subsequent festival celebrations, such as the Beautiful Feast of the Valley.<sup>58</sup> Unlike the funerary scenes, which were exclusively associated with the goddess of the West, western walls or the western portion of the tomb (p. 153–55), these depictions are not associated with any particular wall or symbolic orientation. However, unlike the three lighting devices included in the funeral rites, these offering scenes suggest that two artificial lights (or multiples of two) were appropriate for offerings to the deceased after they were buried. The lighting implements are also each of the wick-on-stick type, mostly shown as a single, white twisted wick attached to a reed with a red tip. The definition of the twisting in the wick is painted in red and in the tomb of Nebamun and Ipuky (TT181) a piece of red fabric is shown holding the white wick to the stick (Davies 1925: plate V). All the lights are carried in the hand, mostly by men, with the exception of depictions in the tomb of Huy (TT54) (Porter & Moss 2004: 104–5) and the late 18<sup>th</sup> Dynasty tomb of Amenmose (TT254) (Strudwick 1996). The scene in Amenmose’s chapel is particularly interesting as two single wick-on-stick implements and a large, red pyramidal wick-on-stick device inserted into a shrine are presented along with other offerings (Strudwick 1996: 67) (Figure 4-6). This marks the first instance that I have identified where an altar,

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<sup>58</sup> Schott (1953: 67) suggests that “fackeln” could have been used as part of the festival celebration, but as a decoration or means of providing illumination, not necessarily as an offering. I have not encountered any light offering scenes explicitly labeled as taking place for the Beautiful Feast of the Valley, but that does not confirm or deny Schott’s hypothesis.



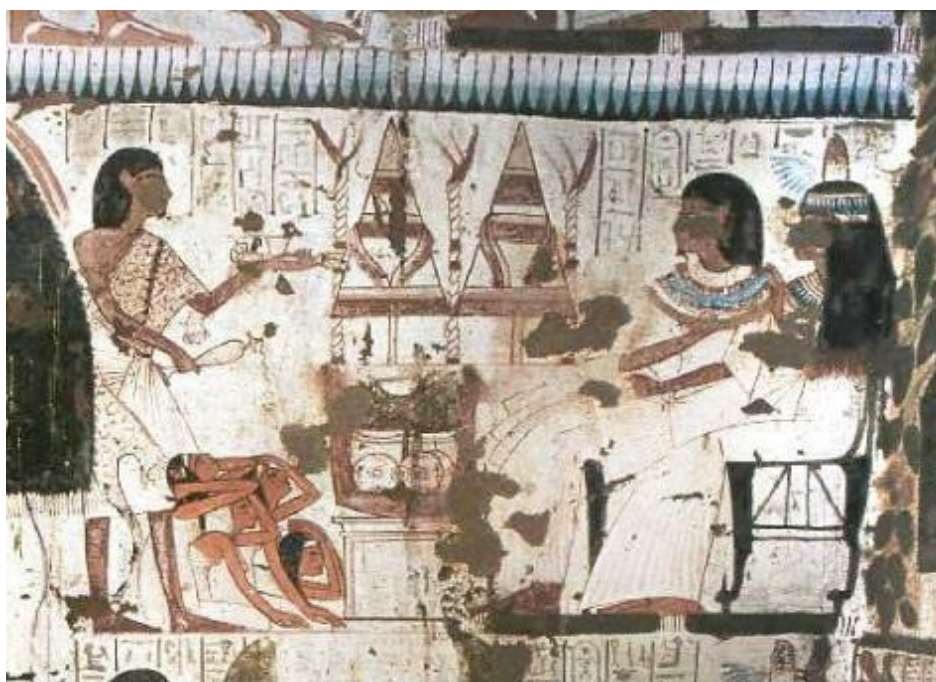
noticeably similar to the Middle Kingdom “shrine” (or perhaps more appropriately altar) of Seshenu, appears in the decorative program of New Kingdom tombs. This is a trend that continues into the Ramesside period and will be discussed in detail below. There does not appear to be any constancy with regards to the other offerings presented alongside artificial light as they may include bread, floral bouquets, jars of fat, rolls of cloth, food offerings and libations. The tomb of Sennefer is notable here as it is the only 18<sup>th</sup> dynasty tomb, aside from that of Amenemhet, which includes a depiction of light offering in the burial chamber. Moving forward into the Ramesside period, depictions of artificial light used as part of the funerary procession disappear. Instead, artificial light is shown as part of the funerary offerings to the cult statue of the deceased at the tomb. Additionally, more depictions of lighting are found in the burial chamber as opposed to the tomb chapel.

### *3.2 Lighting for the dead in the Ramesside period*

The iconography of offering light undergoes further development in the Ramesside period. Unlike the early 18<sup>th</sup> Dynasty tombs, which included scenes of the funeral procession, Ramesside tomb chapels place far more emphasis on depictions of the rites performed at the tomb entrance. As a result, artificial lighting is displayed among the offerings placed before the cult statue as part of the funerary banquet. In contrast to later 18<sup>th</sup> Dynasty offering scenes which are generic in context, the scenes where artificial light is offered in Ramesside tombs are distinctly funerary in nature, frequently including mourning women (Figure 5-12) or Isis and Nephthys as the chief mourners of Osiris/the deceased (Figure 5-15). Interestingly, many more depictions of artificial light appear in Ramesside burial chambers. Of the 23 confirmed tombs that include light offerings in their decoration, 9 tombs depict light exclusively in their burial chambers. The spatial distinction in where the scenes are located also impacts on the content. Depictions of artificial lighting in chapels relate to funerary offerings rites, while those depictions in burial chambers are more mythological in nature.

A scene from the tomb of Userhat (TT51) (N. de G. Davies 1927: 12, plate V, XII B), which dates to the very beginning of the 19<sup>th</sup> Dynasty, exhibits diagnostic features of light offering scenes that are repeated throughout Ramesside period tomb chapels. This scene is particularly beneficial as it bears an inscription to the left of the lighting devices labeling the offering as *jrt tk3 n wsr* “making *tk3* for the Osiris (Userhat)” (see line drawing in Figure 4-4). Located on the west wall of the

transverse hall in the tomb chapel, this scene shows a priest robed in leopard skin pouring libations and offering incense to the cult statues of Userhat and Shepsut, his wife. Kneeling on the ground in front of the priest is a group of mourning women, which indicates that this is part of the funeral offerings to the dead. Between the women and the feet of Userhat is an altar laden with offerings that are surrounded by a pair of raised *tk3*-arms. Above the arms stand two white pyramidal lighting devices decorated with red bands flanked by three wick-on-stick implements (Figure 5-12). The white wicks are attached with pieces of red fabric to the stick, which is invisible. It is unclear from the image whether the lighting devices are placed into the shrine. However, very similar scenes in the chapels of Tjay (TT23) (Porter & Moss 2004: 38–41), Khonsu (TT31) (N. de G. Davies 1948), and Nefersekheru (TT296) (Feucht 1985) indicate that the reeds supporting the wicks are placed into the altar, likely in drilled holes as in the altar of Seshenu from Dashur (Figure 2-56).



*Figure 5-12 - Scene of offering tk3 before the cult statue of Userhat and his wife; Qurna, Luxor (www.osirisnet.net)*

Unlike 18<sup>th</sup> Dynasty tomb scenes where single wick-on-stick devices were dominant, Ramesside tomb chapels suggest that a combination of large, pyramidal-shaped lights and single wick-on-stick implements were preferred during this period of the New Kingdom. Large lights are never depicted on their own, but flanked by single wick-on-stick implements. If one large light is depicted then two smaller lights are also placed in the shrine. If two large lights are present, as in the scene from Userhat's chapel, the addition of a third wick-on-stick device is necessary to

preserve symmetry. The conical form of the larger lights is consistent in all scenes from a funerary offering context, although some lights are rather elongated and appear almost conical as in the chapel of Nefersekeru (Figure 5-13). This scene is particularly interesting because it is the only one that depicts the act of lighting the *tk3* on the altar. Specifically, three of the lighting implements are burning, as displayed by the red color at their tip and the bend towards the offering recipient. The fourth device, extended in the right hand of the priest, is in the process of being ignited from the pyramid-shaped *tk3*. This is indicated by a slight bend in the tip of the device and a small portion of red at the tip where it touches the pyramidal *tk3*. The last implement, held in the left hand of the priest, is yet to be lit. The artist has indicated this by the rough white tip, suggesting frayed ends of linen that have not burnt off. Additionally, the lighting device is completely straight and lacking any red color, evidence of flame. This is the only scene to my knowledge which shows three stages of a light offering: pre-ignition, in the act of being lit, and partially consumed by fire.



*Figure 5-13 - Scene from the tomb of Nefersekeru (TT296) with priest presenting light offerings on an altar;  
Schott photo archive no. 3472 ([www.schott.uni-trier.de](http://www.schott.uni-trier.de))*

Depictions of artificial lighting in Ramesside burial chambers are distinctly different from their tomb chapel counterparts. They are only found in tombs at Deir el-Medina in contrast to scenes in chapels which are distributed across the entirety of the west bank of Luxor. There may have been scenes of light offerings in the tomb chapels at Deir el-Medina, as indicated by the chapel of Kasa and Penbuy (TT10) (Figure 5-3), but very few of these survive. Painted burial chambers at Deir el-Medina, as in the rest of the west bank, are rare. This may account for the lack of lighting depictions in burial chambers from the Ramesside period in general. Still, of the 53 decorated burial chambers at Deir el-Medina, 9 of them depict artificial lighting devices and most of these include more than one representation of light offerings.

With the exception of the tombs of Inherkau (TT359) (Cherpion & Corteggiani 2010) and Nakhtamun (335) (p. 142), where lights are presented by priests or family members of the deceased, artificial light is offered by deities in the Deir el-Medina tombs. Significantly, the Deir el-Medina scenes are the only ones in which light is presented before the mummified body of the deceased, not their cult statue as in all other New Kingdom representations. The scenes are typically located on the symbolic western wall of the burial chamber, at times being presented by a personified emblem of the West itself, as in the tombs of Amunemuia (TT356) (Figure 5-14) and Khawi (TT214) (Figure 5-1). The scene from the tomb of Amunemuia displays the type of lighting device used in these offerings, a non-spouted conical open vessel with flared sides with three wicks placed inside. At times the number of wicks is altered to two, but the majority of scenes depict lights offered in groups of three.



Figure 5-14 - Personified emblem of the West holding light offerings on western tympanum of burial chamber of Amunemuia (TT356); Deir el-Medina, Luxor

Even if a personified *jmntt* is not presenting offerings, the association with the West, and by extension the underworld, is quite explicit in the Deir el-Medina scenes. The gods *dt* and *nḥh* appear in the tombs of Neferabet (TT5) (Figure 5-4) and Nakhtamun (TT335), and in the latter *dt* is labeled as *dt jmy jmntt* “Djet who is in the West”. Anubis also is shown in light offerings scenes either holding a lamp himself, as in the tomb of Nebenmaat (TT219) (Figure 4-7) or flanking the personified West as in the scene from Amunemuia (Figure 5-14). As mentioned previously, the presentation of light before the mummified deceased is a common theme. This is accomplished in several ways: by including light at either end of the mummified body as in the tombs of Neferabet and Paneb (TT211) (Bruyère 1952: plate XXII); by presenting light before Osiris and the deceased simultaneously as in the tomb of Pashed (TT3) and Amennakht (TT218) (p. 227-30); or as in the unique instance in the tomb of Nakhtamun where “Djet who is in the West” presents lighting next to the tomb owner and his wife as they are stood upright at their tomb entrance (Bruyère 1926: 125–27, fig. 87). Frequently, these scenes are painted on the western wall of the burial chamber above where the sarcophagus of the deceased would have been placed. The placement of the artificial light then would have flanked both the painted and physical mummified body (Figure

5-15). Similar scenes are also found in Book of the Dead papyri, such as the 19<sup>th</sup> Dynasty scroll of Ani (EA 10470) (Figure 7-3) and the 18<sup>th</sup> Dynasty papyrus of Nebqed (N 3068) (Figure 7-4) where two lit lamps are shown on either end of the mummified body laid on a bed in the burial chamber.



Figure 5-15 - West wall of burial chamber of Neferabet (TT5) where sarcophagus would have rested; Deir el-Medina, Luxor

### 3.3 Discussion

As with offering light as part of the *h̄tp di nsw*, several aspects of scenes of offering light to the deceased in the New Kingdom suggest that these rites are drawing from an older and richer religious tradition. The first factor is the constancy of elements within the depictions. Early 18<sup>th</sup> Dynasty tomb chapels, for example, record the use of three lighting devices as part of the funeral procession. Although the lights themselves develop from three stationary lamps on stands to hand-held wick-on-stick type lights, they are regularly surrounded by figures such as *muu* dancers, the *tekenu*, deities associated with the West, and a coterie of priests carrying sticks and/or libation vessels. Nearby scenes also frequently depict the journey of the deceased to Abydos and women (perhaps acting as the chief mourners Isis and Nephtys) pouring libations into four basins of water. These rituals are not exclusive to the New Kingdom however, as they incorporate much older burial traditions, such as the Butic rituals, that stretch back to the Old Kingdom (p. 158-59). Moving forward in the 18<sup>th</sup> Dynasty, lights begin to appear in scenes of offerings subsequent to the

burial, presented in pairs for festivals in which the deceased are commemorated. This too is likely not a new rite as the 12<sup>th</sup> Dynasty contracts of Hepdjefa reference the presentation of two lighting devices for the “glorification” of the deceased on the New Year and *wag*-festival (p. 111-12). 19<sup>th</sup> Dynasty scenes where lighting is depicted are distinctly funerary in nature and again contain very consistent elements: a priest in leopard-skin robes who offers incense and libation, mourning women, and large pyramidal lights flanked by wick-on-stick devices placed in an altar. This altar that first appears in the late 18<sup>th</sup> Dynasty tomb of Amenmose and continues in use throughout the Ramesside period again is not a New Kingdom invention. Instead, it very closely resembles the 12<sup>th</sup> Dynasty altar of Seshenu found at Dashur (Figure 2-56). Although these items do not appear in the decorative program of tombs until the New Kingdom, the text inscribed on Seshenu’s altar clearly indicates that these items were already associated with light offerings more than 600 years earlier. I have argued that these objects did not appear earlier due to the decorum of tomb chapel decoration. Middle Kingdom tombs, if decorated, emphasized the tomb owners’ prowess through supervision of work scenes and their virility or regenerative abilities through fishing and fowling scenes. Early 18<sup>th</sup> Dynasty tombs begin to place more emphasis on depictions of the funeral performance, and in them three lighting implements appear. From the reign of Thutmose IV onward, offerings for festivals such as the Beautiful Feast of the Valley and New Year are included in tomb painting repertoire, which allows for the inclusion of artificial lighting in offering scenes. Egyptians did not choose to exclude artificial lighting as offerings until the New Kingdom rather, the tomb decoration adhered to the conventions of what was necessary and appropriate to depict. For reasons stated above, lighting devices were not accepted into the decorative program until the 18<sup>th</sup> Dynasty. However, because they had likely formed part of offering rites for the deceased since at least the 12<sup>th</sup> Dynasty, and potentially the Old Kingdom (p. 153), they appear with a high level of constancy in number, type and context in New Kingdom iconography.

#### **4. Offering light to illuminate the path of darkness**

Thus far the discussion of scenes depicting artificial light have related to funerary and festival offerings to the deceased, as well as provisions to the dead or the gods as part of the *hṯp di nsw*. This section will focus on offerings of light for festivals to commemorate the end of the Egyptian calendar year, the Epagomenal Days and New Year’s eve/day. Once again these scenes first appear in the early 18<sup>th</sup> Dynasty, during the reigns of Hatshepsut and Thutmose III, and continue into the





This same invocation is repeated almost identically in the marginally later tombs of Menkheperrasonob and Amenemhet. The depiction of the *tk3* offering is also very similar. While Senemiah's tomb only has one priest celebrating the Epagomenal Days as a collective, Menkheperrasonob (Figure 5-16) (N.M. Davies 1933: 23–24) and Amenemhet depict one offering bearer for each of the five days and a caption is provided to identify each birthday. One inconsistency is the placement of these scenes. Amenemhet's Epagomenal Days celebration is depicted on the north wall of the tomb chapel shrine, Senemiah's scene is depicted on the west wall of his chapel's transverse hall<sup>60</sup> and Menkheperrasonob's chapel places the scene on the eastern wall to the right of the tomb entrance. The use of this location for the presentation of light offerings is repeated in the Ramesside tomb of Tjay (p. 171-72, Figure 5-19), as well as the temple of Amenhotep III at Soleb (p. 189-91, Figure 7-7). The significance of this will be discussed in the next chapter, but it is important to note that the 18<sup>th</sup> Dynasty chapel of Menkheperrasonob is the first instance of light offerings appearing on the eastern wall of a space, immediately to the right of the entrance.

While all these scenes indicate that wick-on-stick devices are the appropriate type of light for these celebrations, the number provided varies slightly between tombs. The priest in Senemiah's chapel offers one light, while the group of priests in Menkheperrasonob's chapel present one light and one jar of fat (perhaps illuminant?) and lastly, the scene in Amenemhet's chapel shows the men (several of which are labeled as the sons of Amenemhet) holding a pair of wick-on-stick lights in one hand and a jar of fat in the other. The accompanying inscription in Amenemhet's chapel is the most detailed, indicating that the jar of fat presented is *mdt*, discussed in Chapter 3 as a potential illuminant. Unlike the other two chapel scenes that restrict their light offerings to the Epagomenal Days, Amenemhet's tomb also includes the "kindling of a *tk3*" for the New Year, the first tomb, to my knowledge, that incorporates the offering of light for all six of these days.

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<sup>60</sup> The door jambs leading into the inner room of Senemiah's tomb chapel are decorated with a total of 5 priests each proceeding with two wick-on-stick devices in their hands. It is possible that these 5 men are also meant to correspond to the 5 Epagomenal Days. The placement of these scenes is also similar to the depiction of the same celebration in Amenemhet's tomb chapel. However, there is no inscription to corroborate this and the priests may be providing light as part of the *hṯp di nsw* instead.



*Figure 5-16 - Scene from tomb of Menkheperassoneb depicting five priests offering a jar of illuminant and an artificial lighting device for each of the five Epagomenal Days (N.M. Davies 1933: plate XXIX)*

After the early 18<sup>th</sup> Dynasty, depictions of light offerings for the Epagomenal Days are no longer included in the decorative program of tomb chapels. However, scenes in the chapels of Mery (TT95) and Amenmesu (TT89) (N.M. Davies & Davies 1941), which date to the reigns of Amenhotep II and III respectively, suggest that commemoration of the Epagomenal Days and New Year were combined into one offering of multiple lights. In both tombs an open-work rack is shown holding four long wick-on-stick devices before a statue of the deceased. In the tomb of Amenmesu, in front of the rack is a tall stand supporting a bowl from which a large wick and flame rise (Figure 5-17). A similar lampstand may also have been present in the tomb of Mery but the wall is badly damaged and the photograph of the scene (Schott Nr. 8358)<sup>61</sup> only shows the rack and four lighting implements. Importantly, the scene in Mery's tomb is accompanied by a text, which indicates that the light is an offering for the commemoration of the New Year's festival.

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<sup>61</sup> Schott's photo archive can be accessed at: <http://www.schott.uni-trier.de>

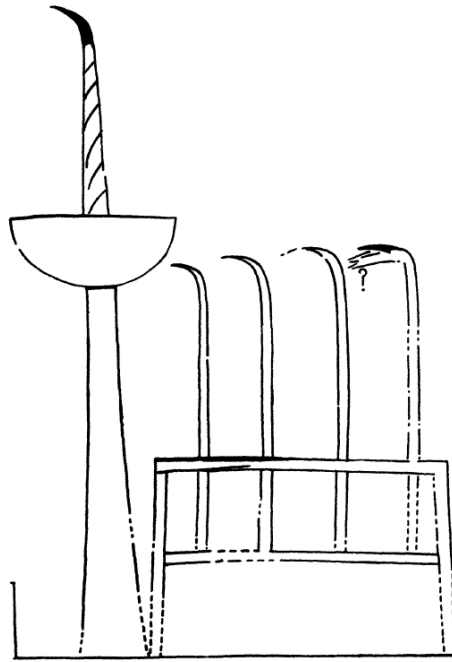


Figure 5-17 - Depiction of five lighting devices for the New Year and Epagomenal Days from the tomb of Amenmesu  
(N. de G. Davies 1924: plate 7, fig. 15)

It is possible that all these lights were presented exclusively for the New Year's festivities. However, given the presentation of light for the Epagomenal Days, which immediately precede the New Year, in the tombs of Senemiah, Amenemhet and Menkhepperasoneb, it seems probable that these lights in racks and stands are meant to incorporate both the Epagomenal Days and New Year light offerings.<sup>62</sup> The inscription in the tomb of Amenemhet further supports this hypothesis as a *tk3* is presented for each of the five birthdays of the gods, as well as the festival of the New Year within the same scene. The scenes in Amenmesu and Mery's chapels also indicate that the offering of light for these days evolved between the reigns of Thutmose III and Amenhotep II. Over this approximate 50 year span of time, the presentation of artificial light, or at least the representation of it, changed from individuals offering *tk3* by hand to *tk3* being presented before the deceased on a rack or stand. As will be demonstrated below, this trend continues in the Ramesside period. This would then mark the first instance, which I have identified, where artificial light is presented in a stand as a light offering for both the Epagomenal Days and the New Year.

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<sup>62</sup> A similar idea is suggested by Davies (1924: 13) but in relation to a scene from the 19<sup>th</sup> Dynasty tomb of Tjay (TT23), which will be discussed later in this chapter.

#### 4.2 Lighting for the Epagomenal Days and the New Year in the Ramesside Period

As with the 18<sup>th</sup> Dynasty, there are very few examples from the Ramesside period of representation of artificial light being offered for the Epagomenal Days and New Year. Though few in number, these scenes are quite rich in information as they incorporate detailed imagery with well-preserved text. I have identified only one tomb chapel that depicts light offerings for the New Year, the 19<sup>th</sup> Dynasty burial of Tjay.<sup>63</sup> This scene is unique as it is located in the courtyard of the tomb, not the interior of the tomb chapel or burial chamber (Porter & Moss 2004: 39). As in the tomb of Menkheperassoneb, the scene is placed on the eastern wall of the tomb complex to the right of the sloped ramp entrance.

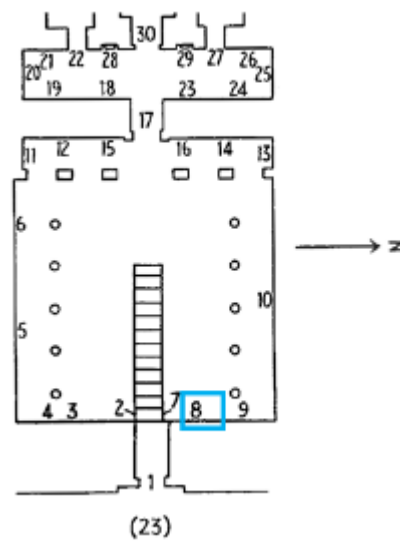


Figure 5-18 - Plan of forecourt of the tomb of Tjay with the location of the New Year light offering scene indicated in blue; plan from (Porter & Moss 2004)

The tomb owner and his wife are depicted on the left of the scene, seated behind a large pile of food offerings and floral bouquets. On the far right, a priest in leopard-skin robes censes and libates before a smaller table of offerings, as well as a shrine into which five single wick-on-stick devices and a large, mound-shaped wick-on-stick light have been inserted (Figure 5-19).

<sup>63</sup> The New Kingdom tomb of Neferhotep (TT50) contains the text of the New Year's light offering but the accompanying vignette depicts the deceased lying on a bier flanked by two lamps, similar to Figure 7-3 (Hari 1985: plate XXIX).

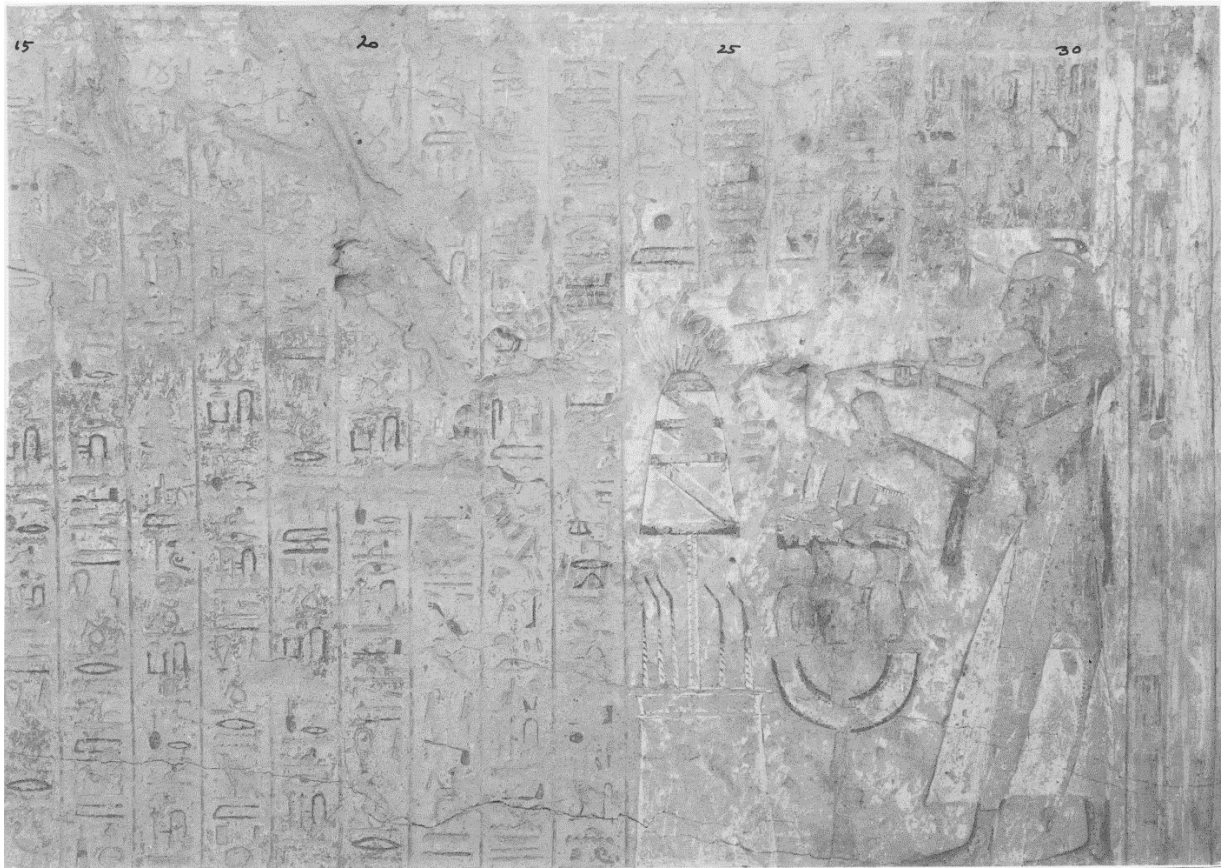


Figure 5-19 - Priest presenting New Year's offerings including six lights on a shrine in the courtyard of the tomb of Tjay;  
Schott archive nr. 2644 ([www.schott.uni-trier.de](http://www.schott.uni-trier.de))

Across the top of the scene, between the priest and the deceased couple are thirty lines of text that record an invocation of the light offering for the benefit of the tomb owner (Haikal 1985). As with the 18<sup>th</sup> Dynasty scenes, the light is referred to as *tk3*, which is provided with fresh fat and linen presumably for the construction of the lighting implements. The opening lines of the text stipulate that the offerings of food, *mdt* and *tk3* are for the New Year celebration. The inscription then addresses the *tk3* specifically:



*jnd-ḥr=k tk3 pn nfr n wsr sš t3<sup>64</sup> m3<sup>c</sup>-ḥrw jnd-ḥr=t jrt ḥrw sšmt ntrw / m kkw sšmt wsr sš t3 m3<sup>c</sup>-ḥrw...*

<sup>64</sup> The tomb owner's full name is Tjay and his nickname, used in this inscription, is generally translated as To.

*Hail to you, this perfect tk3 of Osiris the scribe To, justified. Hail to you, eye of Horus which guides the gods / in darkness and which guides Osiris the scribe To, justified... ; lines 5-6*

This is a clear repetition of the text included in 18<sup>th</sup> Dynasty light offering scenes, albeit with slight modification, as the *tk3* provides illumination to guide the gods and the deceased in darkness. It is also nearly identical to an inscription included within a slightly earlier scene of offering light to Amun for the New Year by Seti I in the temple of Karnak (Nelson 1949b: 336–37). This text also proves useful in filling lacunae in Tjay’s text caused by deterioration of the limestone wall. This is particularly relevant for one interesting line that appears to reference the single wick-on-stick lighting devices:



*wsr, jst, swt, nbt-ḥwt j<sup>c</sup>.sn ḥr=k sk.sn rmyt=k wp=sn r=k m db<sup>c</sup>w ipw / b3k*

*Osiris, Isis, Seth and Nephtys, they wash your face, they wipe away your tears, they open your mouth with their bright / oily fingers<sup>65</sup> ; lines 8-9*

Three previous translations of this text all suggest, and I would agree, that the *db<sup>c</sup>w* are meant to be associated with the wick-on-stick implements offered to the deceased (N. de G. Davies 1924: 13; Nelson 1949b: 337; Haikal 1985: 367). Significantly, the owners of the *db<sup>c</sup>w* (Osiris, Isis, Seth and Nephtys) are deities associated with the Epagomenal Days. Additionally, the inscriptions in Tjay’s tomb and Karnak temple include a lengthy request that the *tk3* may last as long as the gods of the Heliopolitan ennead, including Isis, Horus, Nephtys and Osiris —four of the five deities celebrated during the Epagomenal Days. It therefore seems that the five single wick-on-stick lights are intended to commemorate the Epagomenal Days, while the larger, mound-shaped light is given for the New Year. The scene in Tjay’s tomb also indicates that the placement of these lights into a stand or altar, first seen in the tombs of Amenmesu and Mery, continued into the 19<sup>th</sup> Dynasty.

<sup>65</sup> Davies (1924: 13) translates this line as “five fingers (?) of the olive” or “five tapers of olive oil (?)”, while Haikal (1985: 369) suggests that *b3k* could indicate that moringa oil was used as the illuminant for the lights. Nelson (1949b: 337) favors a translation of “bright” and correlates this passage to Pyramid Text 1983e/30b, and the fingers used to magically open the mouth of the mummy during the Opening of the Mouth ritual (Otto 1960a: 35–36, 79–87; Otto 1960b: 65–66, 91–95). I have incorporated both Nelson’s and Davies’ translations into my own, while setting aside Haikal’s since the text explicitly states that the lighting devices are provided with linen and fat, not moringa oil.

Although the Epagomenal Days no longer seem to be celebrated separately by this time period, the incorporation of five lights as part of the offerings to the deceased for the New Year suggest that remnants of this 18<sup>th</sup> Dynasty tradition remained.

#### 4.3 Discussion

Despite the slight variations in all of these scenes, the intention of offering *tk3* for the Epagomenal Days and New Year remains the same — “illuminating the path of darkness” or guiding the gods and deceased in darkness. This is, however, not a phrase created in the New Kingdom, but one that first appears on the altar of Seshenu in the Middle Kingdom. Here it relates to the *tk3* (which were inserted into the altar) that guides the gods and the deceased in darkness as part of the New Year celebrations. Crucially, the inscription on Seshenu’s altar is nearly identical to those in Tjay’s tomb (p. 171-73) and the temple of Karnak (p. 181-83, Figure 5-21). In the approximate 700 year period between these monuments, the text was not altered, nor does it seem that the implements involved in the rite were changed as Seshenu’s altar is remarkably similar in appearance to the shrine depicted in Tjay’s tomb scene.

The 12<sup>th</sup> Dynasty contracts of Hepdjefa also corroborate the use of lighting for New Year’s Eve and New Year’s Day and suggest one possibility for the practical application of artificial light to “illuminate the path of darkness”. Within Contract 9, Hepdjefa stipulates that two *gmht* are meant to be obtained from the temple of Anubis in Asyut by the overseer of the cemetery and his workmen (p. 111-12). This is meant to be done *m grh*, at night, before the New Year and then again at dawn of New Year’s Day. It is not stipulated whether two lighting devices in total are given to these men, or whether they receive two lighting devices each. I would, however, favor the latter interpretation, particularly for the New Year’s Eve procession as the men were intended to process in the dark from the temple, through the necropolis and up the hillside to the tomb of Hepdjefa. This procession was performed as a *s3hw*, a glorification of the deceased and necessitated that the light was given as an offering to Hepdjefa along with a large quantity of bread and beer. Whether or not this nighttime procession was actually meant to “illuminate the path of darkness” is speculation, but it does illustrate the metaphor. However, these contracts do provide further evidence that lighting was offered on the night before the New Year (which is also the last Epagomenal Day, the birthday of Nephtys) and New Year’s Day well before it was first depicted in the New Kingdom.

## 5. Interpretation of lighting rituals

There is a strong correlation between temple and tomb texts and iconography with regard to the provisioning of light. This indicates that artificial light was an important offering for the cult of the gods, as well as the deceased. Interestingly, Contracts 5 and 7 in Hepdjefa's tomb indicate that this was a reciprocal arrangement, as the deceased could offer light to the god for festival occasions (p. 113). In both of these contracts, Hepdjefa ensures that after his death a *gmht* is provided for the lighting of a *tk3* in the temples of the gods, Wepwawet and Anubis in commemoration of New Year's Eve, New Year's Day and the *wag*-festival. These are also the same festival days for which Hepdjefa was meant to receive light offerings at his tomb. The Ramesside inscriptions in the tomb of Tjay and the temple of Karnak provide additional evidence for this connection as the inscription accompanying the scenes of light offering for the New Year is exactly the same. Presumably then the rites for offering light to a god or a deceased individual were very similar. There is also evidence to suggest that not only were the rituals similar, but the lighting implements themselves may have been shared between the gods and the dead. It is possible, for example, that lighting may have been provided to the deceased from the god as part of the reversion of offerings (p. 152-53). The scene from the temple of Karnak illustrates this as only one of the two wick-on-stick devices given to Amun is extinguished (Figure 5-7). The depiction clearly indicates that a substantial portion of the lighting implement remains, suggesting that it could be reused, perhaps as an offering to another god, or as an offering to a deceased individual via their *ka*-priest. Although purely speculative, it is possible that the initial act of extinction and then re-ignition in a mortuary context was significant, perhaps as a symbol of rebirth or rejuvenation.

This association between the offering of artificial light in temples and tombs has been noted before. The prevailing theory about the purpose of this correlation was predominantly championed by Gutbub (1961: 50–53), although supported by Schott and Haikal (1985: 363–64). Gutbub's hypothesis is that artificial light was initially offered in a temple before being given out to the dead after the reversion of offerings as a *hṯp di nsw*. All instances of offering artificial light were not then separate rituals, but different moments of the same rite all unified in the purpose of protection for the god and the deceased. I would argue that this chapter indicates that this view is far too simplistic. As I suggested above, there are indications that the offering of *tk3 r nb* involved the reuse of temple lighting implements in tombs of the deceased, or perhaps in smaller temples. The



texts that accompany these scenes also indicate that one of the functions of the *tk3* is to protect the beneficiary of the light offerings. The potential reuse and transference of lighting devices from a temple to tomb context is clear and evident since the Middle Kingdom. I do not suggest, however, that all the ritual uses of artificial lighting should be regarded as episodes in one large rite of defense from evil. They could in fact have multiple readings. The transference of lighting devices from the temple of a god to the tomb chapel of the deceased could be seen as a mark of prestige and status, not just as a means of protection. Additionally, iconography and textual evidence related to offering of light for the Epagomenal Days and New Year suggest that this was first a practice performed in tombs, and later adapted for use in a temple context. The variety of contexts in which artificial lighting appears also implies that these rituals were not all seen as parts of a cohesive whole. It is interesting that depictions of lighting devices in tombs develop in shape, size and number throughout the New Kingdom. They are also used in association with other equipment in the form of stands or altars. The 19<sup>th</sup> Dynasty scenes from Karnak however display a single wick-on-stick implement, a device first depicted in 18<sup>th</sup> Dynasty tombs without any accompanying apparatus. Given the development and adaptation of lighting devices evident in Ramesside tomb chapels, it seems odd that the Karnak scenes favor an older style, particularly if temple and tomb offerings are meant to be seen as one and the same ritual.

As previously mentioned, the reason for the attainment of lighting devices from a temple may relate to displays of power or prestige. A priest who was able to offer a *tk3* used in service to a local deity to his deceased patron would certainly have been held in high regard. Likewise, the status and importance of the tomb owner would be heightened, particularly if, as the tomb contracts of Hepdjefa indicate, these arrangements were made while the owner was alive. It also seems likely that the highest quality fabrics and illuminants would have been kept in the temples and so the highest quality lighting devices could be obtained from there. Practical issues such as the means of igniting the devices may also have played a part in connecting temple and tomb. With the exception of the scene in the tomb of Nefersekeru, I have not found the act of ignition depicted in light offering scenes. Similarly, I have only noted the act of extinguishing a light in the temple of Karnak. Perhaps it was necessary to go to the temple to obtain ritual lights because a fire was continually kept burning on the temple premises, which could be used to ignite the lighting implements. Provisions for temple *tk3* extend as far back as the Old Kingdom (p. 117-18), and the

inscription from the temple of Ptah in Karnak indicates that a *tk3* was a fundamental element needed for a temple to function (p. 121-22). As evidenced by the variety of lighting devices recorded in New Kingdom tombs, temples and papyri, it is possible that a temple *tk3* could have been a large lamp with a continually replenished wick and fuel supply. The light would therefore never extinguish—in theory if not in practice—and serve for means of illumination of other lighting devices as needed.

## 6. Ritual Timing and Setting

One minimally discussed aspect of illumination rituals is the environment, both natural and/or built, in which these rites would take place. Generally, the use of artificial lighting devices is something associated with darkened spaces or night-time. Was this the case in ancient Egypt? Davies (1915: 97), for example, suggests that light offerings for a deceased individual would take place “before the niche with statues at dead of night”. Similarly, Reisner (1918: 92) describes a very romantic vision of a night time torch-lit procession on New Year’s Eve, based on the contracts of Hepdjefa, in which the “desert side must have been picked out with lights”. This paints a very appealing picture of dramatically lit, evening ritual enactments, but the evidence suggests that several different times of day and night were utilized. Some rites explicitly state when they are to take place. Contracts 8 (line 307) and 9 (line 312) in the tomb of Hepdjefa, for example, state that artificially lit processions are meant to take place *m grh*, at night, before the day of the New Year and the *wag*-festival. In contrast, Contract 5 (line 298) stipulates that a *gmht* should be provided to light a *tk3* in the temple of Wepwawet *m d3w*, translated as “in the early dawn”, of New Year’s Day (Reisner 1918: 85). Lastly, the depiction of “illuminating the thrones” in the temple of Soleb is described as taking place on the first day of the *heb sed r h d B*, literally “at the brightening of the land”. Unfortunately, as indicated by Davies and Reisner, translations of these terms are grouped under the rather broad headings of “night”, “evening”, and “dawn”. As a further complication, many other depictions of illumination rituals do not specifically mention a time of day when these rites are performed. This results either in the time of day being ignored in discussion of these rituals, or the presumption that artificial lighting was utilized in the evening. I suggest that a more nuanced understanding of the natural setting for these rituals can be ascertained through a reexamination of the iconographic evidence, and comparison to the available textual material.

References in the existing scholarly literature to the architectural space used for artificially lit ceremonies is similarly vague. Luft, in her publication (2009) of the variant forms of Book of the Dead spell 137, provides a rare example of an author offering a suggestion for both the natural and architectural setting of a lighting ritual. However, her hypothesis that the offering of light during the funeral for the deceased took place “in or in front of the grave” lacks crucial specificity. I propose that a reappraisal of the iconographic evidence for lighting rituals provides much more detail about the location of these rites and, consequently, allows for a deeper understanding of how artificial lighting was employed in these spaces. In order to avoid overlap in the following discussion, I will organize the rituals by the time of day that they were performed. I will then incorporate a discussion of the built environments utilized within each of these natural settings.

### *6.1 Ritual at sunset*

In my exploration of illumination rites, I have found only one that seems to have taken place at sunset, the ritual described in Book of the Dead spell 137A, commonly referred to as the “torch ritual”.<sup>66</sup> This spell first appears in early Eighteenth Dynasty funerary papyri and is one of three rituals (spell 137A, 137B, and 137 late) that describe rites in which artificial light, *tk3*, is offered to a deceased individual. The rubric of spell 137A is quite explicit with regards to the equipment and people necessary to properly perform the ritual. First, four *tk3w* must be made of fine red linen and coated in Libyan oil. They are to be carried by four men whose arms are each inscribed with the name of one of the four sons of Horus. The *tk3w* are then lit and presented before the mummy while the spell is recited by a priest. At the culmination of the ritual the *tk3w* are extinguished in four basins of clay, mixed with incense, filled with the milk of a white cow. In the best preserved vignette of this spell from the papyrus of Nu (EA10477) (Figure 5-20), several of these aspects are clearly illustrated as four men dressed in kilts are depicted, each with a wick-on-stick type lighting device clasped in both hands (Lapp 1997: plate 76, 77). They are identified by a caption in the top right corner of the vignette as *rstjw hr*, “guardians of Horus”. In front of the man at the front of the procession are drawn four basins within which the word *jrtt* is written. This suggests that these are the four basins filled with milk that will be used to extinguish the torches.

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<sup>66</sup> For a critical analysis of Spell 137, including an examination of the extant versions of the text and vignettes, a philological commentary on the origins and variants of the spell, as well as a synoptic publication of the spell, see Luft (2009). The line numbers provided in my commentary on spell 137A follow those used in Luft’s publication.

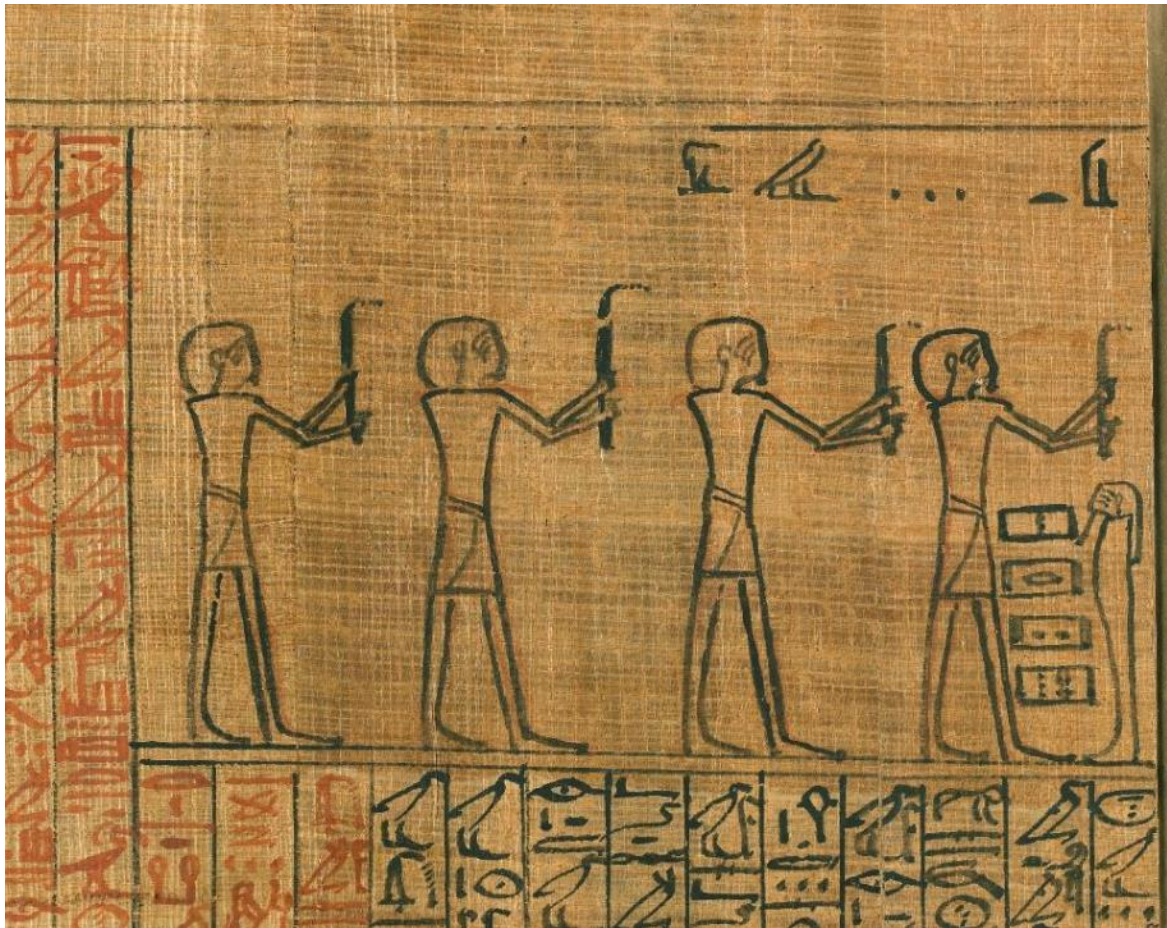



Figure 5-20 - Vignette of spell 137A from the papyrus of Nu (EA10477); British Museum, London  
©Trustees of the British Museum

Despite the detail about what and who should be involved in the performance of this ceremony, the setting within which the ritual would take place is not clearly stated, nor is there a direct explanation for how this rite would fit into the sequence of the funeral. However, I propose that individual lines from the text itself provide evidence that spell 137A was utilized at sunset, after the performance of the Opening of the Mouth ritual.<sup>67</sup>

Referring back to the vignette from the papyrus of Nu (Figure 5-20), I would like to focus on the mummiform figure at the far right side of the vignette. Though diminutive in stature, this individual is the focus of the scene. This is clearly indicated by the four followers of Horus who are oriented towards the figure and present their four *tk3w* to it. It seems likely that this is a

<sup>67</sup> This opinion is also shared by Luft (2009: 92–93). She and I both came to this conclusion independently in 2009 while she was working on her publication of spell 137 and I was working on my Masters thesis at the University of Memphis (Strong 2009). As will be discussed in the next chapter, we have differing opinions as to why this ritual was performed at sunset.

representation of Nu, the person for whom the papyrus is inscribed. The drawing of the figure, however, is slightly ambiguous as it could represent either the mummified body of the deceased, or his *twt*, likeness or cult image, which is also written with the determinative . Previous interpretation of this vignette favors the latter (D.C. Luft 2009: 95), however, I would argue that this drawing is purposefully drawn so as to represent both the mummified Nu *and* his cult statue.

### 6.1.1 Sunset ritual in front of the tomb

By interpreting the figure as the mummy of Nu, the vignette depicts the initial performance of spell 137A during the funeral rites. More specifically, by drawing the mummiform figure of Nu standing upright the scribe is alluding to an instruction given at the very end of the text (line 109-110):



*jr=k md3t tn jw j<sup>c</sup>b 3h pn sjkr(w) twr(w) wp r3=f m bj3*

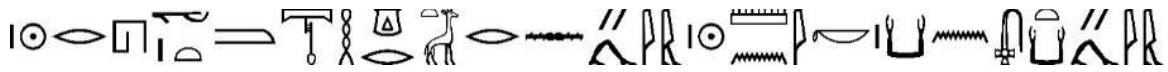
*If you use this spell, the blessed dead is reconstituted, initiated, and purified, and his mouth is opened with metal ; (D.C. Luft 2009: 299–300)*

The end of this line in particular refers to the Opening of the Mouth ritual in which a series of instruments would be touched to the lips of the mummy, coffin and/or cult statue to symbolically open their mouth and allow them to breathe again (Otto 1960b: 16–26). Representations of the Opening of the Mouth in tombs and funerary papyri indicate that the mummy is to be placed upright for the performance of the ritual, such as in the papyrus of Hunefer (EA9901) (Budge 1899). The vignette for Chapter 22 in Hunefer’s Book of the Dead, along with other contemporaneous depictions, indicate that the mummy is stood up in the forecourt of his/her tomb,<sup>68</sup> or perhaps just at the entrance, during this portion of the funeral (Budge 1899: 7, plate 7). Additionally, texts from several Theban tombs that reference the Opening of the Mouth ritual suggest that the rite is to take place in broad daylight with the mummy or cult statue’s face oriented to the south (Assmann 2005: 317–19; Barthelmeß 1992: 100–105).

<sup>68</sup> The tomb of Neferrenpet, for example, indicates that the mummy is “set up for Ra” (*s<sup>c</sup>h<sup>c</sup>.tw s<sup>c</sup>h=k n r<sup>c</sup>*) in the *wsht* of the tomb (Hofmann 1995: 62).



as the penultimate act in the daily service to the god (Nelson 1949b: 321–25). The opening lines of the accompanying text to Episode 38 read:



*jj tk3 / n k3=k jmn-r' jj srt grh m-ht hrw*

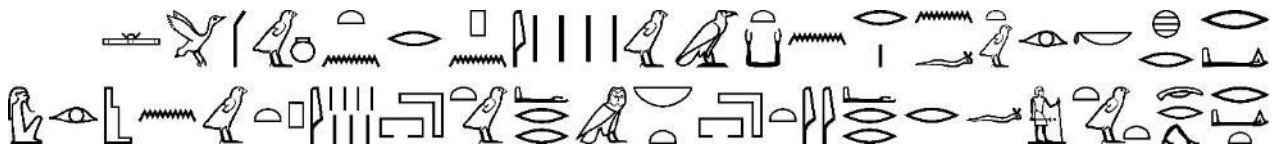
*The tk3 comes / for your ka, Amun-Ra. It comes announcing/heralding the night after the day.*

(Nelson 1949b) (text also provided in Figure 5-6)

These two lines are nearly a direct copy of line 4 in spell 137A and both seem to indicate that the lighting of the *tk3* is an indicator that night is coming. Even if the reversion of offerings was not carried out exactly at sunset, the implication is that lighting, and subsequently extinguishing, the *tk3* served as a marker of the end of the god's day in the temple. I would argue that this was also the case for the use of *tk3* in the funeral rites. The *tk3* was lit at, or near, sunset in order to mark the end of the day, as well as the culmination of the funerary ritual. This implies that the offering of lighting implements is linked to times of transition in the day, just as they are depicted in tombs at points of transition between sunlight and darkness (p. 143).

### 6.1.2 Sunset ritual in the tomb chapel

Returning to the vignette in the papyrus of Nu, if the mummiform figure is interpreted as the *twt* or cult image of the deceased, it then speaks to a different portion of spell 137A. The postscript of the spell stipulates that the rite is meant to be performed whenever the deceased passes through the gates in the underworld:



*rdj hr=k jr.tw n=f r3 n tk3w 4 jpn / r tnw rdt spr twt=f r rryt nbt m rryt 7 jptw n wsr*

*You shall cause the spell of these 4 tk3w / to be used for him whenever his image is caused to arrive at any gate of these 7 gates of Osiris ; papyrus of Nu, lines 99–100 (D.C. Luft 2009: 293–94)*

This line makes reference to the seven gates described in the Middle Kingdom text, the Book of Two Ways (Lesko 1972). This text is found on coffins from el-Bersheh, which coincidentally is also the provenance of many Middle Kingdom coffins that contain texts referencing *tk3*. The seven gates

were each guarded by three deities and the deceased would have to pass through each of these gates in order to reach the hall of Osiris. Only after completing this journey successfully could the deceased join Ra in his barque as a reborn *akh*. It also meant that the deceased was then free to come and go as he pleased from the underworld. The cult statue was the vehicle by which the *k3* of the deceased could come back and forth from the land of the living in order to receive offerings and participate in festivals. In order to render the cult statue ritually effective, the Opening of the Mouth ritual was performed on it as described above. It also seems that the offering of light was provided to the cult statue, as well as the dead. This may have been done at the end of the funeral, as with the mummy of the deceased. However, this line from the spell's postscript indicates that 4 *tk3w* were presented to the cult statue of the tomb owner on a continual basis after the interment of the body. It therefore seems that the vignette in the papyrus of Nu is expressing both the presentation of light to the mummy of Nu, as well as his cult statue, within a single scene. I would also suggest that scenes depicting the presentation of artificial light before the cult statue of the deceased as part of the funeral in New Kingdom Theban tombs should also be seen as taking place at sunset for this reason.

## 6.2 Rituals at night (*m grh*)

If a time of day is given for the performance of a lighting ritual, the most common phrase used is *m grh*, which is traditionally translated "at night". The term *grh* (*Wb V*, 183.12–185.9) is used frequently in contrast to *hrw*, night versus day (Spalinger 1992: 147).<sup>70</sup> More specifically this phrase is used to specify the night before a festival celebration, such as *grh n wpt-rnpt*, the night before New Year. This was the most prominent occasion on which lighting was presented *m grh*. As previously mentioned, extant records of the text that was likely recited during this night time ritual are recorded on Seshenu's altar from Dahshur (p. 65-66 Figure 2-56), as well as in the tomb of Tjay (TT23), and in the Hypostyle Hall of Karnak (p. 171-73). At Karnak, the scene records Episode 52 of the Ritual of Amenhotep I and depicts Seti I presenting a single *tk3* to Amun (Nelson 1949b: 336–37) (Figure 5-21). All three of these texts include a reference to the *tk3* being presented *m grh pn nfr*, "on this beautiful night" prior to New Year's Day. The depiction at Karnak makes it clear that this offering took place on the night before New Year, not the night of New Year's Day, as the episodes

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<sup>70</sup> The word *grh* can also be used as a verb (*Wb V*, 182.4 – 183.3) "to complete" or in association with "ending" (*Wb V*, 183.5 – 9). With regards to time of day, *grh* may then denote the end or completion of the 12 hours of day.



are depicted in chronological order and Episode 54 specifically relates to the early dawn of New Year's Day (Nelson 1949b: 339–41) (Figure 5-22).

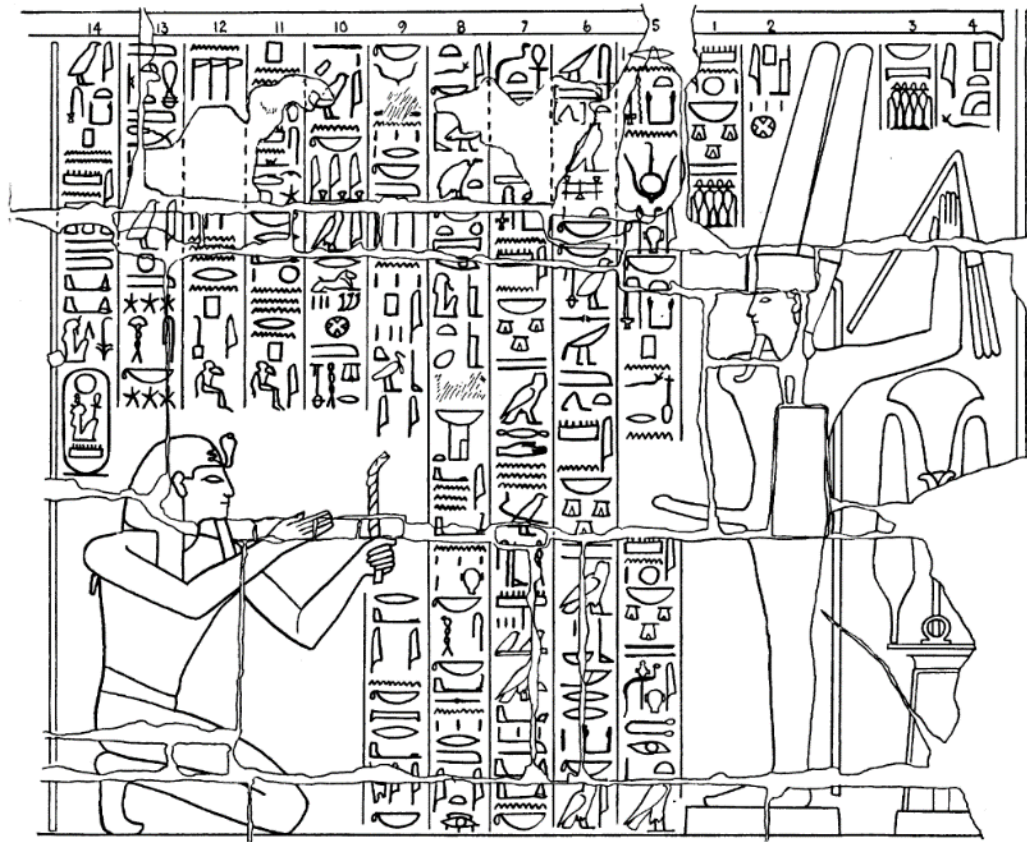


Figure 5-21 - Seti I presenting a *tk3* to Amun-Min at Karnak on the night before the New Year (Nelson 1949b: fig. 37)

### 6.2.1 Nighttime processions from god's chapel to tomb chapel

The two New Kingdom representations of New Year's Eve light offerings indicate that *tk3* were offered at night either in the chapel of a god or in a tomb chapel. Both of these locations correlate with the two locations mentioned in the tomb contracts of Hepdjefa. Contract 9 is the only extant description of this ritual, so drawing direct links between it and the New Kingdom depictions of the same rite are tenuous. However, the locations listed as to where the ritual begins (temple) and where it ends (tomb chapel), as well as the number of lighting devices offered are the same.


Hepdjefa's Contract 9 stipulates that on the night of the 5<sup>th</sup> epagomenal day, the night before New Year, the cemetery overseer and his workmen go to the temple of Anubis to be given 2 *gmht* (Griffith 1889: plate 8, lines 312-18; Reisner 1918: 87–88). From the text of the contract, it seems that one of the *gmht* is used for New Year's Eve, while the other is provided for New Year's Day. The workmen are then instructed to walk in procession to the tomb of Hepdjefa as a glorification (*s3ht*)


of the tomb owner (Griffith 1889: plate 8, line 312). The text also mentions that this is an act which would be performed for their own deceased family members (p. 112). After the workmen glorified (*s3h*) the deceased Hepdjefa, they would then give the *gmht* to the *ka*-priest. This apparently was a very significant act as Contract 9 stipulates that parcels of land and the hind-quarter of a bull would be distributed to the cemetery overseer and his workmen for this service (Griffith 1889: plate 8, lines 313-14). Contract 8 mandates that a similar nighttime procession would take place on the eve of the *wag*-festival (Griffith 1889: plate 8, lines 307-311; Reisner 1918: 86–87). On this occasion the *ka*-priest and hour priests of the temple of Anubis would process to the “lower stairway”/ valley chapel of Hepdjefa’s tomb in order to present a *tk3* and food offerings before his cult statue (Griffith 1889: plate 8, lines 307-8).

It seems from both of these contracts that artificial lighting was used both in procession and as an offering to the dead for the night before New Year and the night before the *wag*-festival. To my knowledge, there are no depictions of the *wag*-festival light offerings. However, New Kingdom representations of light processions and offerings for the Epagomenal Days and New Year’s Eve offer a point of comparison to Hepdjefa’s contracts (Figure 5-16). For example, it is stipulated in the contracts that one lighting device should be obtained for the procession on New Year’s Eve and another for New Year’s Day (Reisner 1918: 88–89). According to the scene from Karnak, it seems that one lighting implement was also offered to the god for the same occasion (Figure 5-21). Hepdjefa’s contracts also state that the lighting device is obtained from the temple of Anubis (Griffith 1889: plate 8, line 312). Perhaps these lights were procured after the offering of light to the god for New Year’s Eve as depicted in Karnak temple. Although speculative, it is possible that attainment of light from the temple on this occasion may have been a way of transferring light from the chapel of the god to the chapel of the dead. This may have been a means of sharing powerful light from the god with the dead at the culmination of a year. As Hepdjefa’s contracts describe, the offering of light for the eve of the *wag*-festival, New Year’s Eve and New Year’s Day was something in which all people in Asyut would have participated so as to honor their own deceased family members (*s3h=sn s’h=sn*) (Griffith 1889: plate 8, lines 308, 313). If everyone was expected to go to the temple to obtain their lighting devices for this festival it would be a way for all the dead in the necropolis to share in the light of the god.

After receiving the lighting devices from the temple, Contract 9 states that the cemetery overseer and workers would then process through the necropolis until they reached the tomb of Hepdjefa (Griffith 1889: plate 8, lines 312-13). Presumably other members of the community would join in this procession, diverting to the graves of their loved ones as they went. This may provide context for scenes from the New Kingdom tombs of Amenemhet, Menkheperasoneb, and Senemiah, discussed in Section 4.1, which all depict men processing into the tomb chapels of the deceased for the Epagomenal Days and New Year. It seems that the idea of a procession of light for the New Year persisted from at least the Middle Kingdom to the New Kingdom, perhaps incorporating a celebration of the Epagomenal Days with the New Year over time. Given this evidence, I would suggest that the offering of light to the cult statue of Amun in Karnak, and presumably other deities throughout Egypt, would have taken place on the night preceding the New Year. Additionally, I would argue that the concept of a night time procession through the necropolis with light offerings for the New Year continued from the Middle Kingdom to the New Kingdom. The early 18<sup>th</sup> Dynasty tomb chapels of Amenemhet, Menkheperasoneb and Senemiah seem to record this. Additionally, the scenes in Amenemhet and Senemiah's tombs depict the men processing with their lights into the inner room where the deceased's cult statue would reside. In this way, the offering to the cult statue of a god and the deceased took place within their own respective shrines.


### 6.3 *Ritual at pre-dawn (m d3w)*

Another lighting ritual associated with the New Year is depicted in the Hypostyle Hall of Karnak and corresponds to Episode 54 in the Ritual of Amenhotep I (Nelson 1949b: 339–41). The two preceding episodes, 52 and 53, depict the presentation of a *tk3* to Amun on New Year's Eve, and indeed the accompanying texts directly parallel the New Year's Eve texts from the altar of Seshenu and the tomb of Tjay (Nelson 1949b: 336–39). In his discussion of Episode 54 (Nelson 1949b: 341), I believe Nelson correctly suggests that this is a depiction of lighting a *tk3* for New Year's Day based on evidence provided in Contracts 2 (Griffith 1889: plate 6, lines 227-82) and 5 (Griffith 1889: plate 7, lines 296-301) from the tomb of Hepdjefa (Reisner 1918: 83, 85). Specifically, as Contract 5 stipulates, the lighting of the *tk3* was to take place at *d3w*, which Reisner has translated as "early dawn" (Reisner 1918: 85). The determinative used in the writing of the term,  N2, implies however that *d3w* is a time associated with darkness (Griffith 1889: plate 7, line 298). This is

corroborated by other terms utilizing  as their determinative which include *grh*, “night”, and *kkw*, “darkness”. The timing of this ritual seems particularly crucial as this is when “the house is given to its lord”, i.e. the temple is renewed in service to the god for another year.

Although pinpointing an exact time for *d3w* is likely not possible, the cenotaph of Seti I in Abydos may provide a plausible explanation for *d3w* as a time that is pre-sunrise. A description of a shadow clock from the cenotaph suggests that there was recognition of a distinct 2-hour period pre-sunrise and post-sunrise, although these 2-hour timespans are not given names. The inscription details:

*2 hours have passed in the morning before the sun shines (on the shadow clock) and another 2 hours (will) pass after the sun enters [the Duat] for fixing the place of the house of the night; (Henri Frankfort 1933: 77–78)*

Parker and Neugebauer (1960: 116–21) suggest that this may reflect a development in the conception of the 12-hour division of the day, which stems back to at least the 15<sup>th</sup> century BC. Working from this information, I would suggest that *d3w* could be associated with this 2-hour period of pre-sunrise twilight as described in the cenotaph of Seti I. Time lapse video taken during fieldwork in Deir el-Medina captures such a period of twilight, which is about two hours in length. This time frame begins with a period of darkness, which would explain the use of the determinative  in the writing of *d3w*, and then lasts through sunrise and early dawn when the sun is still quite low in the horizon. There is a marked change after this period as the sun is higher in the sky, the aurora colors have gone, and the sun’s full intensity shines down on the landscape. While not definitive, I would suggest that this pre-dawn time of day corresponds to *d3w*.

### 6.3.1 Ritual *m d3w* within the god’s shrine

Contract 5 in the tomb of Hepdjefa states that the lighting of the *tk3* in the temple of Wepwawet took place at *d3w*. This is the time when the temple was renewed in service to the god for the next calendar year. Interestingly, this is also one of the occasions for which Hepdjefa provides a *gmht* via his *ka*-priest in order to light a *tk3* for the god, Wepwawet. There is unfortunately no contemporaneous depiction of this event, but Episode 54 in the temple of Karnak seems to depict the same ritual. In the scene, Seti I presents two *tk3* to the god Amun (Figure 5-22). Interestingly, unlike all other Karnak episodes that depict the king placing offerings in the chapel of the god,

this scene shows the king inside the shrine that contains the cult statue. This may not have been physically possible but the implication is that the king presents the *tk3* within the house or dwelling of Amun. The fact that this offering of light took place at pre-dawn seems rather significant as the Egyptian day began at dawn, and a full day was counted from one dawn to the next (Parker 1950: 10). The offering of *tk3* is then meant to commemorate a new beginning, the first dawn of the New Year and may have been one of the first ritual acts of the year. The presentation of *tk3* not just within the chapel, but within the shrine that held the statue of god also seems to be a significant component of the ritual performance.

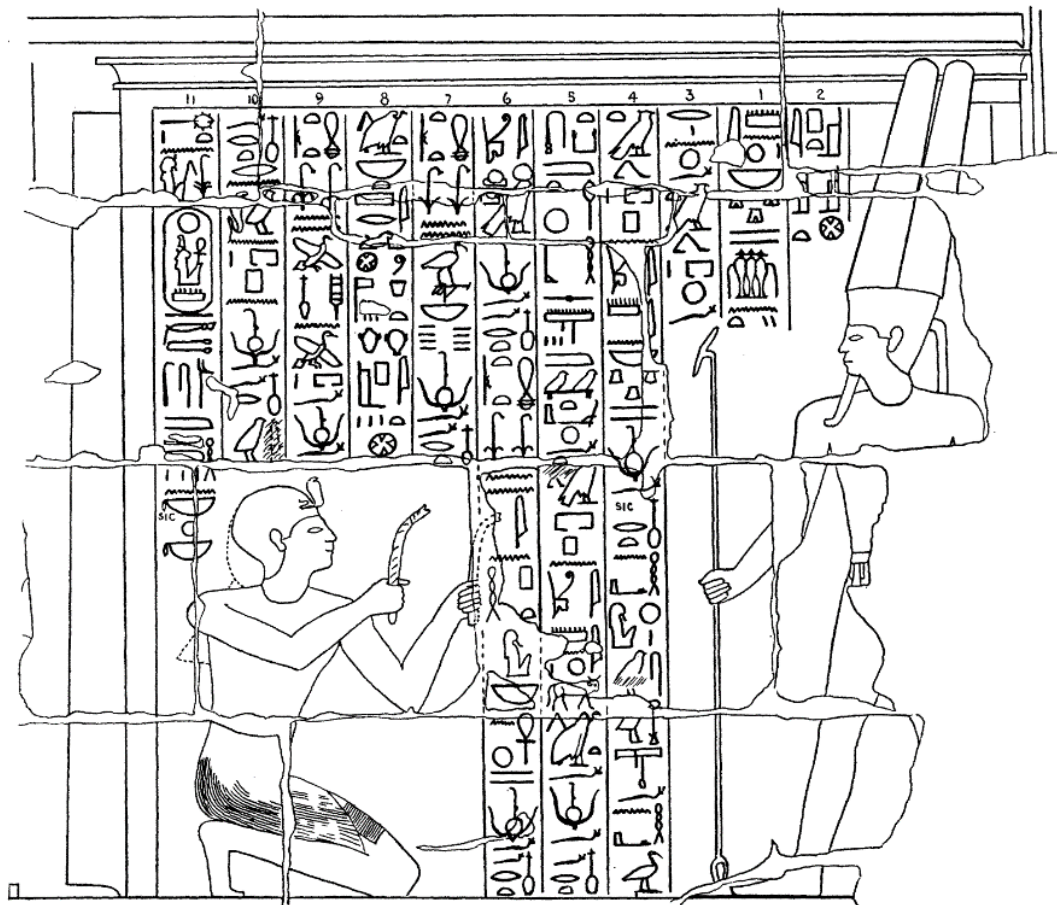


Figure 5-22 - Seti I presenting *tk3* within the shrine of Amun-Ra for the New Year, Episode 54 in the temple of Karnak (Nelson 1949b: fig. 39)

### 6.3.1 Filling a space with artificial light

In his discussion of Episode 54 at Karnak, Nelson highlights the usage of a rare verb, *hft/hftt*, which he translates as “pervading/illuminating” (Nelson 1949b: 339). The opening lines of the text that accompanies Episode 54 read (lines 3–5 in Figure 5-22):



illuminate the temple with his essence (Nelson 1949b: 341). I would suggest that a comparison of the scenes in Karnak and Soleb suggest that the two existing translations of *hft* “pervade” and “illuminate” could in fact be combined and be translated as “fill with light”.

In the scene at Soleb, it is curious that the *tk3* is described as *hft*, “illuminating” the shrine, not the thrones inside, which are presumably more important. It seems clear from previous examinations of this scene that *int3t* refers to the container that holds the thrones. Wilson (1936: 294) interprets this structure to be a baldachin, a ceremonial canopy over the thrones, while Schiff-Giorgini (2002: 221) labels it as a kiosk. The presence of doors on the container suggests that Wilson’s interpretation is incorrect since baldachins do not have doors. Instead, Schiff-Giorgini’s translation of kiosk, or perhaps even shrine, seems more appropriate. The presence of doors suggests that this is a solid container designed to contain the royal thrones. Significantly, the doors are open in this scene, which would allow the light from the *tk3* offered by Amenhotep III to shine into the interior of the structure. If *hft* is translated as “fill with light” this depiction and accompanying inscription then makes more sense:

*O X, take the flame from the tk3 that fills the shrine with light.*

Crucially, the scene in Karnak which also uses the verb *hft/hf3t*, depicts Seti I presenting two *tk3* to a statue of Amun who is shown inside a shrine with opened doors. Again, it seems that the doors of the shrine are opened in order to permit the entry of the light from the *tk3*. Using my proposed translation of *hft*, the introduction to the text above the scene could be read as:

*r n hf3t pr hf3t pr pn jmn..*

*Spell for filling with light. Filling this house [the shrine] of Amun with light...*

I would argue that the parallels between these two scenes suggest that artificial light was used to fill shrines/enclosed spaces with light, at least at the beginning of both the New Year and the *heb sed*-festival. Specifically, this ritual took place either at pre-dawn or day break. One other point of comparison between the Karnak and Soleb scenes is their geographic location within their respective temples.

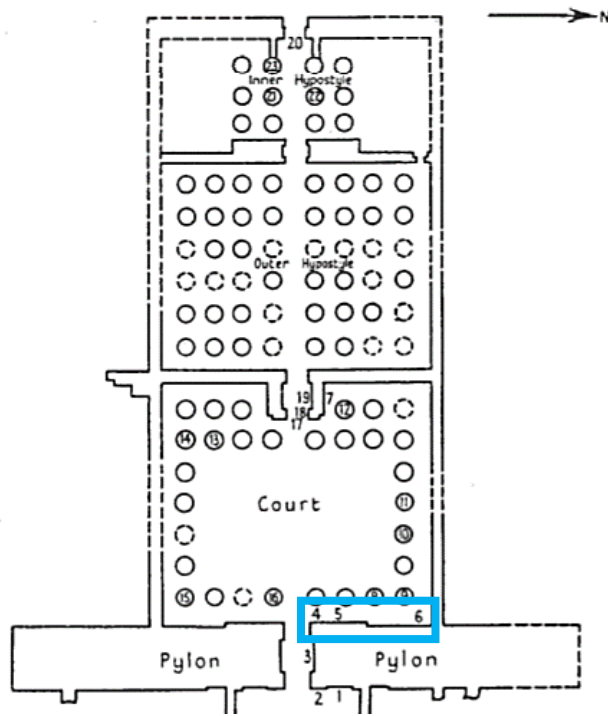


Figure 5-23 - Plan of temple of Soleb with location of *tk3* offering for *heb sed* outlined in blue on the east wall; plan from (Porter & Moss 1962)

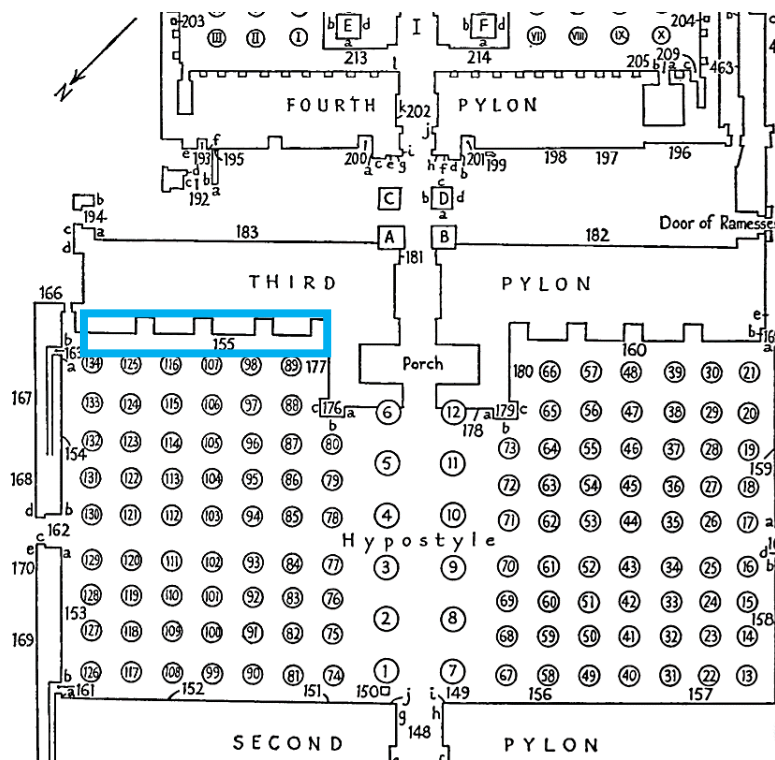


Figure 5-24 - Plan of Hypostyle Hall of Karnak Temple with location of *tk3* offering scenes outlined in blue on the east wall; plan from (Porter & Moss 1972: plan X)



The scenes in Soleb temple are located on the northern half of the east wall of the first court, on the back of the pylon entranceway (Figure 5-23). The scene in Karnak is also carved into the northern half of the east wall of the Hypostyle Hall (Figure 5-24). Additionally, the Karnak scene represents the offering of light in the shrine of Amun, which itself was located in the eastern portion of the temple. This eastern orientation is particularly appropriate for depictions of rituals associated with pre-dawn and day break as it is from the eastern horizon that the sun would rise every day. Parallels could also be drawn between the beginning of a new day, associated with the east, as well as the beginning of a new year or the celebration of a renewal of kingship as in the *sed*-festival. These scenes oriented to the east are also in marked contrast to those depictions of light offerings in tombs, which are located either on the west wall or associated with emblems of the West.

#### 6.4 Rituals at day break (*r ḥd t3*)

Of all depictions of light offering rituals, only the *heb sed* scene at Soleb is stated to take place *r ḥd t3*, “at the brightening of the land” (Wilson 1936: 294) (Figure 7-6). As with *d3w*, there is no explicit indication of a time of day to which *ḥd t3* is associated. However, if *d3w* corresponds to the period of pre-dawn, *ḥd t3* may be the time of day immediately succeeding *d3w* at day break. At the very least, given that the land is meant to be in the process of brightening, it seems likely that *ḥd t3* is associated with the early morning hours.

##### 6.4.1 Dawn procession from the god’s shrine to the tomb chapel

Aside from illuminating the two thrones at the *ḥd t3* of the *heb sed*, the contracts of Hepdjefa indicate that light offerings were also made to the deceased at the beginning of the New Year. In addition to the artificially lit procession to the tomb of Hepdjefa on New Year’s Eve, Contract 9 also demands that the overseer of the cemetery and his workmen return back to the temple of Anubis on New Year’s Day to receive a second *gmḥt* for another procession through the necropolis. On the night before New Year only one *gmḥt* is offered to Hepdjefa in his tomb chapel. In contrast, on New Year’s day the workmen are meant to offer a *gmḥt* along with a large number of food offerings, including 11 *ds*-jars of beer, 550 rolls of *kfn*-bread and 55 rolls of white bread (Griffith 1889: plate 8, lines 314-15). The contracts only state that this procession is meant to take place on the day of the New Year, however Reisner (1918: 92) suggests, and I would agree, that this procession took place after the lighting of the *tk3* for Anubis in the temple at *d3w* (Griffith 1889:

plate 7, line 296; plate 8, line 305). In this way the artificial light could still be visible on the landscape and provide illumination for the walk through the necropolis at twilight.

Unfortunately, there are no Middle or New Kingdom tomb scenes that are explicitly labeled as depictions of light offering for New Year's morning. Considering the similarities between Middle and New Kingdom texts and iconography regarding the New Year's Eve offering of light, it seems likely that the tradition of New Year's Day offerings also continued. The altar in the tomb of Tjay, for example, may depict all the light offerings for the five Epagomenal Days, the last of which would have been a single light for New Year's Eve, along with a light for the New Year (Figure 2-57). The presence of a large pile of food offerings before the cult statues of Tjay and his wife would also seem to correlate with the great amount of provisions described in Contract 9 of Hepdjefa for New Year's Day (Figure 5-19). Lastly, the text records the words that were likely meant to be recited on New Year's Eve (p. 141). In this way, the scene in Tjay's tomb is a composite depiction of seven rites: the five Epagomenal Days, represented by the five single wick-on-stick devices in the altar; the night before New Year, represented by the text and the last wick-on-stick light; and New Year's Day for which the food, floral bouquets and a large mound-shaped light are offered.

While Contract 9 of Hepdjefa stipulates that the cemetery overseer and his workmen are meant to present light to the tomb owner's cult statue, it also makes mention that they would have performed this function for their own deceased family members. It is this family offering of light for New Year's Eve and New Year's Day which seems to have continued down into the New Kingdom. To my knowledge, no mention is made in any Theban tomb of the overseer of the cemetery or necropolis workmen presenting *tk3* for any occasion. From New Kingdom tomb scenes, such as those discussed in Section 4.1 and 4.2, it does seem that the practice of presenting light for New Year's Day was common, even if it was combined in representation with preceding festivals. Unfortunately, none of the New Kingdom scenes of light offering for the New Year make it clear from which temple the lights came, if any. Hepdjefa's contracts state that the devices came from the local temple to Anubis (Griffith 1889: plate 8, line 312), and it is very possible that this practice was common across Egypt. Most towns throughout Egypt would have only had one temple from which people could receive lights. However, in a location such as Luxor many temples could have provided lighting implements. It is impossible to know whether people would

have procured their lights from the main temple of Karnak or from other temples closer to their homes. It is also not possible to say whether the tradition of processing from the temple, through the necropolis, to the tombs of the dead was practiced in the New Kingdom. Although scenes in the 18<sup>th</sup> dynasty tombs of Amenemhet, Senemiah and Menkhepperasoneb may suggest that this practice continued. What does seem likely is that lighting devices were offered within New Kingdom Theban tombs for the New Year, and that specifically they were offered within the tomb chapel before the cult statue of the deceased. It is possible that the cult statue was brought out of the tomb chapel in order to have a larger space for family and friends to gather and for the priest(s) to perform the appropriate rites. However, I would argue that evidence of the morning lighting rituals in Karnak and for the *heb sed* suggest that the cult statue was purposefully left inside the tomb chapel so that the space could be filled with the light of the *tk3*. As with other light offering rituals, it is possible that processing with light to the necropolis after the lighting of the *tk3* in the temple was a way of transferring a portion of the light from the god to the deceased.

### 6.5 Discussion

Rituals for offering light were performed at several times of day and generally restricted to either a tomb chapel or temple context. The offering of light at sunset, discussed in Section 6.1, was restricted to a tomb and could be accompanied by the recitation of spell 137A from the Book of the Dead. This spell, particularly as recorded in the papyrus of Nu, indicates that the initial performance of this ritual was at the funeral (p. 179). Specifically, *tk3* were presented before the upright mummy in the courtyard outside of the deceased's tomb as a culminating element of the funeral (Section 6.1.1). After the burial, the same ritual could have been performed at sunset before the cult statue in the tomb chapel (Section 6.1.2). For this reason, many Ramesside tomb depictions of the presentation of light in a funerary context could be interpreted as taking place at sunset.

The presentation of light *m grh*, "at night" is first described in the Middle Kingdom contracts of Hepdjefa, as well as in a text inscribed on the altar of Seshenu (Section 6.2). A near identical version of Seshenu's text is also included in the New Kingdom tomb of Tjay and the temple of Karnak (p. 175). All of these texts indicate that an offering of light should be made to the cult statue of the deceased, as well as the statue of the god during the night before New Year. The contracts of Hepdjefa suggest that light was first carried in procession through the necropolis before being presented at the tomb. 18<sup>th</sup> Dynasty tomb scenes seem to depict a similar procession although they

expand to incorporate the Epagomenal Days, as well as New Year's day. Seshenu's altar indicates that upon reaching the tomb, the lights were placed into a holder, presumably so they could be left to burn down throughout the evening. Open-work racks in the tombs of Amenmesu and Mery (Figure 5-17), as well as light-holding altars depicted in 19<sup>th</sup> Dynasty tombs such as Tjay, Nefersekheru (Figure 5-13) and Userhat (Figure 5-12) speak to a similar concept and suggest that this type of light holder was utilized between the 12<sup>th</sup> Dynasty and the Ramesside period.

Several different rituals took place in the hours surrounding sunrise. Specifically, lighting of the New Year *tk3* for a god in their shrine takes place *m d3w*, a time which possibly corresponds to the twilight of pre-dawn. The purpose of this ritual performance was to fill the shrine of the god's statue with light, which is described with the verb *hft/hf3t*. Processions from a temple, where lighting devices were obtained, to the tombs of the deceased were also made during the morning of the New Year, which could be described as *r h4 t3*, at day break. This would have taken place after the pre-dawn (*m d3w*) presentation of light to the god. Similar to the act of filling the god's shrine with light, this early morning procession from the temple to the tomb may have been a way of filling the chapel of the deceased with the light of the New Year. Similarly, the ritual offering of *tk3* at the *h4 t3* of the *heb sed* may have been intended to fill the shrine containing the royal thrones with artificial light.

Crucially, the timing of all these rituals corresponds to phases of transition. For funerals, and perhaps subsequent offerings to the dead, lighting is offered at sunset, the end of the 12 hours of day and the beginning of night. For festival occasions, artificial lighting is employed at certain times of day because these are the liminal stages of the festival—the beginning at pre-dawn or day break, as well as the night before a festival, which marks the transition from dusk to dawn. As discussed on p. 143, the placement of depictions of light offerings in tombs correlate to this concept as they are placed at transitional points in the tomb architecture where sunlight ends and darkness begins. Was there a religious purpose for performing rituals at certain times of day? Likewise, was the placement of light offering scenes at liminal points in tombs particularly significant? And would the offering of light have impacted either on the objects to which it was offered or on the ritual participants? Answers to these questions are not immediately apparent in the archaeological, textual and iconographic evidence presented thus far. However, the next two chapters will seek to

address these questions by taking a sensory approach to the evidence, complemented by experimental archaeology.

## Chapter 6 – THE SENSORIUM AND ARTIFICIAL LIGHT

Since the early 1990s, anthropologists, archaeologists, art historians and other social/cultural scientists have incorporated the role of the senses into their research (Howes 1991; Howes 2003; Bacci & Melcher 2011; Hamilakis 2013). The exploration of the sensory experience of modern and ancient peoples has increasingly led to the realization that the senses are culturally constructed. The senses are not merely corporeal data input centers, they are the means by which we interpret and give meaning to the world around us (Gosden 2001; Classen 2005). It is also evident that the senses do not operate in isolation but are intermingled and linked so as to provide a multisensory understanding of the natural and built environment. The ocularcentrism of Western civilization has been closely scrutinized in many sensory studies, as has the standard hierarchy of five senses first posited by Aristotle (*De Anima II*). The priority placed on sight has not only impacted on scholarly research since the 19<sup>th</sup> century, it has also bled over into the examination of material culture. The display of objects in museums, for example, has been highlighted as a means of supporting colonialism and the perceived superiority of Western aesthetic ideals (Edwards *et al.* 2006). Advances in sensory archaeology have highlighted this bias and a growing body of scholarship is now shifting away from asking whether ancient cultures can be “read” and instead investigating how they can be “perceived”. In recent years, this has led to an ever increasing number of publications on the unique contributions that sensory studies can make to archaeologists’ understanding of urban planning, religious practices, and social structure (McMahon 2013; Shepperson 2017; Betts 2017; Classen *et al.* 2014). These studies, however, have primarily focused on the Greek, Roman and Mesopotamian worlds, which provides an opportunity for Egyptologists to enrich the understanding of the sensory experience in the ancient Mediterranean and Near East.

In Egyptology, the propensity to focus on “reading” an object is valuable and necessary. This applies not only to the translation of hieroglyphic text but also to a symbolic reading of objects and depictions based on principles of semiotics and hermeneutics. A sensory approach to Egyptian material culture by no means negates the importance of a visual examination of the evidence. It does, however, require an assessment of ephemeral qualities that cannot be excavated out of the

ground. This chapter will adopt a multisensory approach to artificial lighting in order to answer questions which are not immediately apparent through a solely visual investigation:


- Did the process of making a lighting device have any impact on the senses? If so, did this affect the role or perception of artificial light within ancient Egyptian culture?
- What, if any, effect did artificial light have on the objects to which it was presented?
- How did artificial light impact on the sensorium of the ritual performer and audience?
- Was there a contrast in sensorial perception between natural and artificial lighting? If so, did this contrast impact on artificial light offering rituals?

A sensorial examination will also complement the archaeological, textual and iconographic evidence presented in Chapters 2, 4 and 5 of this thesis by utilizing data gathered from reproducing ancient lighting devices. Experimental archaeology is particularly beneficial in investigating ancient technologies and has been employed by Egyptologists to provide insights into the mummification process, pottery production, and furniture craftsmanship, among other subjects (Coles 1979; Graves-Brown 2015). Experimental and experiential work is well-suited to a sensory examination of artificial lighting devices as it allows for personal experience of the construction and utilization of the implements to be included in the analysis.

It is necessary to acknowledge that sensory, experiential and experimental archaeology have been criticized for their subjective nature and lack of academic rigor (Reynolds 1999: 157–58; Hamilton & Whitehouse 2006: 31–32; Marsh & Ferguson 2010: 2). It is difficult, for example, to remove the researcher's own cultural understanding and background from their interpretation of the experiment results. A reflexive approach in this type of investigation is vital in order to minimize the researcher's personal perspective as much as possible. Additionally, when recreating ancient technologies, it may be difficult to obtain similar materials and reconstruct conditions as they would have been in the past. Every effort should be made to replicate the materials and processes of manufacture as accurately as possible, but discrepancies between ancient and modern production may still persist. It is also important not to over emphasize the significance of results. The outcomes of an experiment indicate what might have happened in the past but should not be viewed as facts in and of themselves. Despite these limitations, experimental archaeology is still a useful tool as the results of an experiment, when combined with archaeological evidence and textual records, can provide fresh perspective to a research question. While the experiments

described in this chapter are all preliminary, they provide valuable insight into the production and use of artificial lighting devices in ancient Egypt. They also create the opportunity for comparison to lighting technologies from the ancient Mediterranean and Levant (Evershed *et al.* 1997; Parisinou 1998; Elrasheedy & Schindler 2015). Additionally, visual, haptic, olfactory, and aural senses all would have played a part in not only the experience of artificial lighting devices themselves, but in the perception of objects illuminated by them.

## 1. Methodology

As discussed in Chapter 2, the primary components of an Egyptian lighting implement are a wick and an illuminant. For my experiments, I utilized organic, untreated linen for wicks in keeping with Eastwood's (1985: 226–30) discussion of wicks excavated at Amarna. Her examination indicated that most wicks were made from reused linen, suggesting that strips could easily be torn off of old clothing or bed linen. This corroborates with ostracon Toronto A (p. 102) from Deir el-Medina which states that *ḥbs jss*, "old clothes" were used to make wicks for use in construction of the tombs in the Valley of the Kings (Černý 1973). The method of twisting a wick is straightforward and requires holding the length of linen at one end and then twisting the entire strand between the fingers and thumb. While holding the two ends, in order to prevent the piece from unraveling, the length of linen is folded in half allowing the two halves to twist around each other. The twisting action is sufficient to hold the wick together with only the very ends slightly separating from each other. The end result is a wick which very closely resembles the hieroglyph .

Drawing from the textual and archaeological evidence presented in Chapter 3, Section 4.1 and 4.2, I chose a variety of vegetable oils and animal fats to test as illuminants. Vegetable oils included castor, linseed, sesame and olive, along with rendered animal fats from cattle, geese and pigs. I purchased all the vegetable oils in pure, organic form, as well as a jar of pre-rendered goose fat. The pig fat I collected from cooking bacon and the beef tallow I rendered myself from organic, free-range cattle suet. I chose to render my own beef tallow as raw suet from cattle was easy to obtain and, according to textual evidence, tallow or *sgnm* from cows was of the highest quality (*ḥ3tj*).



## 2. Making an ancient Egyptian lighting device

### 2.1 The raw materials

There are two extant scenes that possibly represent the process of fat rendering: one from a subsidiary chamber (Room C) in the tomb of Ramesses III (KV11) which shows the processing of an ox, and the other from Room 17, located off the butcher's yard in Seti I's temple at Abydos (Figure 6-1) (Ikram 1995: 177).<sup>73</sup> To my knowledge, only the Abydos scene has been published (Naville 1930: 9). In the scene, a scribe oversees a group of workmen who chop up pieces of fat (*ʿd*), place them over a flame in a large pot, and then strain the fat through twisted fabric into a vat for collection.

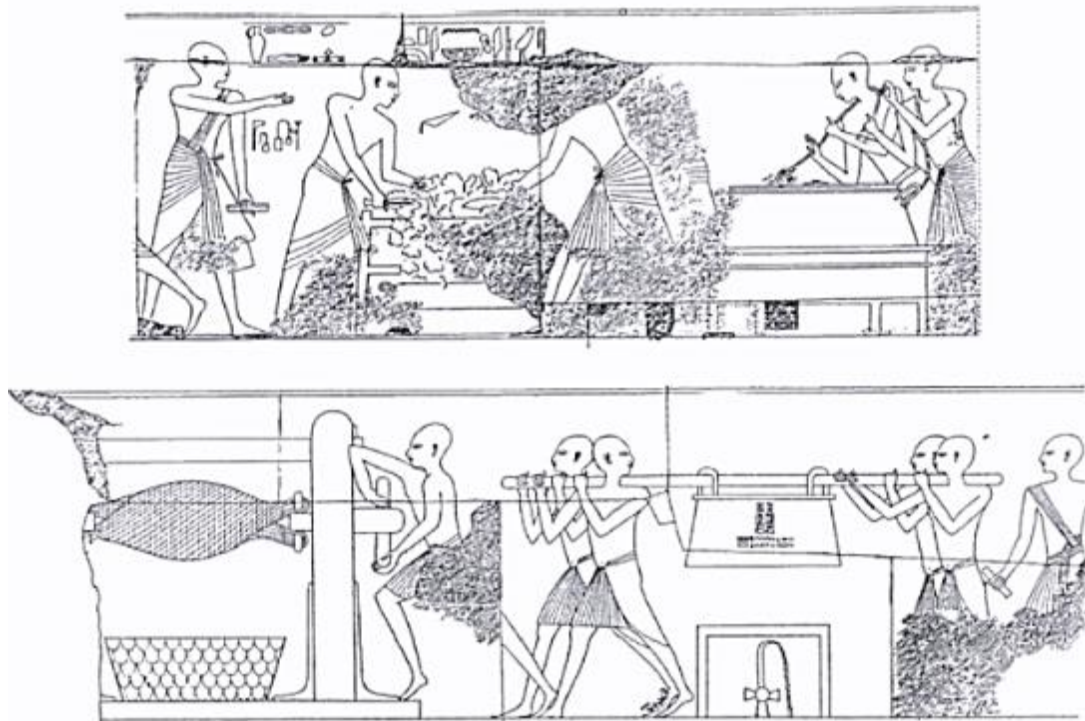


Figure 6-1 - Scene of (possible) fat rendering from Room 17 in the temple of Seti at Abydos (Ikram 1995: 178, fig. 55)

Because there is negligible accompanying text to provide any more detail to the scene, I corroborated this ancient evidence with discussion of fat rendering technique from Ikram (1995: 176), Serpico (2000: 408–9) and blog posts for home rendering.<sup>74</sup> The modern process of rendering

<sup>73</sup> Ikram (1995: 179) also suggests that Middle Kingdom tomb models may depict fat rendering by the inclusion of a pot filled with mixed red and white contents in the context of animal butchery.

<sup>74</sup> The most thorough description of beef tallow production that I found was:  
<http://www.theprairiehomestead.com/2012/02/how-to-render-beef-tallow.html>

closely parallels the top row of the Abydos temple scene (Figure 6-1) and indicates that the first crucial step in the process is chopping the suet into very small cubes. This is suggested by piles of fat in front of the two Abydene priests who appear to be vigorously hacking at it with knives. The online blog post states that keeping the fat cold aides in this process as it prevents the fat from melting and sliding all over the chopping board. As the ancient Egyptians would have had no means of refrigeration to chill the fat, I allowed my suet to come to room temperature before cutting it into cubes.



*Figure 6-2 - Slices of suet in the process of being cubed (above) and 2kg of suet after being cubed (below)*

The suet became increasingly hard to chop as the radiant heat from my hands began to melt the fat. After a couple close calls of cutting off my thumb, I did resort to keeping the suet in the refrigerator and only removing small portions at a time that could be cubed quickly. After cubing all the suet and placing it in a cast-iron pot, I rendered it slowly over a low flame. After approximately fifteen minutes, a greasy odor began to permeate the kitchen. Within half an hour the smell was so intense that I had to close the kitchen door and open a window in an attempt to keep the meaty aroma from permeating the entire house. In total 2kg of fat took approximately an hour and fifteen minutes to render, at which point the small burnt remaining pieces of tissue could be strained away. After allowing the rendered fat to cool for a few minutes, I poured it into glass jars for storage. It quite quickly set into a slightly viscous, pale yellow tallow. In fact the goose fat, pig lard and beef tallow were all of the same color and consistency once cooled. I rendered the beef tallow in February 2016 and used it in lighting experiments intermittently until September 2016. I used approximately 450g of tallow in order to grease 20 wick-on-stick type implements and make 2 small lamps. Initially, the tallow had minimal odor within the jar, but the more I opened it to use for experiments, the stronger the greasy smell became. I also kept the jar in varying lighting conditions and temperatures and dipped my hands directly into the jar in order to scoop out tallow as needed. By December 2016, the remnants of tallow in the jar had begun to mold and were no longer suitable for use. A second smaller jar of approximately 200g, which went unused and was kept in a dark, cool cupboard since it was bottled in September 2016, is still in perfectly useable condition in November 2017 with no mold and negligible scent.

### 2.1.1 Perceiving fabric and fat

The production of a wick from a strip of linen was quite a straight-forward process and could be easily understood from observing extant examples. After a few practice attempts, it was quite a mindless task and something committed to kinaesthetic or muscle memory. The process was dominated by haptic perception of the woven linen between the fingertips and the tautness in the twist of the fabric. As Deir el-Medina ostraca indicate (p. 102), the use of old clothes for wicks would suggest that the feel of the linen was a familiar texture. However, as I argued in Chapter 4, Section 6.1, textual evidence suggests that wicks made for offerings or for festival occasions were made from finer, high-quality fabrics (p. 112). The maker(s) of these wicks may have then perceived them to be special by the fine texture of the linen, which would have contrasted in feel

to more utilitarian textiles. Additionally, as I highlighted in my discussion of *h/h<sup>c</sup>t* and *gmht* in Chapter 4, these terms both relate to twisting or braiding. The terms may relate to the visual appearance of these objects, but this is also complemented by the haptic sensation of twisting the fabric between one's fingers, as well as twisting the fabric around itself in order to produce a wick.

The production of an animal fat illuminant is much more of a multi-sensory experience, in addition to being labor intensive. As discussed in Chapter 3, none of the vegetable oils or animal fats would have been easy to produce, and a majority of them would have required a great deal of processing for a very low yield product. While I did not make all of the oils and fats used in the experiments myself, I would suggest that the production of beef tallow is indicative of the amount of effort required to produce a potential illuminant. The basic act of chopping animal fat from a logistical sense must have been rather complicated in the Egyptian heat. As the fat warmed from the atmospheric temperature and the body heat of the person chopping it, the suet would have become increasingly slippery. This would not only have made the fat itself more difficult to cut, but would have coated the hands of the worker making it difficult and dangerous to grasp the knife needed for the task. A pungent, meaty aroma also would have emanated from the raw fat as it warmed and melted.

From the depiction in Seti's temple at Abydos, as well as Middle Kingdom tomb models, such as the model of a slaughterhouse from the tomb of Meketre (Metropolitan Museum of Art, 20.3.10), it appears that the rendering process was done outside, or in an unroofed building (Oppenheim *et al.* 2015: cat. 143). This certainly would have allowed the oily smell to dissipate, although the odor would likely have set into the kilts of the workers charged with overseeing the rendering. The scent produced from rendering fat in my own home lingered for about a week. As the fat heated, it sizzled and spit, which meant that the cooking surface surrounding the pot was coated in a thin layer of grease by the end of the rendering process. The rendering suet also needed to be stirred intermittently. This process required that I come in more direct contact with the bubbling fat, hearing the constant sizzle, breathing in the thick steam, and feeling the sting of the hot fat splattering my hands. Those who participated in fat rendering on a regular basis may very well have carried the scent, and perhaps the scars from burning, home with them. As I theorized in Chapter 3, Section 4.2, those individuals charged with overseeing the rendering process and/or keeping the fat were likely high status individuals. The prestige inherent in their job title may have

also been complemented by the scent of their place of employment. While it would not have been consistently present, a greasy, meaty cologne may have served as an olfactory reminder of an individual's association with high commodity items, such as beef fat, and their resulting status in the community. The Egyptians might have also found the scent of rendered animal fat quite pleasing, correlating it to the aroma of grilled meats for festival occasions or funerary banquets.

It was interesting to note that once the beef tallow had cooled and was jarred, it was the same color and consistency as rendered goose fat and pig lard. The minimal odor would also not have aided in distinguishing between the fats. The only way for me to differentiate between the products was by the labels on the jars. This may provide a clue as to why the ancient Egyptians frequently referred to animal fat illuminant as *nd wd3*, "fresh fat" or *sgnn*, "rendered fat". It is possible that the Egyptians did not consistently distinguish between rendered fat, at least for purposes of illumination, or that jars were not always labeled with the animal source of the contents. Additionally, the shelf-life of the beef tallow from my experiments supports the theory that rendered animal fat was a desirable commodity in ancient Egypt because it could be stored for lengthy periods without going rancid. Although the heat of the Egyptian climate would likely decrease the length of preservation.

## *2.2 Assembling a lighting device*

Creating an oil lamp took a matter of minutes from tearing a strip of linen, twisting it into a wick, placing it into a bowl, and pouring in a selected oil. The only time consuming portion of the process was allowing the illuminant to absorb completely into the wick. This could be hastened either by pouring the oil over the wick and letting it sit submerged in the vessel before pulling the end of the wick out of the illuminant for lighting, or by rubbing illuminant into the wick with one's fingers. Making a wick-on-stick type lighting device was far more time consuming. I modeled my wick-on-stick implements on the one extant example found in the tomb of Tutankhamun (Figure 6-3). I used two different types of reeds for these experiments based on availability. Initial tests utilized lengths of bamboo acquired from a local garden supply store, which are in the same family as common reeds and are the same thickness as the reed visible on the Tutankhamun lighting implement. Additional experiments, including a perception study carried out at the Fitzwilliam Museum, which will be described in further detail below, utilized reeds procured from a Nile Delta

farm in Egypt.<sup>75</sup> Based on dimensions of the Tutankhamun lighting device, I made most wicks approximately 38cm in length. For an experiment of processing with wick-on-stick implements, as depicted in New Kingdom tomb scenes discussed in Chapter 5, I asked friends to make their own wick-on-stick devices which ranged in length from 35–45 cm. A 38 cm wick required approximately 76 cm of linen to produce, since the length of textile needed to be folded in half. The longer the completed wick, the longer the original strip of linen. Due to the length of material that needed to be twisted, producing a wick for a wick-on-stick device was more complicated and unwieldy than a lamp wick. Quite frequently I, or other experiment participants, lost hold of one end of the fabric while twisting, which resulted in the linen unraveling and necessitating a fresh start. As with the twisting of lamp wicks, however, I am sure this would be committed to kinaesthetic memory with practice.

Once the wick was assembled, it needed to be attached to a reed with an additional strip of linen. Again, using the Tutankahmun lighting device as an example, I placed the open end of the wick at the top of the stick and secured it to the reed by wrapping the extra strip of linen tightly around them both. It was not necessary to tie a knot to hold the wick in place as long as the additional strip of linen was wound tightly enough. The remainder of the linen strip was then wound around the reed, leaving a few centimeters gap between each turn. The final wick-on-stick devices were not as elegant in appearance as Tutankhamun's piece, but they were a close approximation (Figure 6-3).

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<sup>75</sup> My thanks to Mennat Allah el-Dorry for procuring the reeds from her family farm in Egypt and to Giulio Lucarini for transporting them from Cairo to Cambridge.



*Figure 6-3 - An example of a wick-on-stick lighting device created for experiments (left) and the extant wick-on-stick light from Tutankhamun's tomb (right)*

After the wick was attached to the reed a selected illuminant needed to be applied. For vegetable oils, it was easiest to submerge the entire lighting implement into a glass or jar of the illuminant. This allowed the wick to absorb the maximum amount of oil. Pouring the oil over the device also worked but took much longer for the wick to become saturated. This method also necessitated a receptacle to be placed underneath the device in order to avoid wasting oil. Animal fats were fairly time-consuming to apply. However, because the fat had to be applied by hand it allowed the maker of the device to ensure that every inch of the fabric and reed were coated in illuminant. For some wick-on-stick lighting experiments, I applied the illuminant and then immediately lit the devices, while for other experiments I stored the implements for 24-48 hours and then lit them.<sup>76</sup>

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<sup>76</sup> Since conducting my experiments in the spring and summer of 2016, I have learned that fabric soaked in linseed oil and left to sit has the capability to spontaneously combust. I would therefore strongly discourage other scholars from soaking wicks in linseed oil and storing them for future use.

Storage did not make any difference in their ability to burn, nor did the device dry out over this period of time.

### 2.2.1 Feeling light

The making of lamps and, to a greater extent, wick-on-stick implements impacts quite heavily on haptic sensation. This includes the feel of the textile used for the wick, as well as the contrasting smooth almost silky texture of the reed to which it is attached. It is also important to note the difference in time manipulating wick and illuminant with one's hands in order to create a lighting device. A lamp can be expeditiously made in a couple minutes, even less if wicks are pre-made and readily available. A wick-on-stick lighting device, the type most frequently depicted in ritual offering scenes, takes a greater investment of time. The reeds must be procured, the wick must be made to an appropriate length, and then the two are tightly lashed together with additional linen. This may not take more than a few minutes with a fair amount of practice, but it requires both manual dexterity and a tactile experience with two differing textures. The application of illuminant, particularly animal fat, also adds to the haptic perception of the object. The easiest mode of application is to scoop the fat out of the jar with one's fingers and then rub the tallow into the wick and onto the reed. To ensure the illuminant is thoroughly worked into the wick, several applications of tallow are required. As the tallow warms, the applicant's hands also become thoroughly coated in fat, which imparts a lingering mild greasy smell and acts as an excellent moisturizer. The silky, greasy texture of the fat, as well as the subsequent suppleness of the light maker's hands, was likely quite different from the majority of tactile sensations experienced by ancient Egyptians. The heat and sun would sap moisture from the skin, building materials like sand and stone were rough and jagged, and textures in the natural landscape, such as palm trees, animal hair, and other plants and grasses, would all share a coarse, fibrous quality. Making a wick-on-stick lighting device would therefore create a completely different sensory experience, separating it from textures in the everyday vernacular and perhaps lending to the perceived importance of the item.

The investment of time and craftsmanship in wick-on-stick lighting implements also seems appropriate for an item used in ritual offerings. Perhaps this is one reason, in addition to their portability, why they are commonly depicted in sacred celebrations, as opposed to oil lamps whose construction requires minimal effort. The action of twisting fabric, as with the manufacture of



lamp wicks, also plays a significant role in constructing wick-on-stick devices. An added layer of twisting or wrapping is also needed to attach the wick to the reed in order to complete the piece. The manual twisting of the fabric seems to have been a significant detail as it is not only referenced in terminology (see Chapter 4, p. 99), it is consistently carved and/or painted onto representations of wick-on-stick devices.

### *2.3 Not all illuminants are created equal*

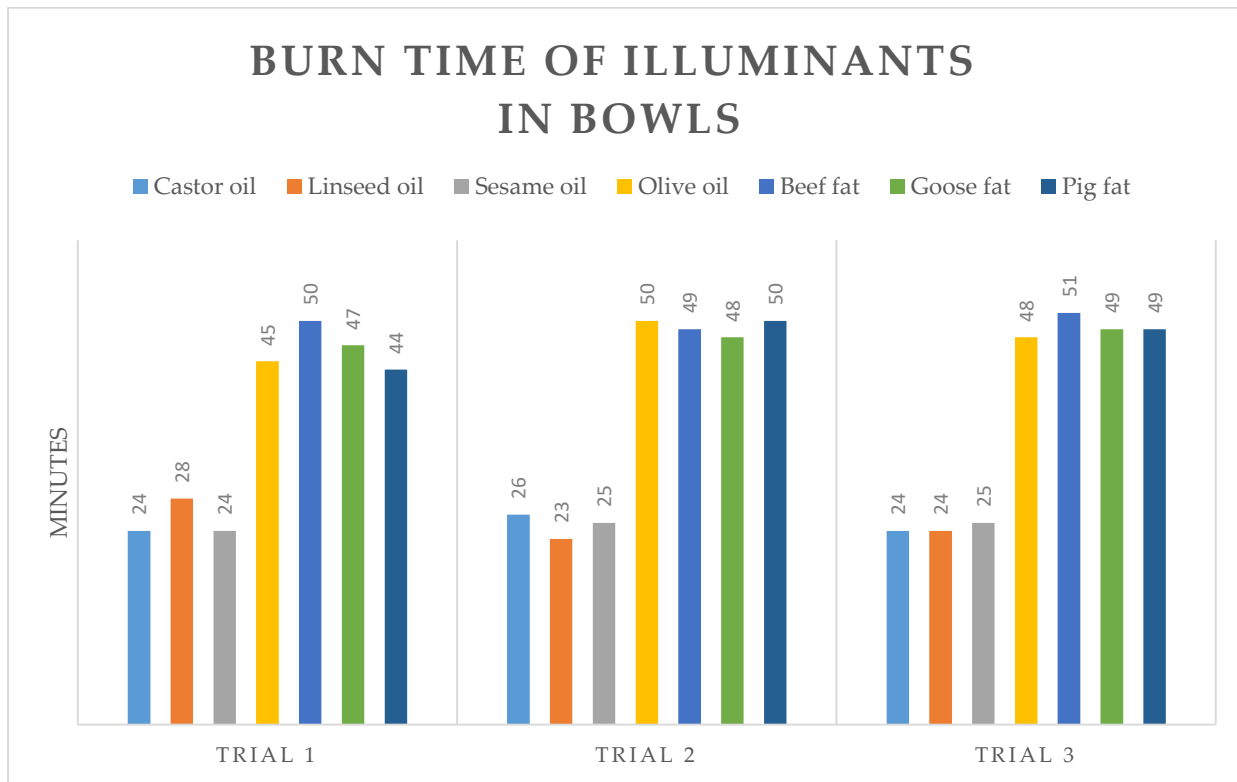
I tested a total of 7 illuminants in my experiments including: castor, linseed, sesame and olive oils, as well as beef, goose and pig fat. Each illuminant was examined for burn time, smell, amount of smoke and quality of light produced in both lamps and wick-on-stick lighting devices. In order to avoid any damage from unexpected bursts of flame or incredible amounts of smoke, I performed each lighting experiment outside even though most artificial lighting in ancient Egypt was used in interior spaces. All fats and oils used were those which I identified in Chapter 3, Section 4.1 and 4.2 as the most likely Pharaonic Period illuminants. I was unable to obtain radish oil, so that was left out of the experiments. I also included olive oil as this was the most common illuminant throughout the ancient Near East and Mediterranean during the Pharaonic Period, and it would provide a point of comparison to illuminants available to the ancient Egyptians. I chose beef, goose and pig fat in order to have a selection of ruminant and non-ruminant fat sources, and, as discussed on p. 86, these are also the most frequently attested illuminants in textual and archaeological evidence.

For each experiment 1 fluid ounce of illuminant was used along with a 5 cm long wick with a diameter of approximately 1 cm. Each illuminant was tested at least 3 times. The burn time of oil lamps was greatly affected by the wind as the flame could either be blown out or blown back onto the remainder of the wick, which would cause the whole surface of the wick to catch fire and burn quickly. In the absence of any gusts of wind, 1 ounce of linseed, castor and sesame oils each burnt for approximately 25 minutes. While 1 ounce of olive oil on average burnt for 50 minutes.<sup>77</sup> All types of vegetable oil produced a moderate quantity of black smoke. Castor oil produced the thickest black smoke with the most noxious odor, while linseed oil produced a moderate level of smoke with an aroma of grilled or charred meat. Sesame and olive oil produced the same amount

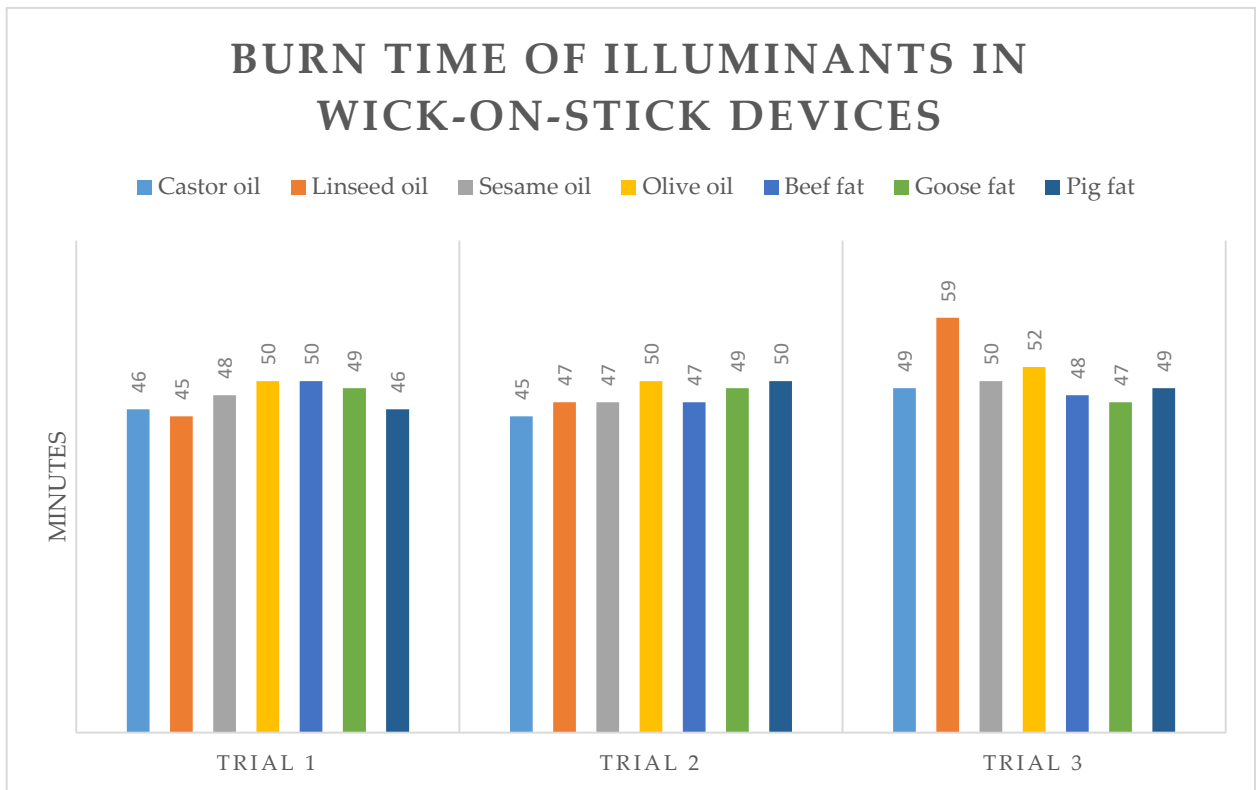
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<sup>77</sup> This burn time for olive oil in an Egyptian open vessel oil lamp corresponds to another study conducted with replica open vessel oil lamps from Tel Kedesh in Israel (Elrasheedy & Schindler 2015).

of smoke as castor and linseed oils but with minimal to no scent. All the vegetable oils produced a strong, bright, yellow-orange flame. Beef, pig and goose fat all burnt the same with minimal to no smoke or odor and a strong, bright, predominantly orange flame. As with olive oil, the animal fat illuminants burnt for approximately 50 minutes.



For wick-on-stick device experiments, each implement was modeled on the Tutankhamun piece with a 38 cm wick and an additional 5 cm wide, 38 cm long strand of linen to attach it to the reed. Each device was coated in illuminant to ensure that the wick was completely saturated. The wick-on-stick devices burnt far more consistently with all illuminants burning for approximately 45 minutes. The smell, amount of smoke produced, and color of flame were consistent to burning the illuminants in lamps. In many of these experiments, a sizzling or hissing sound was audible from the light. This was most frequently heard when initially lighting the wick-on-stick device, but would also occur as the device burnt down at irregular intervals.



In addition to burning wick-on-stick devices while stationary, I also recruited three volunteers to process with the lights, as depicted in New Kingdom tomb scenes and referenced in the tomb contracts of Hepdejfa. The volunteers each made their own wick-on-stick device with 76cm of linen and then coated them in either beef tallow, castor oil, or linseed oil. Regardless of the construction technique or illuminant used, all three wick-on-stick devices burnt for approximately 50 minutes. The device coated in castor oil produced the most smoke, followed by linseed oil, with the beef tallow light producing the least smoke. In the open air, and while walking around, any odor was greatly dissipated and none of the volunteers reported any noticeable scent from their light. All of the devices were easy to handle, and did not drip illuminant or burning flecks of wick onto the hands of the volunteers. They were also easily able to see well enough, in complete darkness outside, in order to walk a perimeter of my backyard.

#### 2.3.1 Hearing fat and smelling oil

It is clear from these illuminant experiments that not all potential Pharaonic Period fats and oils produced the same amount or quality of light, nor were they all equally pleasant to burn. Using castor oil, particularly in a lamp, would have been extremely disagreeable in a confined space. The smell, which was akin to burning tires, accompanied by thick, black smoke would have likely

produced coughing, a stinging throat and burning eyes to individuals in the same room. Linseed oil, which produced the same amount of smoke, had an unexpected scent of grilled or charred meat, which may have been an appealing quality to an ancient Egyptian. Grilled meat and fowl in particular are commonly depicted and recorded as desirable offerings to the gods and the deceased. Perhaps burning a lamp or wick-on-stick device coated in linseed oil would mimic this delectable aroma. If using a lighting device in an enclosed space, it seems likely that animal fats would be preferred as they produced minimal to no smoke or scent.<sup>78</sup> This in fact corroborates textual evidence presented in Chapter 4, p. 102 that *sgnn* or *ꜥd wd3* were requested illuminants for artificial lighting devices used in the construction of the tombs in the Valley of the Kings.

The wick-on-stick devices proved ideal for mobile light sources as they could easily be carried in the hand for at least 45-50 minutes without scalding their carrier or running out of fuel. This correlates with references to light offering processions in Contract 9 of Hepdjefa's tomb, which would have required a light to be carried a distance of approximately 1.5km from the temple of Anubis to the tomb chapel of the deceased (Griffith 1889: plate 8, lines 312-13). Based on my experiments, a wick-on-stick device would burn throughout the time it would take to walk from the temple to the tomb of Hepdejefa (approximately 20 minutes) and then perform an offering ritual before the cult statue of the tomb owner. Additionally, New Kingdom tomb scenes of light offerings depict wick-on-stick implements being carried in the hand without any form of guard or protection, which my experiments indicate would not have been necessary.

The spitting or hissing sound produced by the wick-on-stick implements is particularly interesting. Putting this sound in context, however, requires an understanding that wick-on-stick devices are most commonly labeled as *tk3* in New Kingdom tomb and temple offering scenes, which I highlight throughout Chapter 4. As I discussed in Chapter 4, Section 7.2, *tk3* can be wielded by snake goddesses as a protective flame and the flame of the *tk3* itself is associated with fire spit from the mouth of the uraeus. It is possible that the hissing, spitting sound from *tk3* in wick-on-stick form reinforced this association with snakes and/or snake goddesses. This aural connection

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<sup>78</sup> Lighting experiments in Altamira cave achieved similar results when burning fat obtained from a cow tibia in a stone, open-vessel oil lamp (Perez-Seoane *et al.* 1999).

between light offerings and the protective power of snakes may have also strengthened the perception that light was an appropriate gift to provide for the gods and the deceased.

### **3. Accessing the ancient Egyptian lightscape**

Once an artificial light source was made, it was then used to illuminate a space lacking in or devoid of natural light. The reason for this illumination varied from a practical application of allowing workers to see in darkened underground chambers in the Valley of the Kings (Černý 1973) to serving as an offering in a sacred space (Nelson 1949b: 321–23). In both of these instances, artificial lighting not only facilitated the visual navigation of these environments, but impacted upon the viewer's perception of the space and objects within it. Scholars have previously discussed the role of light, both natural and artificial, as the means by which humans experience the world (Merleau-Ponty 1964; Ingold 2000). It is only recently, however, that anthropologists, archaeologists and art historians have begun to examine how lighting, particularly artificial lighting, is used and manipulated within individual cultures to impact on material culture (James 1996; Nesbitt 2012). Specifically, as Bille and Sørensen (2007: 265) discuss in their introduction of an "anthropology of luminosity", scholars are now beginning to examine "how light is *used* socially to illuminate places, people and things, and hence affect the experiences and materiality of these, in culturally specific ways". This type of examination allows for a consideration of how light impacts upon and/or creates shadow, sheen, color and movement when interacting with different spaces and surfaces.

While not previously applied in Egyptology, this line of inquiry could provide new insights into ancient Egyptian material culture as Egyptologists rarely have the opportunity to appreciate these objects in their originally intended lighting environment. Tomb chapels and burial chambers in Egypt, for example, are lit with crude, fluorescent floor lamps that drown out color and illuminate a space in its entirety. This is far from the lighting conditions that the ancient Egyptians would have experienced. The light from lamps or hand-held lighting devices would have flickered, moved, and interacted with the carved and/or painted surfaces of the wall. They would have created shadows and varying levels of darkness, only illuminating small portions of a tomb at a time. Similarly, viewing a cult statue, a faience shabti or a burnished ceramic bowl in a glass case under static LED lighting, as opposed to a soft, flickering flame, creates a very different visual impression on the viewer.

### 3.1 Fitzwilliam Museum coffin experiment: a case study in the transformative effect of lighting

While ancient Egyptians would not have seen their world under the glow of an LED or a fluorescent lightbulb, they would have experienced different perceptions of an object under the glare of the bright Egyptian sun versus the dim, erratic glow of an artificial lighting device. To examine the effect that such a variation in lighting conditions might have had on an object, I was fortunate to be able to collaborate with the Antiquities Department at the Fitzwilliam Museum in Cambridge.<sup>79</sup> As part of their ongoing Ancient Egyptian Coffins Project, they recreated portions of coffins in their collection in order to study carpentry techniques, as well as pigment and varnish application. Since ancient light offerings were presented before coffins, I decided this was an ideal case study to examine the interaction between light and surface treatments in their original condition. As a way of focusing the experiment, I decided to utilize panels painted only in the pigments yellow ochre and orpiment. This supported the Fitzwilliam's project goals as they were examining the coffins of Nespawershefyt (E.1.1822), a yellow-painted 21<sup>st</sup> Dynasty coffin, while at the same time allowing me to narrow my examination to how light interacts with yellow pigments (J. Dawson & Strudwick 2016: 182–89, cat. 26). Additionally, it was determined that working with freshly painted yellows could provide interesting perspectives as yellows, particularly orpiment, are extremely light sensitive and susceptible to degradation and loss of color over time (J. Dawson & Strudwick 2016: 96). As a result, much of the yellow preserved on ancient Egyptian objects today does not look as it would when it was first applied.

As part of the preparation for the experiment, I noted that recent archaeometric analyses of pigments indicates that inorganic yellows were commonly layered in paintings (Blom-Böer 1994; El Goresy *et al.* 1986; Hartwig 2013; McCarthy 2001). Research has particularly focused on the layering of yellows on tomb and temple walls, but analysis at the Fitzwilliam suggests that this same technique was applied to wooden coffins of private individuals (J. Dawson & Strudwick 2016). Other studies in pigment analysis, suggest that layering of pigments was a conscious choice on the part of the craftsman (Colinart 2001; Moussa *et al.* 2009). The reason for this layering may be that the artist wished to create a specific effect. In the tomb of Menna (TT69), for example, the

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<sup>79</sup> My thanks to Dr. Lucilla Burn, former Keeper of the Antiquities Department for supporting this project, in addition to Helen Strudwick, who facilitated the experiment logistics, and Elsbeth Geldhof, who painted the coffin panels and served as a photographer for the project.

figure of the tomb owner was frequently painted on to a layer of huntite, a bright white mineral that reflects light and increases the vibrancy of color. By painting Menna over huntite, the artist ensured that the image of the tomb owner would stand out from others that were painted on a layer of calcite, a less vibrant and reflective white (Hartwig 2013: 150). This begs the question if yellow ochre and orpiment were also layered for a particular visual effect on coffins.

Yellow ochre was the most common yellow pigment in the ancient artist's palette and was used throughout the entirety of ancient Egyptian history. It contains a mixture of clays, iron oxides, goethite and limonite with a fine-grained, rounded structure that absorbs light (Lee & Quirke 2000: 115). Orpiment, a naturally occurring arsenic sulphide, produces a bright yellow color. In contrast to yellow ochre, orpiment has a sheet-like structure which should be left coarsely ground as a pigment (Scott 2016). As a result, orpiment has a luminous or sparkling appearance because the pigment structure reflects light. It was previously thought that orpiment was rarely used in painting and primarily reserved for royalty because it was sourced from as far away as modern day Kurdistan, Iran, Syria or Anatolia (Lucas 1962). Evidence now suggests, however, that earlier studies may have missed the presence of the pigment due to degradation or its inclusion with mixtures of yellow ochre (Lee & Quirke 2000: 115). As for the purpose of utilizing the color yellow, scholars have theorized that the ancient Egyptians employed the pigment, particularly orpiment, as a substitute for gold (Colinart 2001; G. Robins 2001; J. Dawson & Strudwick 2016: 96). This metal was coveted not for its inherent value necessarily, as gold was relatively abundant in Egypt, but for its symbolic association with the gods, particularly the sun god, Ra. As described in the *Destruction of Mankind*, the gods were said to have: "bones of silver, flesh of gold, and hair of real lapis lazuli" (Piankoff 1955: 27–29; Lichtheim 1976: 197–98). Indeed, remnants of Egyptian material culture, such as the burial mask of Tutankhamun, indicate that the Egyptians wanted to associate themselves with the gods by displaying these divine attributes. Of course not everyone was royal, nor did they have access to the materials needed to produce a solid gold death mask with precious stone inlay. It is therefore tempting to interpret the use of the color yellow as a gold substitute, but is it only pure orpiment that would achieve this effect? Or could the choice of layering yellow ochre and orpiment provide any clues as to the intended perception of these pigments? More crucially for this thesis, did artificial lighting have any effect on the pigments?

To examine these questions, I chose to conduct a preliminary perception study on four panels painted in orpiment and/or yellow ochre illuminated by wick-on-stick type lighting devices. The parameters of setting (outdoors) and lighting devices (wick-on-stick implements) were derived from analysis of textual and iconographic evidence of offering light before a coffin as described in spell 137A. The timing of the experiment, at sunset, was based on my hypothesis as presented in Chapter 5, Section 6.1.<sup>80</sup> One panel painted in unvarnished orpiment (Panel 1) would allow for analysis of the interaction of lighting with the pure pigment theorized to serve as a gold substitute. Panel 2 was painted in unvarnished, layered yellow ochre and orpiment reflecting the combination of pure pigments identified in recent pigment analyses as presented above. The third panel (Panel 3) was painted in orpiment with a pistacia resin varnish, which was chosen to enhance the potential metallic appearance in addition to creating contrast with Panel 1.<sup>81</sup> The last panel was layered with orpiment underneath yellow ochre and then varnished with pistacia resin (Panel 4). The varnish was intended to create a contrast with Panel 2. Additionally, a varnish layer, primarily composed of pistacia resin (*sntr*), was applied to Panels 3 and 4 to replicate the varnish layer commonly found on New Kingdom private wooden anthropoid coffins (Serpico 1983: 293–314; Serpico 2000: 459–60). Each panel was placed on an easel in order to hold it roughly perpendicular to the ground, to mimic the upright placement of the coffin at an ancient Egyptian funeral (Figure 6-4). Before each panel were placed two wick-on-stick lighting implements, the construction of which were based on the one extant example from the tomb of Tutankhamun, albeit a bit taller in order to correspond to the height of the panels on the easels. The illuminant used was homemade beef tallow to replicate the *ʿnd wd3* or “fresh fat/tallow” frequently mentioned in the context of artificial lighting, while the reeds were provided from a farm in the Egyptian Delta.

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<sup>80</sup> My thanks to Tim Knox, Director of the Fitzwilliam Museum, for the utilization of his garden for this research.

<sup>81</sup> Serpico (1983: 305, 312) theorizes that a yellow varnish, primarily composed of pistacia resin, may have been applied over yellow paint to mimic the sheen of gold, while clear varnish may have been applied over gray paint to mimic silver.





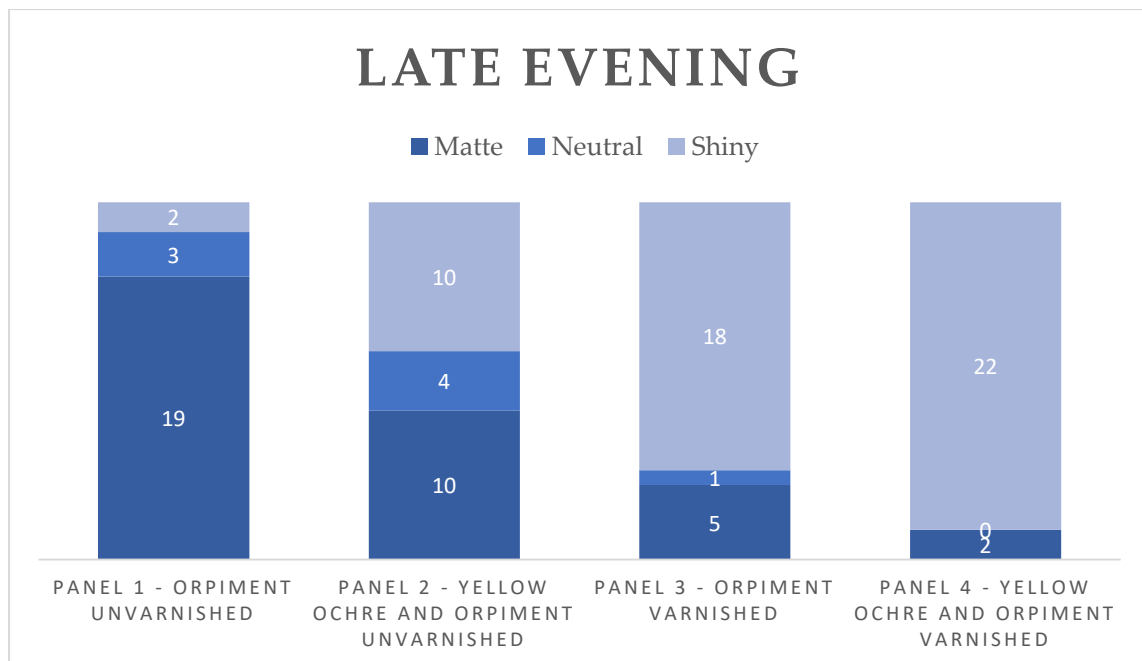
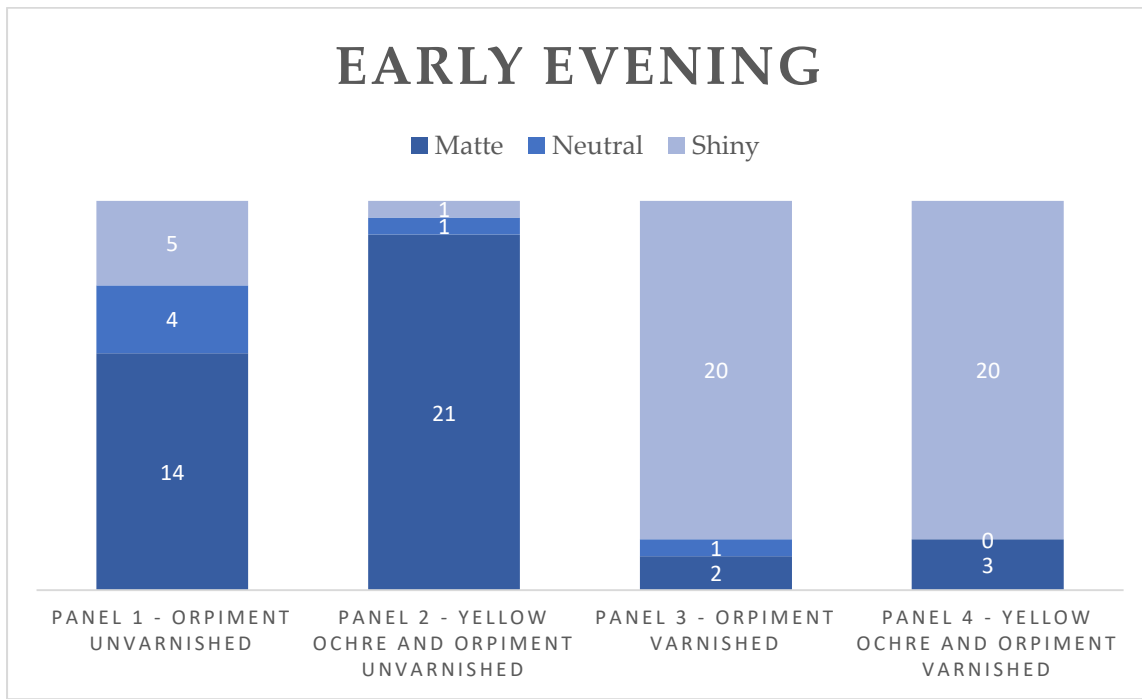
*Figure 6-4 - Paintings conservator, Elsbeth Geldhof, and myself prepare the panels for the experiment; arranged in numerical order (1 - 4) from right to left; photograph by Helen Strudwick*

In order to avoid bias in opinion, and to incorporate an element of community outreach, the participants for the perception study were volunteer members of the public. A total of 47 people took part in the experiment, which was held on 9 August 2016. All of them were asked to fill out a 5-point Likert scale questionnaire in order to assess their perception of the interaction between the panels and artificial light.<sup>82</sup> Each participant was asked to state how strongly they agreed with five different descriptive pairs with regard to the panels. They also were encouraged to write in their own comments which were not captured in the questionnaire. The participants were divided into groups of 5 and each in turn were given 3 minutes to view the panels and complete their questionnaire. The most intriguing data from the experiment resulted from comparing the perceptions of those who completed the questionnaire earlier in the evening, when the torchlight was mingled with the remaining sunlight, to those who completed the questionnaire later in the evening when torchlight was the only source of illumination on the panels. It is important to note

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<sup>82</sup> This form of assessment was chosen as it is the most widely used tool in scaling people's attitudes or behaviors towards a particular topic. A copy of the questionnaire, a transcribed copy of all participant responses, and protocol for the experiment is included in Appendix 3.

that in Cambridge this transition from twilight to darkness took approximately 45 minutes, while in Egypt it would take approximately 24 minutes at the same time of year.<sup>83</sup> Below is provided a summary of the perception of shiny/matte and bright/dull qualities for each panel divided by early evening (20:40 – 21:00) and late evening (21:02 – 21:20).

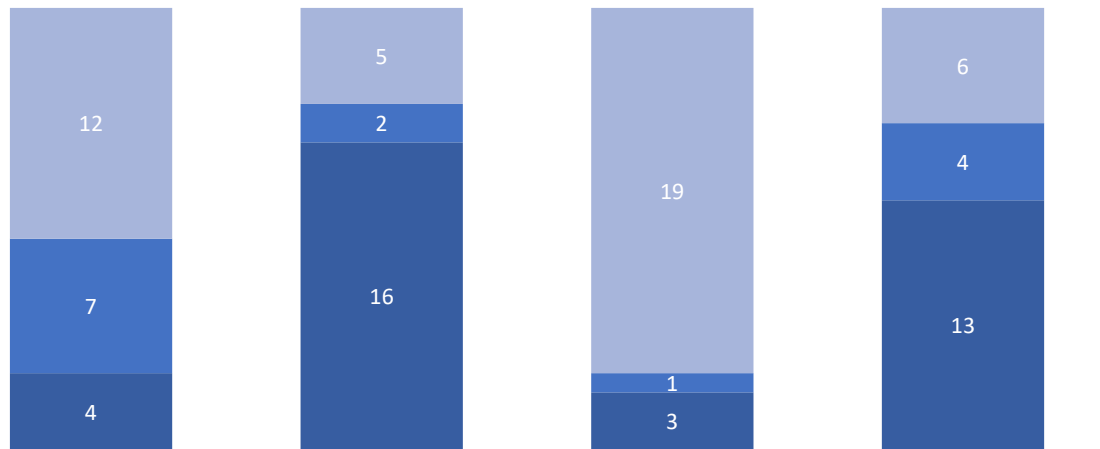


<sup>83</sup> Data taken from [www.gaisma.com](http://www.gaisma.com) which produces data on sunrise, sunset, dawn and dusk times from across the globe.

From these results, it is evident that changes in lighting conditions do impact on the perception of sheen of yellow painted surfaces. Panel 1, while primarily described as being matte in appearance, was perceived to become more matte when artificial light was its only source of illumination. A similar trend is also seen in Panel 3. While the varnish layer certainly increased the shininess of the surface for both early and late evening groups, a loss of natural light increased the perception of a matte appearance of the panel. In contrast, those panels (2 and 4) painted with a layer of yellow ochre and orpiment became increasingly shiny when artificial light was the sole source of illumination. This change is particularly apparent in Panel 2 where 88% of the participants found the panel to be matte early in the evening, while later in the evening 42% of participants described the panel as matte and another 42% found the panel to appear shiny. According to this experiment, orpiment is perceived to be shinier under natural lighting, while under artificial lighting it becomes more matte in appearance. While this change is lessened in surfaces covered in a layer of varnish, the panel painted in orpiment with a layer of varnish was still perceived to be more matte when illuminated only by artificial light. Surfaces painted in layers of yellow ochre and orpiment, however, seem to benefit from illumination by artificial light sources as this combination of pigments greatly increased in sheen. Similar trends are also found in examining the panels for dull versus bright qualities.

## EARLY EVENING

■ Dull ■ Neutral ■ Bright



PANEL 1 - ORPIMENT UNVARNISHED

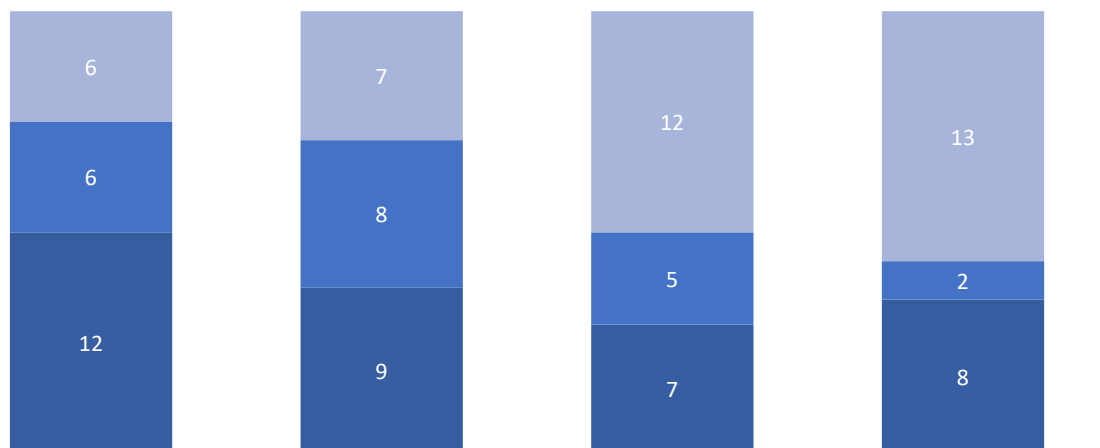
PANEL 2 - YELLOW OCHRE AND ORPIMENT UNVARNISHED

PANEL 3 - ORPIMENT VARNISHED

PANEL 4 - YELLOW OCHRE AND ORPIMENT VARNISHED

## LATE EVENING

■ Dull ■ Neutral ■ Bright



PANEL 1 - ORPIMENT UNVARNISHED

PANEL 2 - YELLOW OCHRE AND ORPIMENT UNVARNISHED

PANEL 3 - ORPIMENT VARNISHED

PANEL 4 - YELLOW OCHRE AND ORPIMENT VARNISHED

As with perception of sheen, panels (1 and 3) painted only in orpiment were considered to be brighter in appearance in early evening when illuminated in a mixture of natural and artificial light. Under artificial lighting however, the orpiment panels were deemed to be considerably duller. This is particularly evident in Panel 1 as early in the evening 50% of participants found the

panel to be bright, while later in the evening the same percentage found the panel to be dull. Those panels (2 and 4) painted in yellow ochre and orpiment also exhibited a marked change in appearance under natural versus artificial lighting conditions. This is most evident in Panel 4 as early in the evening 50% of participants found the panel to be dull, but under artificial lighting 50% of participants perceived the panel to be bright.

Results of the experiment indicate that a change in lighting conditions did have an impact on the visual perception of the painted panels. Panels 1 and 3, which were painted with only orpiment, markedly decreased in perceived sheen and brilliance when viewed exclusively under artificial illumination. This suggests that orpiment looks more vibrant in daylight, or at least in a mixture of natural and artificial light. In contrast, Panels 2 and 4 increased in brilliance and sheen when viewed under the same lighting conditions. Interestingly, the panels painted in a combination of yellow ochre and orpiment, particularly Panel 4, were described as looking metallic or golden in appearance and that this quality was enhanced by the artificial light. This counters previous suggestions that orpiment was used in order to replicate gold and that the application of varnish alone would mimic the sheen of precious metals. This experiment suggests that while varnish did increase the sheen and brightness of surfaces, the underlying pigments, as well as changing light conditions also played a part in achieving a metallic effect.

Natural Color System (NCS) references of the panels taken during the experiment may further explain the perceived metallic appearance of the layered yellow ochre and orpiment panels. The warmth of the yellow in the mix of yellow ochre and orpiment (90% yellow, 10% red) is very similar in color to a high carat (18–22k) gold, which has a high percentage of gold (75–91.7%) and fewer inclusions of silver or copper.<sup>84</sup> The higher gold content results in a warmer color gold with a richer hue that leans towards the red end of the spectrum. In contrast, a lower carat gold is lighter and more yellow in color. Analysis of several gold objects from ancient Egypt suggests that their native mines produced gold ranging from 17–23.5k, placing it at the warmer side of the color spectrum (Lucas 1962: 228). It may be then that by mixing yellow ochre and orpiment the Egyptian artist was attempting to replicate this warmer gold color by introducing the reddish hue to the paint. The additional application of a varnish would have only enhanced the sheen and metallic

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<sup>84</sup> Percentage taken from the World Gold Council at: [www.gold.org](http://www.gold.org), accessed 28 April 2017.

appearance of the surface. Additionally, the orange-colored flame produced by the tallow coated wick-on-stick implements would also have enhanced the warmth in the yellow ochre and orpiment pigments. The warm, golden hue also seems to be significantly increased when illuminated by artificial lighting as opposed to natural light (Figure 6-5).



*Figure 6-5 - Golden, metallic effect visible in Panel 4 during the experiment indicated by green arrow); photograph courtesy of Elsbeth Geldhof*

### *3.2 Glaring sun and flickering flames*

The Fitzwilliam experiment is of course only an initial investigation into the impact that different lighting conditions had on the perception of painted surfaces. It is important to bear in mind the small scale of the project, which restricts the ability to test statistical significance. Additionally, the participants all perceived the panels through the lens of their own individual cultural constructs. This could not only impact on how they perceive brilliance and sheen, but on the qualities they associate with these characteristics. The experiment results do, however, suggest that certain pigments, such as orpiment appeared more brilliant and shiny under natural lighting conditions, as opposed to layered yellow ochre and orpiment, which was enhanced by artificial lighting. This

begs the question if Egyptian artisans consciously chose and layered pigments based on the lighting in which they would be viewed. As stated above, recent pigment analyses have discovered that yellow ochre and orpiment are commonly mixed or layered on top of each other on tomb and temple walls. These are spaces that were primarily illuminated by artificial light in ancient times and, as the Fitzwilliam experiment indicates, artificial lighting brings out qualities of sheen and brilliance in these pigments that are greatly lessened in sunlit conditions. The application of these pigments on coffins is particularly interesting as they would have been seen under both sunlight and artificial light. During the procession to the tomb, for example, the coffin would be dragged through the necropolis under the glaring midday sun. The light reflecting off the sand, gilded or varnished object surfaces, and the white linen of funeral attendees must have been near blinding, and possibly quite painful to look at. Additionally, if the coffin was painted in yellow ochre and orpiment, it would appear quite matte and lifeless under the sun's rays. If, as I theorized in Chapter 5, Section 6.1, the culminating rites of the funeral, including the offering of artificial light, were meant to take place at the tomb entrance at sunset, the coffin and other funerary furniture could have been perceived quite differently. The blinding white glare of the sun would give way to the soft, warm flickering of flames. As the Fitzwilliam experiment suggests, a coffin painted in yellow ochre and orpiment and lit in these conditions would transform in appearance from a matte, yellow-brown colored object to a brilliant, shiny coffin resembling gold. The guttering of the flames would have interacted with the carved and/or painted details on the funerary goods creating a sense of movement. Shadows of the funeral attendants, priests and the coffin of the deceased also would have projected onto the façade of the tomb.

Other senses beyond vision would be affected as well by shifting lighting conditions. The sweltering heat of the Egyptian sun would subside once it had set. Presumably in the fading natural light, people would draw closer to the artificial light sources so that they could still witness the end of the funeral. They would then experience a different source of heat from the flames, as well as body heat from the nearby attendants. It would also bring people in closer contact with the funerary objects and the tomb, perhaps inviting them to run their hands over the carved, rough limestone surface of the tomb entrance or the smooth, varnish of the coffin. This also would have brought the attendants close enough to the funerary goods to catch hints of freshly cut wood, the pungent aroma of bitumen or varnish, and the many perfumes and oils used to anoint the

deceased.<sup>85</sup> The heady smell of burning incense likely permeated the air, and its opaque wisps of smoke would have mixed with the erratic flames from the lighting devices.

This all suggests that ancient Egypt had two distinct lightscares, one produced by sunlight, the other by artificial lighting implements. The examination of the artificial lightscape in this chapter suggests that lighting was a multisensory experience that extended from the procurement of the raw materials, to the construction of the device through the burning of the light itself. I cannot comment on what ancient Egyptian senses would have been impacted the most by artificial lighting. What is crucial to consider is that there are visual, haptic, olfactory and aural sensations created by artificial lighting that are distinct from the sensory experience of natural lighting. While sunlight in Egypt is glaring, hot, flattening and static, artificial lighting produces a warm glow, which is erratic and soft. Artificial light also draws one closer to an object or surface due to its minimal amount of light. The flame of an artificial light source picks out carved details, creates a sense of movement, and illuminates only small portions of a surface at a time, casting portions of a room or object into deep shadow while highlighting others. The required proximity between the viewer and the flame also exposes the viewer to the heat of the flame, the smell of the illuminant and the texture of the illuminated surface. Significantly, conclusions drawn about the sensory experience of artificial lighting are supported by textual evidence and religious ideology, providing a richer understanding of ancient Egyptian culture. As discussed, the act of twisting linen for wicks, for example, may be related to the term *h / h'ct*, "twisted/braided thing", which is used to designate a type of lighting device. Similarly, it is also possible that the greasy, beefy smell of rendered tallow added to the prestige of an individual in charge of illuminant, or that the hissing sound from a burning wick-on-stick implement would support the correlation between the flame of a *tk3* and divine snake goddesses. All of this evidence suggests that a visual examination or "reading" of ancient Egyptian culture is important, but that sensory archaeology, and experimental archaeology, can add to and enhance Egyptological scholarship.

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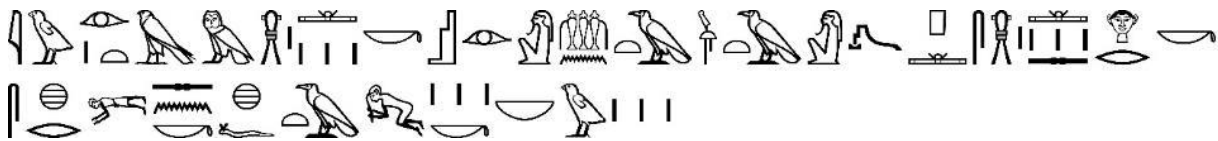
<sup>85</sup> During the experiment at the Fitzwilliam, the varnished panels had a very strong scent of cucumbers. We are not entirely certain what produced this scent, but it is most likely either from the heating of the pistacia resin for the varnish or from the addition of natural turpentine oil. The turpentine, procured from coniferous trees that would have been available to the ancient Egyptians (Serpico 1983: 92), was added to the melting pistacia resin to allow it to become liquid enough that it would spread over the panel surface.



## Chapter 7 – THE POWER OF LIGHT

All previous discussion on the ritual significance of artificial light centers on protection, specifically protection from Seth and other enemies (Gutbub 1961; Haikal 1985; Régen 2010; Schott 1937). Haikal (1985: 362–63) summarizes this prevailing opinion by stating that light offering rituals may “...vary in length and phraseology, but whatever the variants, they are always performed for protection: protection of a sanctuary, a divine barque or statue, or even a throne, and protection of the dead.” An element of protection is certainly implicit in the use of artificial lighting, particularly within a mortuary context. Several texts related to the afterlife specifically mention the use of lighting for the purposes of expelling enemies from the deceased:

*Father of Teti, father of Teti in darkness; Father of Teti, Atum, in darkness; bring Teti to your side that he may kindle a tk3 for you and protect you as Nun protected these four goddesses on the day they protected the throne, Isis, Nephthys, Neith, Serket ; Utterance 362, Teti Pyramid Texts (hieroglyphic text and transliteration on p. 128)*



*jw jrt hr m s3=k wsjr hntj-jmntjw / stp=s s3=s hr=k / shr=s n.k hftjw=k nbw*

*The eye of Horus (the light source) is your magical protection, Osiris, Foremost of the Westerners / It exerts its protection over you / it overthrows all of your enemies for you; spell 137A, papyrus of Nu, lines 14-16 (D.C. Luft 2009: 244–45)*

Given the variety of rites for which artificial lighting is employed, however, it seems unlikely that light offerings were solely meant to perform a protective role. What is particularly problematic with previous interpretations of the ritual application of artificial lighting is the implication that this light is intended to protect against darkness (N.M. Davies & Gardiner 1915: 97–98; Fischer 1977: 80; Haikal 1985: 363; D.C. Luft 2009: 93). This gloss suggests a modern, classical interpretation of darkness, which has become entangled with connotations of evil, ignorance, and death (Galinier et al. 2010). This bias has bled over into archaeology, resulting in minimal understanding of how ancient cultures utilized, manipulated and experienced darkness and/or night (Dowd & Hensey

2016; Gonlin & Nowell 2018). I would suggest that the ancient Egyptian perception of night and day, light and darkness may be more nuanced than scholarship acknowledges. Not only did light and dark have differing symbolic qualities, they also created very different sensory experiences as highlighted in Chapter Six (p. 222-23). Glaring, static sunlight muted colors, flattened details and created sharp, deep shadows. Artificial lighting, however, was dynamic and warm, capable of picking out carved details and interacting with pigments to create coruscating surfaces. In order to appreciate this effect, an amount of darkness was necessary. Based on the placement of representations of lighting devices in tombs (p. 143), it appears that lighting was not associated with the deepest, blackest recesses of these spaces. Instead, light offerings are depicted just at, or near to, the boundaries of natural lighting in chapels and burial chambers. This implies that the offering of lighting implements is related to liminal space, not spaces devoid of natural light. Additionally, the association of light with personified emblems of the West or western walls in tombs (p. 144), as well as eastern walls in temples and for depictions of festival celebrations in tomb chapels (p. 171, 191-92) suggest a correlation between artificial light and these two horizons. This chapter will investigate these links and use them to facilitate a discussion on the ritual potency of light offerings.

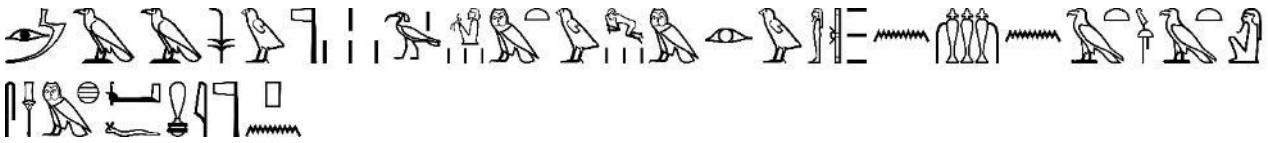
Chapter 5 highlighted the diversity of rituals for which artificial lighting was used, as well as the environment necessary for the proper performance of these rites. Building from this, and incorporating an examination of the effect of light on perception, I would argue that the ritual application of artificial light was for more than a means of protection. Namely, I suggest that lighting was used to facilitate and mark points of transition. This included the transition of the deceased from a mummified body to an *3h*, as well as transitions in time of day, the calendar year, and the 30-year cycle of kingship. By association with these transitory moments, I would argue that light offerings also became associated with concepts of rejuvenation and rebirth. Crucially, I propose that artificial light's use in rituals associated with transition, renewal and rejuvenation is closely linked to the impact that light had on the sensory perception of ritual attendants. Artificial light was not a passive element shed on to an object rather, it was an active element shed *for* a specific purpose, an agent of change on the objects to which it was offered. To avoid redundancy with previous scholarship, which has primarily focused on literary evidence, I will incorporate a similar methodological approach in this chapter to that of Chapter 5. My discussion will



devices by four priests representing the sons of Horus. As I argued in Chapter 5, Section 6.1.1, this was included in the funerary rites as a culminating element of the funeral.

### 1.1.1 Osiris Foremost of the Westerners and Osiris N

While the text is expressly labeled as a *s3hw*, other portions of the spell indicate exactly what roles light offerings are meant to play in the deceased's transition to an *3h*. Firstly, the performance of spell 137A is intended to associate the deceased with the god Osiris. This is directly stated in the postscript of the text that as a result of the proper performance of the spell:



... *m33 sw ntrw 3hw mwtw m jrww n hntj-jmntjw / shm=f mj ntr pn*

... *the gods, the 3hw and the dead see him (the deceased) in the forms of Foremost of the Westerners / he is powerful like this god ; papyrus of Nu, lines 97-98 (D.C. Luft 2009: 292–93)*

Additionally, the body text of the spell continually alternates back and forth between addressing Osiris N., the deceased, and the god of the underworld, Osiris (D.C. Luft 2009: 79). In this way, the presentation of artificial light is meant not only for the deceased as an Osiris, but for the actual god Osiris as well. The majority of lines 14-67, more than half of the spell, indicate that the presentation of *tk3w* would overthrow the enemies of Osiris and Osiris N., while lines 41-56 state that the *tk3w* would also serve to repel any obstacles and smite Seth.

The use of light to correlate the deceased with Osiris is also attested in two tomb scenes. Both paintings are located on the west wall tympana of the burial chambers of Pashed (TT3) and Amunnakht (TT219) at Deir el-Medina. In both instances the sarcophagus and coffin of the tomb owner were originally intended to rest beneath these depictions. The vignette preserved on the tympanum of Pashed's tomb depicts an enthroned figure of the green-skinned god, Osiris wrapped in bright white robes and wearing a gold and blue striped *nemes*-headdress (Figure 7-1).



Figure 7-1 - West tympanum of the tomb of Pashed (TT3) whose sarcophagus originally rested below this scene; Deir el-Medina, Luxor

Osiris sits in front of a depiction of the western hills of Thebes, holding a *heqa*-scepter and flail, symbols of his role as Foremost of the Westerners. He is flanked by two deities, a personified *udjat*-eye and a seated *genius*, who each offer two red and white striped, wick-on-stick type *tk3w* in red conical bowls. Directly beneath the outstretched arms of the eye, a miniature kneeling figure of the tomb owner, Pashed, raises his hands in adoration of Osiris. The line of hieroglyphic text in front of the tomb owner labels him as, "Osiris, servant in the place of truth, Pashed." Behind the *udjat*-eye is a figure of Horus as a falcon, who is painted against the left side of the tympanum. The text written along the right side of the tympanum in six lines is entitled *r n stt tk3*, "Spell for kindling the *tk3*." The text reads, "Spell for kindling the *tk3* for Osiris, Foremost of the Westerners, in the necropolis. A way is opened for you in the darkness, a place that is in eternity. Your heart is powerful and broader than the sky. Osiris is the ruler of the Ennead, he remains with you for eternity" (Saleh 1984: 75; Zivie 1979: 47, plate 18). While the text is directly addressed to Osiris, Foremost of the Westerners, the fact that Pashed is also identified as an Osiris implies that the spell benefits him as well. Additionally, as lines 97-98 from spell 137A state, the offering of *tk3w* to the deceased directly correlates them with Osiris in his role as Foremost of the Westerners.

The tomb of Amunnakht (TT 218) is part of a tomb group for the father, Amunnakht, and his two sons, Nebenmaat and Khameteri (Porter & Moss 2004: 317–20). The family had a joint offering chapel with three distinct niches, one for each man. All three tombs and their respective chapels are elaborately painted in polychrome. While Amunnakht's sons only have one main burial chamber each, Amunnakht's burial complex is composed of two separate chambers both of which are fully decorated. The depiction of the presentation of *tk3w* is found in the outer chamber, which I suggest was intended to serve as Amunnakht's original burial chamber before the complex was expanded. The scene is very similar to the one in Pashed's tomb, but the text is radically shortened to only one line, "The *tk3* is lit for you" (Saleh 1984: 75).



Figure 7-2 - West tympanum of the outer chamber in the tomb of Amunnakht (TT218); Deir el-Medina, Luxor

Osiris remains the main figure in the scene and is still identified as Foremost of the Westerners, but he is depicted wearing the *atef*-crown and the western hills themselves have become the seat of the god's throne (Figure 7-2). In addition to the *udjat*-eye and the Horus falcon behind Osiris, a pair of female arms hold the sun disk within the western mountain. The addition of this figure and the narrowness of the chamber make the scene rather cramped, which may account for the

shortening of the spell's text. The tomb owner, Amunnakht, is not depicted in the tympanum scene, but as in Pashed's tomb his sarcophagus and coffin were intended to rest just below this vignette against the western wall. As a result, he could still benefit from the offerings of *tk3w* depicted above him.

### 1.1.2 *s3hw*, *3h* and *3ht*

The association of the deceased with Osiris as Foremost of the Westerners is unlikely to be a coincidence, nor is the placement of the scenes in the tombs of Pashed and Amunnakht on the western wall of the burial chamber. In fact, I would argue that the Egyptians were cleverly associating the *s3hw* ritual of light offerings with the western *3ht*, the point in the horizon where the sun would set every day. The text of spell 137A contains a line that specifically references this connection:



*jj jrt hrw wd3t psdt mj r' m 3ht*

*The eye of Horus (the offering of tk3w) comes shining like Ra in the horizon ; papyrus of Nu, line 33 (D.C. Luft 2009: 253)*

As I mentioned on p. 147-48, this phrase is found on the Middle Kingdom stela of Sarenput I from Elephantine, as well as in the 18<sup>th</sup> Dynasty tombs of Senenmut and Puimre. This suggests that the correlation between funerary light offerings and the *akhet* is established at least by the 12<sup>th</sup> Dynasty and continues throughout the New Kingdom by its inclusion in spell 137A, as well as tomb scenes situating the offering of *tk3w* in the western *3ht*. This may be the reason why the tombs of Pashed and Amunnakht depict Osiris enthroned on the Theban hills, in the *3ht*, the physical place where the sun would appear to set. The addition of the sun in Amunnakht's tomb further strengthens this connection. Significantly, the verb, *psd* (*Wb I*, 556.14–558.3), which is used in every instance of this phrase is first attested in the Pyramid Texts and specifically relates to the “shine” or “glow” emitted from Ra/sun when he is in the *3ht*.

Scholars have also suggested that *3hw* are beings associated with the *3ht*, the point in the horizon where the sun rises and sets every day (Jansen-Winkel 1996: 203–5; Janák 2010). Interestingly, *3ht* is also a term for “flame” or “fire” (*Wb I*, 17.6) an association that I suggest the ancient Egyptians

utilized in word play in texts relating to the offering of light. In the line above, the light offering is referred to as the eye of Horus, which is a common term used for an offering. In a clever allusion to this concept, a personified eye of Horus presents the *tk3w* in the tombs of Pashed and Amunnakht. The eye is also associated with the sun, which would set in the western horizon. Linking *tk3w*, flaming lighting implements, with the fiery glow of the sun in the horizon therefore seems fitting. The double meaning for *3ht* as “horizon” and “flame/fire” makes the presentation of *tk3w* at the western horizon, as depicted in the tombs of Pashed and Amunnakht, or by the personified West, as in the tombs of Amunemuia (TT356) and Khawi (TT214) at Deir el-Medina, particularly appropriate. This also supports my hypothesis that the offering of light at a funeral, as described in spell 137A, took place at sunset when the sun would sink into the western *3ht* (Chapter 5, Section 6.1). Additionally, the term *3ht* refers to a *uraeus*-serpent (*Wb I*, 16.18-19), which may be another point of connection with the flame of a *tk3* that was associated with fire-spitting snakes (p. 130-32).

As discussed above, the recitation of a *s3hw* text and the performance of proper burial rites was intended to cause the deceased to become an *3h*. An additional element in the deceased’s transition to the afterlife required the joining of the *ba*, depicted as a human-headed bird, with the body of the deceased. The *ba* was particularly associated with the continuation of a full and happy life for the deceased in the afterlife, and could also share attributes of an *3h* (Žabkar 1968: 149–56). As a result, the daily reunion of the *ba* with the mummified body was crucial (Žabkar 1968: 106–10). Although isolated, some depictions in *Book of the Dead* vignettes, illustrate that artificial lighting played a role in this union. While not expressly tied to the rite described in spell 137A, these vignettes do connect the use of artificial lighting to a period of transition/renewal for the deceased.





Figure 7-3 - Vignette to spell 89 from the papyrus of Ani depicting the human-headed *ba* reuniting with the mummified body of the deceased; British Museum © Trustees of the British Museum

Examples of these vignettes are found in the papyri of Ani (EA 10470) (Figure 7-3) and Nebqed (Louvre N 3068) (Figure 7-4).<sup>86</sup> Both illustrate the *ba*-bird flying into the burial chamber to reunite with the mummified body, which is flanked by two lamps on stands. The papyrus of Nebqed also includes a depiction of the *3h* of Nebqed, clothed in bright white garments and stepping out of the tomb into the sunshine. Interestingly, the types of artificial light depicted in these vignettes are very similar in form to non-spouted open vessel oil lamps placed on lampstands found in the tomb of Kha and others. As the vignette of Nedqed depicts, the oil lamp and stand were placed just inside the entrance to the burial chamber at the foot of Kha's sarcophagus. It also seems from residue left within the vessel of Kha's oil lamp that the lamp had been lit and left burning at the time the burial chamber was sealed. It is therefore possible that in addition to depicting these scenes on tomb walls and papyri, that actual lighting devices were placed near the sarcophagus as further assurance of the successful rebirth of the deceased.

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<sup>86</sup> A similar scene is included in the tomb of Neferhotep surrounded by the *tk3* offering text for the night of New Year's eve (Hari 1985: plate XXIX).

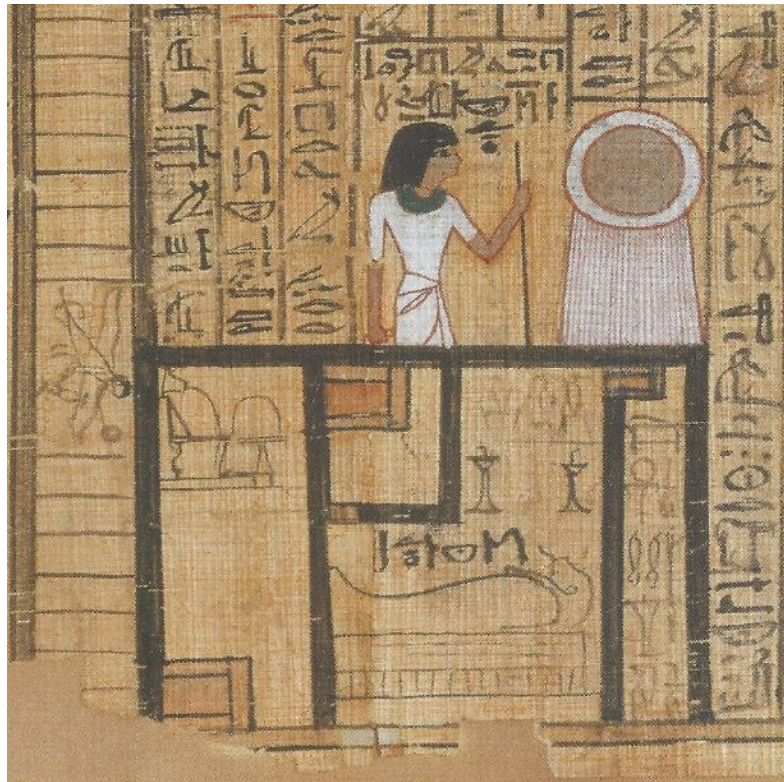


Figure 7-4 - Vignette from the papyrus of Nebqed depicting the ba flying down the burial shaft into the chamber where the mummy and two lit lamps are placed; Louvre Museum, Paris (Taylor 2010: 100–101, cat. 41)

In addition to the associations between *s3hw* and *3ht*, the use of lighting implements in a *s3hw* rite is particularly appropriate as an *3h* is a being associated with luminosity. Scholars have posited different reasons for this association, including textual evidence linking *3hw* to the glimmer of the sun and the stars, or that the source of their “effectiveness” correlates to a primordial creative force, which is associated with light (Englund 1978: 205–7; Friedman 1986: 99). As in the depiction from the papyrus of Nebqed, once the deceased is transfigured into an *3h* he is depicted in luminous white robes, a visual cue from the artist to indicate that Nebqed’s new immortal spirit was associated with brilliance and sheen. As I presented in Chapter 5, Section 2.2, the presentation of light offerings before the coffin of the deceased at the funeral may have impacted upon the perception of the coffin by the ritual attendants. By witnessing the change in appearance of the coffin from dull and matte under full sunlight to shiny and brilliant in artificial light, the funeral attendants may have felt that they witnessed the transition of the deceased from an inanimate mummy to a luminous *3h*. This transformation in appearance could have assured the family that the funerary rites had been performed properly and that their family member was prepared to journey into the afterlife.

## 1.2 *A way is opened for you*

A second function of light offerings in the deceased's transition to an *akh* is to open a way into the underworld. This is explicitly stated in the text from the tympanum of Pashed's tomb (Figure 7-1):



*wn.tj tw n=k w3t m kkw*

*A way is opened for you in the darkness.*

### 1.2.1 Anubis and Wepwawet as light bearers

The use of artificial light to illuminate a path and/or facilitate the deceased's journey to the underworld is also suggested by the god Anubis, who commonly presents light or is included in scenes where light is offered. In TT219, the tomb of Nebenmaat, a recumbent Anubis presents a bowl containing three flaming wicks (Figure 4-7). This representation of the jackal-headed god is very similar to the statue of the god Anubis (JE61444) that was found at the entrance to the treasury in the tomb of Tutankhamun. Of particular relevance is the placement of the so-called "torch brick" or *w3*-brick (JE62357) on the ground immediately in front of Anubis and aligned between his paws. The wick-in-stick device, which had fallen out of its brick holder, had small pieces of charcoal scattered beside it. This indicates that the device was lit upon its interment and subsequently fell over spilling fragments of burnt wick or reed material on the ground. Additionally, both the depiction of Anubis in TT219 and the statue with wick-in-stick device were placed immediately next to doorways connected to the burial chamber. In the tombs of Amunemuia (TT356) and Khawi (TT214) two figures of Anubis flank the personified emblem of the West, who presents a bowl with three burning wicks in each hand. This association with the west is also echoed in Tutankhamun's Anubis figure who faced in a westerly direction. The location of the Anubis statue, as well as the placement of scenes of the god offering light near doorways implies that Anubis' light offering was intended to facilitate passage in to and out of the final resting place of the deceased. The association of these images with the west correlates to the location of the necropolis, as well as the entrance to the underworld.

In tombs, Anubis is frequently depicted holding the hand of the deceased, leading them into the hall of Osiris where they would be judged. This could be interpreted as opening a path into the

underworld. However, Anubis is also linked to the god Wepwawet whose name literally means “opener of the ways”. Although the figures described above are all labeled as “*inpw*”, I would suggest that the overlap in characteristics of Anubis and Wepwawet indicate that Anubis was also thought of as an “opener of the ways”. Significantly, the earliest extant references to light offering rituals come from the tomb of Hepdjefa located in Asyut, a cult center for the gods Anubis and Wepwawet (Kahl 2007). As a result, although the earliest depictions of Anubis presenting lighting devices are found in New Kingdom tombs, it is likely that the god’s link to light offerings stretches back at least to the Middle Kingdom, perhaps even originating in Asyut although our evidence is too limited to investigate such possibilities.

### 1.2.2 Journey through the seven gates of Osiris

Once a way was opened into the underworld, spell 137A indicates that light offerings would facilitate the deceased’s journey through the seven gates of Osiris. Lines 99–101 of the spell stipulate that the offering of *tk3w* was meant to be performed whenever the deceased traveled through the gates of Osiris (p. 182). As I outlined in Chapter 5, Section 6.1.2, these seven gateways represented stages of advancement into the underworld ultimately culminating in the hall of judgement before the god himself. I argued on p. 182-83 that this line applies to both the mummy of the deceased, and the cult statue, which would facilitate the receipt of offerings after the funeral. In addition to referencing these seven gateways in spell 137A, I propose that these thresholds were also suggested in tomb iconography.

In addition to the light offering scene on the tympanum in the burial chamber of Pashed, two rows of figures are painted on either side of the curved ceiling facing the tomb entrance. These seated deities represent the tribunal in the Hall of Judgement and include Thoth, Nut, Nephthys, Isis, Anubis, Wepwawet and Geb among others. A depiction of the god Osiris is included at the beginning of each row at the entrance to the burial chamber. In addition to him, there are seven figures in each row. Interestingly, the last two deities in each row, and thereby those closest to the depiction of the light offering scene on the tympanum, are Anubis and Wepwawet. As in Pashed’s burial chamber, there are two registers of seven deities each in Amunnakht’s outer chamber which flank both sides of the ceiling and represent the panel of judges in the underworld. Osiris is not included at the beginning of each row, which may be a result of constraints on space. I think this number of deities was specifically chosen to represent the seven gates mentioned in spell 137A.

The presence of these deities also speak to the lines in the postscript of spell 137A, which stipulate that the offering of *tk3w* would allow the deceased to enter into the presence of Osiris without being turned away, and ultimately be judged worthy of dwelling with the gods.

In addition to facilitating passage through the seven gates of Osiris, the postscript of spell 137A indicates that the recitation of the text and the offering of *tk3w* is meant to ensure that:



*nn šn<sup>c</sup>=f hr wsjr / wnn hr jrrw n=f nn <sup>c</sup>k=f prr=f / nn šn<sup>c</sup>=f nn dr.tw=f*

*He (the deceased) is not rejected from Osiris. The one for whom it (the light offering ritual) is done will exist by entering and going forth, without being turned back or driven out ; papyrus of Nu, lines 103–5 (D.C. Luft 2009: 296–97)*

This also reinforces the idea that the *tk3w* are not solely meant to protect the deceased on their journey to the underworld, but, perhaps more importantly, serve as an indicator that the deceased has successfully navigated this path and been judged favorably by Osiris. As a result, the deceased is allowed to freely travel back and forth from the underworld as a transfigured *akh*. This may be the reason why light offering scenes are placed at liminal points in the tomb chapel and burial chambers where daylight can no longer penetrate, marking the physical boundary between light and dark, but also the point where the *3h* will go out or literally step into sunlight and then return to the *kkw* or darkness of the underworld. The scenes in the tomb of Pashed and Amunnakht may also refer to this as light is presented in front of and behind Osiris/Osiris N. In this way light would lead the deceased towards the path to go out from, as well as return to the tomb.

### 1.3 To cause the *3h* to endure

The third role of light offerings in the deceased's transition to an *3h* was to ensure that the deceased would continue to come and go freely from their tomb and endure in their glorified *3h* -state for eternity.

Line 91 of the spell from the papyrus of Nebsemi (EA 9900) also states that the *tk3w* offering should be made to endure/stay lit:



*srwd tk3w pn n 3h m hr-ntr m-b3h wsjr ntr 3*

*Making these tk3w endure for the 3h in the necropolis in the presence of Osiris, the great god (D.C. Luft 2009: 287)*

A variant writing of this line in the papyrus of Nu indicates that the enduring flame of the *tk3w* also serves as a metaphor for the eternal life of Osiris:



*srwd tk3w pn n 3h mj wsjr hntj-jmntjw*

*May this tk3 endure for the 3h as Osiris, Foremost of the Westerners (endures) (D.C. Luft 2009: 287)*

In addition to spell 137A, the use of light offerings to both symbolize and ensure the deceased's continuation in the afterlife is supported by iconography of light presented as part of the *h<sub>tp</sub> di nsw* in 18<sup>th</sup> Dynasty tombs. As I argued on p. 148, light was included with these offerings in order to provide eternal sustenance, and illumination, for the deceased. The endurance of light is also indicated by the presentation of light by Djed and Neheh as in the tombs of Neferabet (TT5) and Nakhtamun (TT335). Both deities are connected with time as different aspects of eternity, but Djed's association with the afterlife is particularly appropriate because he represents eternal time in the realm of the gods (Servajean 2007: 57–61, 83). I would therefore suggest that the presentation of light by Djed provides an offering of enduring illumination for the deceased. I would also suggest that this aspect of light offerings as symbols of endurance and eternal life, may also have associated them with aspects of renewal, rejuvenation and rebirth of the deceased. As will be discussed in the following section, I would argue that this link was particularly important for the use of light offerings during the New Year and the *heb sed*.

#### 1.4 Discussion

A re-examination of the evidence for light offerings in a funerary context indicate that lighting served as more than just a means of protection for the deceased. In addition to warding off enemies, lighting was utilized as part of the *s3hw* rites intended to transfigure the deceased into a luminous *3h*. Within this context, lighting played several roles including: associating the deceased with Osiris, Foremost of the Westerners, opening a way for the deceased into the underworld

(through the western *3ht*), facilitating their passage through the seven gates of Osiris, and finally, ensuring that they would be able to endure as an *akh* and be free to travel back and forth between the land of the living and the dead for eternity. Iconography, as well as the placement of light offering scenes at liminal points in tombs or on western walls supports these conclusions. Light offering scenes painted on tympana in the tombs of Pashed and Amunankht are relevant examples. Both of these scenes clearly illustrate the overlap of the presentation of *tk3w* to both the god Osiris and the tomb owner as an Osiris. Appropriately, both scenes are placed just above the intended position of the sarcophagus where the deceased would have been placed to live out his afterlife in communion with Osiris and the pantheon of other gods. Both scenes are also located on the western wall of the burial chambers further suggesting that the presentation of artificial light is linked to the West, the direction associated with the underworld, and the horizon where the sun would set below the Theban hills. The depictions link to concepts expressed in spell 137A, that the offering of *tk3w* marks the passage of the deceased through the gates of Osiris to the underworld where they will be judged. The *tk3w* also ensures that this transition goes smoothly so that the deceased may successfully be transformed into an *3h*. While the scenes depicted in both tombs serve as symbols of these concepts, I suggest that the initial performance of the rite described in spell 137A and deposition of the deceased in their burial chamber would have quite literally enacted this journey.

As discussed on p. 178-80, both Pashed and Amunnakht were likely stood upright before the entrance to their tomb on the day of their funeral to have their mouths opened and receive the required offerings and prayers. At the end of the funeral, as the sun set behind the Theban hills, priests would present the deceased with four *tk3w* and recite the words in spell 137A. I suggest that these same wick-on-stick implements would then be used to light the way for the coffin to be brought into the tomb. Upon entering the burial chamber, the *tk3w* would process with the coffin underneath the depictions of the seven tribunal deities, representing the seven gates of Osiris, on the ceiling. After successfully passing each of these deities/gates, the deceased in their coffin would be placed in their sarcophagus immediately underneath the western tympanum where the presentation of *tk3w* to Osiris was depicted (Figure 7-5).

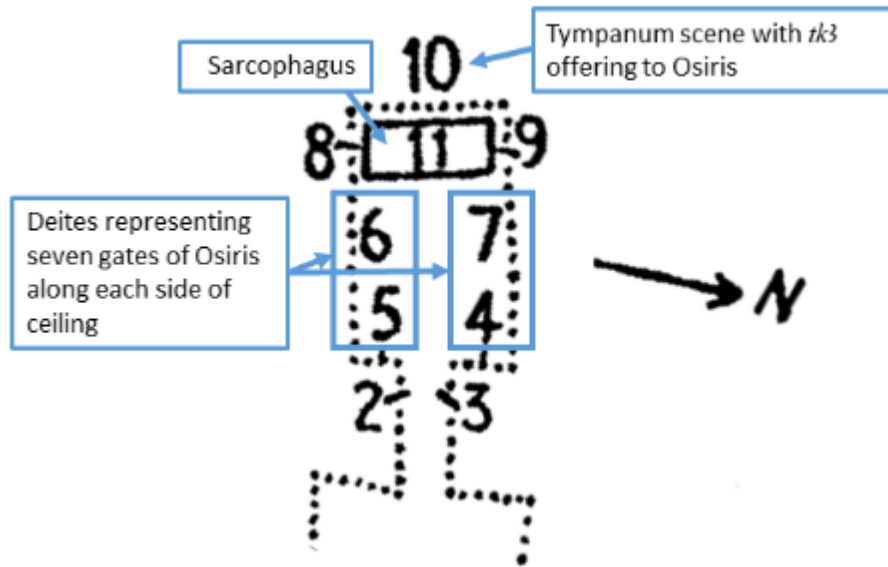


Figure 7-5 - Plan of burial chamber of Pashed indicating placement of sarcophagus and location of tympanum and seven gates scenes; plan from (Porter & Moss 2004: 2)

The distance was not far, maybe 10 steps from one end of the burial chamber to the other, but the implication of this act is clear. In using the *tk3w* to light the way into the burial chamber, they were providing illumination in the place of darkness and facilitating the deceased's journey on the path to their final resting place. This is also the first and only time that this rite would be performed in the burial chamber, ensuring that at least the deceased's initial journey past the seven gates of Osiris would be completed successfully. Admittedly, this is an idealized version of this ritual. The burial chambers of Pashed and Amunnakht were immediately accessible from ground level. In most tombs, the coffin and burial goods would have to be maneuvered down a shaft before being deposited in the burial chamber. In this instance, lighting implements would still be useful to navigate these dark underground spaces and could still serve a symbolic role of aiding the deceased's journey into the underworld. It is also likely that during the process of movement of burial goods into the burial chamber(s), individuals would need their hands free in order to carry boxes and other vessels. As a result, the wick-on-stick devices used during the performance of spell 137A might have been placed into bowls or short vases. This may be what is represented in the scenes from Pashed and Amunnkaht's tomb.

Significantly, the power of the *tk3* was not only for the benefit of the deceased but for the ritual attendants as well. In witnessing the effects of the artificial light on the coffin of the deceased they may have felt that they participated in, or at least witnessed the transition of the deceased, and



were assured of their continuation in the afterlife. The fact that priests, specifically designated as the sons of Horus, were the only ones permitted to utilize the light sources for this ritual adds to the perceived potency of the light source (p. 177; spell 137A, line 79). Only subsequent to the funeral, once the deceased had become an *akh* did family members offer lighting implements to the deceased for calendrical festivals or regular cultic offerings (Chapter 5, Section 1). Perhaps the use of lighting as a ritual tool at the funeral was too powerful to entrust to family, unless they assumed the role of a proxy for one of the sons of Horus. In fact the text of spell 137A even warns against improper use of the spell because of its potency:



ḥ3 tw wrt / jmj=k jr sw hr-hr nbw wpw-hr ḥw=k ds=k m jt=k m s3=k / r-ntt sšt3w pw ʿ3 n jmntt...

*Be very careful! Do not use it for everyone, only for yourself along with your father and son / It is a great secret of the west... ; papyrus of Nu, lines 94–6 (D.C. Luft 2009: 289–91)*

## 2. Light for the transition to new beginnings

It seems logical that light offerings for the deceased's transition to an *3h* are associated with the western *3ht*, the place where the deceased began their journey to the underworld. This section will demonstrate that light offerings for the New Year and *heb sed* are associated with the eastern *3ht*, the location of sunrise and the beginning of a new day/year. Although not as explicit as mortuary references to light offerings and the setting sun, some New Kingdom texts do suggest a link between *tk3* and the rising sun at the beginning of creation and, by extension, at the beginning of a new day. Early New Kingdom versions of the litany of Ra, such as the one inscribed in the tomb of Paheri, indicate that the sun god was a living *tk3* that came forth from Nun (p. 133). Additional New Kingdom texts, such as Chester Beatty VIII (EA10688), record that Ra rose up into the sky each day from a *tk3* (p. 133). As discussed above, the link between *3ht* as a place of flame/fire is just as appropriate in the eastern horizon as it is in the west.

### 2.1 Opening a good year

A series of rites that associate the offering of light with the eastern horizon are those for the New Year, which include the Epagomenal Days, New Year's Eve and New Year's Day. As discussed in

Chapter 5, Section 4, the offering of light to gods for New Year's Eve and New Year's Day dates back to at least the Middle Kingdom. These rites seem to share several similarities with the offering of light for the deceased at the funeral. Firstly, the location for the offering of light is explicitly associated with the *3ht*, the horizon. Light offerings for the dead are implicitly associated with the western *3ht*, while light offerings for the New Year are associated with the eastern *3ht*. This is indicated by the placement of scenes representing these light offerings on eastern walls, such as in the forecourt of Tjay's tomb (p. 171-72) or in the tomb of Menkheperasoneb (TT112) (p. 168). The depictions of offering light on the night before New Year and New Year's Day in the Hypostyle Hall at Karnak are not only located on an eastern wall but also illustrate rites that took place within the shrine of Amun, which was located at the eastern end of the temple.

A second point of similarity between light offering rituals for the dead and for the New Year is the use of light to open a path. As discussed on p. 167-68, 18<sup>th</sup> Dynasty tombs include a caption to light offering scenes for the Epagomenal Days and the night before New Year indicating that the purpose of the *tk3* offering is to provide "illumination on the path of darkness" for the gods and the deceased. Later Ramesside versions of this text vary slightly but continue a similar theme that the *tk3* "guides" the gods and the deceased in darkness. As I demonstrated in Chapter 5, Section 4.3, this phraseology dates back to the Middle Kingdom. Although speculative, it may refer to the practical purpose of using lighting implements *m grh*, at night, during processions from the temple to the tombs of the dead as described in Hepdjefa's Contract 9. However, I would argue that the light also symbolically opens a path and/or provides illumination for the New Year to come. Just as the light of the *tk3* opens a way for the deceased to journey into the afterlife and transition to an *3h*, the light for the Epagomenal Days and New Year's Eve opens a way for the old year to leave and the new year to come forward. It is also possible that transporting light from a temple to the tombs of the dead on the night before the New Year signaled the death of the old year, while the procession of light from a temple to the tombs at dawn of New Year's Day heralded the birth of a new year. The use of light at these moments is in keeping with my argument that light offerings are used at times of transition. In the case of New Year's festivities, light is used to indicate transitions in time of day—night and dawn—in addition to the beginning of a new calendrical year. It could further be suggested that the use of light offerings for the New Year also associated

light with concepts of renewal and rejuvenation, just as light offerings for the deceased as an *3h* may be correlated to aspects of rebirth and regeneration.

Lastly, as with funerary light offerings, I propose that the impact of artificial lighting on the senses of the ritual performer and participants enhanced the perceived efficacy of New Year's lighting rituals. As discussed above, and in Chapter 6, Section 2.2, the effect on sensory perception was likely caused by viewing objects in different lightscares. Just as glaring sun and flickering flames required attendants to interact and perceive a coffin in different ways, it seems likely that the same holds true for viewing a cult statue in near darkness versus artificial light. In order to witness the effect of the light offering on the cult statue, the ritual performer and any attendants would have to be in extremely close proximity to the object, much more so, perhaps, than during daily offering rites. This is due to the physical constraints on space in the sanctuary, but is also indicated by the textual and iconographic evidence. As I argued in Chapter 5, Section 6.3.1, the purpose of the New Year's Day light offering at Karnak was *hft pr pn*, "filling this house" with light from the *tk3*. As indicated by the depiction of this rite in the Hypostyle Hall (Figure 5-22) this required Seti I to be within the shrine of the god, or at least within very close proximity to the statue. This in itself would have added to the importance of the occasion, as well as the attendants themselves as they were allowed to be so near to the god. Placing the light offering next to the statue would allow the flame of the *tk3* to play across the surface of the statue, which was likely covered in metals, semi-precious stones, and/or glassy paste inlays. This must have produced quite a dazzling effect, in addition to filling the shrine with flickering light that could also produce shadows of the statue that would have appeared to move. This effect may have only been witnessed by a select few but would nevertheless have created quite a contrast between viewing the cult statue in minimal to no light prior to the light offering and viewing the statue illuminated by a warm, dynamic artificial light source during the ritual.

Performing this light offering within the sanctuary of the god at the beginning of the New Year may have also correlated with cosmological associations of the ancient Egyptian temple, which indeed was a common feature of the ancient Near East (Baines 1976; Ragavan 2013; Shafer *et al.* 1997). In essence, the temple represented the primordial Egyptian world in microcosm. The star speckled roof stretched over the lotiform and papyriform columns of the hall, recreating the darkened marshy conditions from which the first mound of earth arose, which is signified by the

temple sanctuary (Baines 1976: 12; Shafer *et al.* 1997: 133). Presenting a light within this space before dawn on New Year's Day would have had a potent symbolic value. This offering may have linked the glow from the light source with the first light at the formation of the Egyptian cosmos described in *Coffin Text* spell 335 and *Book of the Dead* spell 17 (Allen 1988: 30–35). Timing this light offering with the beginning of the New Year may therefore have represented the renewal of the annual cycle, as well as Egypt itself. Presenting this light in the eastern portion of the temple, also would have aligned the *tk3* light with the sun that would rise from behind the temple in the eastern horizon. Additionally, if this New Year's light offering was then processed from the sanctuary, through the temple and out to the tombs in the necropolis, as the contracts of Hepdjefa describe, this would require the procession of light bearers to pass through the pylons of the temple. These pylons were intended to be a physical manifestation of the hieroglyph for horizon, *3ht*, through which the sun rose and set (Shafer *et al.* 1997: 5). The passing of artificial light through the pylons may have been another way of linking the offering of light with the horizon, the transition point between night and day and—in the case of New Year's festivities—the transition point between the old and the new year.

## 2.2 Dawn of the *heb sed*

Unlike funerary or New Year's rituals, there is only one register of scenes in the temple of Soleb that speaks directly to the role of light in the *heb sed*-festival (Wilson 1936; Schiff Giorgini 2002: 218–22; Schiff Giorgini 1998: plate 33–38). The scenes are greatly damaged resulting in significant loss to the text and imagery, in addition to a reduction in the information that can be gleaned from such an isolated context. Nevertheless, valuable data on the offering of light can still be surmised. What is clear is that the visual focal point of the register is the shrine that contains the two thrones, symbol of the *heb sed* and representative of the king's rule over Upper and Lower Egypt (Schiff Giorgini 1998: plate 36) (Figure 7-6). Specifically, the left side of the kiosk, which is on the northern part of the wall, contains the throne of Lower Egypt indicated by four papyriform columns that support a cavetto cornice topped with a row of uraei. The right side of the kiosk, on the southern portion of the wall, contains the throne of Upper Egypt and is decorated with four lotiform columns. From the traces of decoration still visible on the wall, it appears that the entire container was decorated with emblems of kingship including figures wearing the crowns of Upper and Lower Egypt, Horus and Seth, the “mighty bull”, another figure carrying the crook and flail, and

two rows of solar-crowned uraei. The carving of the right side of the shrine, which is better preserved, indicates that the thrones are placed on a raised dais and carry an enthroned figure who holds a scepter of some kind in his hand. This may indicate that the thrones each bore a figure of the king wrapped tightly in the *heb sed*-cloak wearing the crowns of Upper and Lower Egypt in their respective sides of the shrine. This harkens back to some of the earliest depictions of the *sed*-festival such as the ebony label of Den (EA32650) (Strudwick 2006: 38–39) and the Narmer macehead (Ashmolean E. 3631) (Baines 1995: 118–119, 3.8).

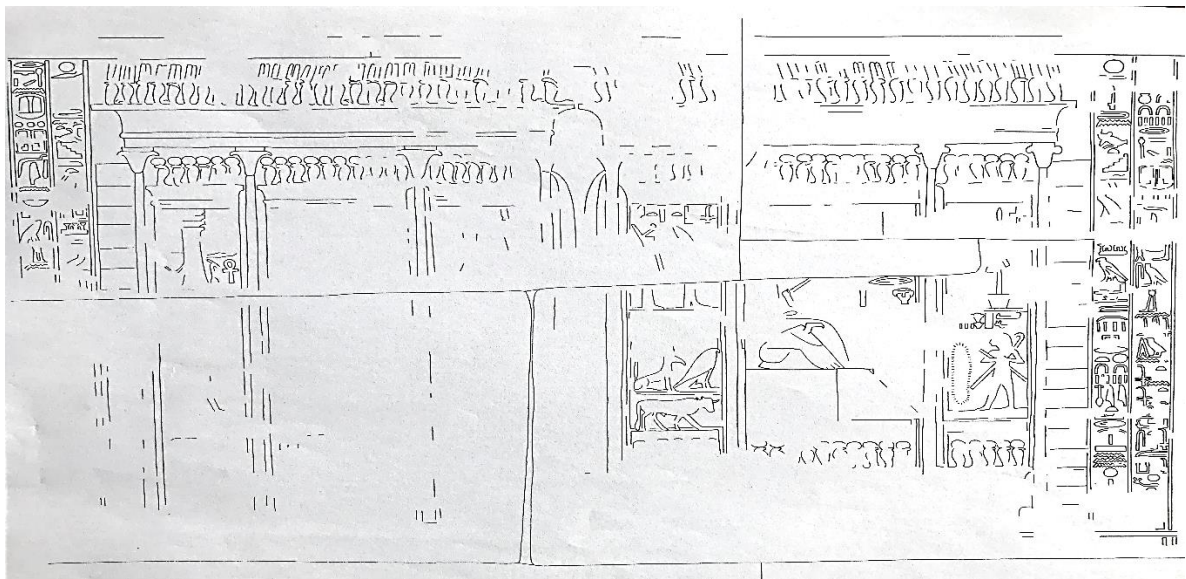


Figure 7-6 - Drawing of kiosk containing the thrones of Upper and Lower Egypt from the first court in the temple of Soleb (Schiff Giorgini 1998: plate 36)

Appropriately, the depictions on either side of the central shrine are mirror images of each other, in order that the same rite may be performed before both thrones. The primary ritual performer is Amenhotep III who, accompanied by Queen Tiye, presents a very tall wick-on-stick type lighting implement, referred to as a *tk3* in the text, before the open doors of the kiosk containing the thrones (Schiff Giorgini 1998: plate 35, 37) (Figure 7-7). Interestingly, unlike every other depiction of a wick-on-stick implement that I am aware of, all the ones in the Soleb scene have small mound-shaped objects spaced at regular intervals along the top half of the light. Perhaps these are meant to serve as supports due to the extreme length of the piece or potentially they serve a decorative purpose. There is a hierarchy to the application of the mound-shaped pieces, however, as the light presented by the king contains 6 mounds, the one carried by Mery, chief priest of Amun, has 5, and all the lights carried by other priests in the scene bear 4. Between the king and the kiosk is a

mound-shaped container labeled as a *sh n mrht št*, a “booth of secret oils”, which was brought in order to *hft tnt3t* “fill the kiosk with light” (Schiff Giorgini 2002: 220–21; Schiff Giorgini 1998: plate 35). Presumably then, these oils are meant to serve as illuminants for the *tk3*.

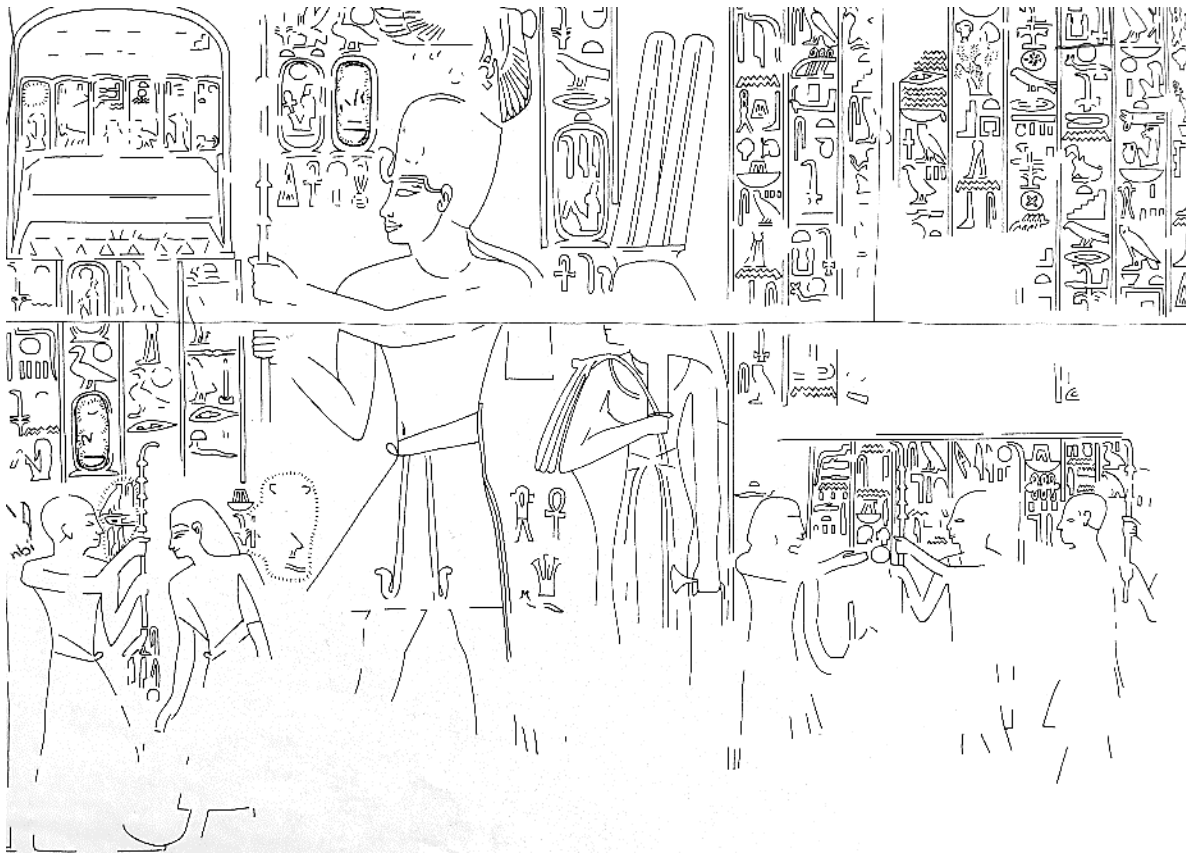


Figure 7-7 - Drawing of Amenhotep III, accompanied by Queen Tiye, presenting a *tk3* before the throne of Upper Egypt (not depicted) (Schiff Giorgini 1998: plate 37)

While the focal point of the scene is the shrine and thrones, the emphasis of the accompanying text is on the light source, the *tk3*. The text follows a formulaic pattern by requesting that one individual brings a flame (*bs*) in order to give the fire (*st*) of the *tk3* to another individual so that they might illuminate the kiosk. The first person to do this is, of course, the king and so the rite begins as the lector priest, Nebermeretef, says:



*sm jn bs dw n nswt nswt šsp st m tk3 hft [tnt3t]*

*O sem-priest (Mery), bring a flame and give (it) to the king. O King, take the fire of the tk3 (for) filling the shrine with light; column 2 (Schiff Giorgini 1998: plate 37)*

This pattern continues so that a lector priest, the “guardian of the place” and the “guardian of the *wsh*”, along with others whose titles are lost, are asked to bring a flame and give it to a sem-priest, the “Great One of Upper Egypt”, the chief of magicians, and the “god’s mother” so that they may illuminate the throne (Wilson 1936: 295; Schiff Giorgini 2002: 220). The inscription is only preserved on the southern portion of the wall, but presumably the inscription on the northern side would have listed individuals from Lower Egypt. This inscription, though fragmentary, appears to establish that only certain individuals may offer the light before the thrones. Significantly, the first part of the invocation refers to the light source as *bs*, a flame. Only in the second half of the phrase, when it is received by an individual is it called a *tk3*. As I demonstrated in Chapter 3, Section 7, *tk3* is a term used to refer to a light source offered in a ritual context, or in relation to a powerful flame issued from a *uraeus* or connected to the sun god, Ra. The term *bs* (*Wb I*, 476.1-5) on the other hand I have not found used in texts referencing light offerings, nor is it recorded in any light offering scenes that I have identified. It is then possible that *bs*, in this context, is used to create a distinction between a less potent light source that is brought to the ritual performers, and a *tk3* that is presented before the thrones. This hierarchy of power is also suggested by the individuals who bring the light source and those who ultimately present it. Lower ranking priests, as well as guardians of the place and the *wsh*, bring the *bs*, while the “Great One of Upper Egypt”, the chief of magicians and the “god’s mother”, perhaps referring to the mother of Amenhotep III or her representative, take the “fire of the *tk3*” and present it as an offering.

I would suggest, based on evidence presented earlier in this chapter, that those who present the *tk3* before the thrones are considered to be more powerful and/or important because of the effect that the light had on the thrones. As with the presentation of light before a cult statue in a darkened sanctuary, the illumination of a throne in an enclosed shrine by a flickering light source would have created a luminous, glimmering effect. The thrones representing Upper and Lower Egypt likely would have been covered in sheets of metal, semi-precious stones and glass-like inlays, similar to the golden throne of Tutankhamun (JE62028). These would have glistened under the warm glow of artificial light, with carved detail and/or raised relief creating variations in shadow and texture. Additionally, as with other rituals presented in this chapter, the presentation of the light required the ritual performer to be within close proximity to the object to which light is presented. In this case, it appears that an individual would step up just in front of the opened

doors of the shrine, as the depiction of Amenhotep III indicates. This may have involved a priest or other high-ranking official stepping out of the rows of ritual attendants and individually walking forward to “fill the shrine with light”. This would have separated them out as individuals worthy of offering *tk3*, in addition to allowing other attendants to witness the effect that their light had on the throne and setting. Additionally, those offering *tk3* may have applied one or a selection of the illuminants from the “booth of secret oils” to their light, exposing them to the silky, greasy texture of the oil and any perfume that may have been added to them. As the offering bearers stepped back into the crowd they would have carried this scent with them—a lingering reminder to those near them that they were selected to offer light. Viewed within the larger context of the *heb sed*, those individuals who presented light before the thrones of Upper and Lower Egypt may have been regarded as taking part in the rejuvenation of the king, and the legitimacy of his rule. This was particularly relevant for the *heb sed* depicted at Soleb as it marked Amenhotep III’s first jubilee celebration, which commemorated a new 30 year cycle of kingship, in addition to his transition to a deified form of Ra (Johnson 1996: 66; D.B. O’Connor & Cline 1998; Kozloff 2012: 120–22, 182–96). Significantly, as the accompanying text states, this light ritual took place *r hḏ t3* “at dawn” of the *heb sed*, which links the timing of the rite to a time of transition—the beginning of a new day and the beginning of the *heb sed* (Schiff Giorgini 2002: 221; Schiff Giorgini 1998: plate 36-37). The ritual setting at dawn also correlates to the eastern *3ht* where the sun would rise, which is further supported by the placement of the light offering scene on the east wall of the temple’s first court.

### 3. Discussion

*“If light is scarce then light is scarce; we will immerse ourselves in the darkness and there discover its own particular beauty.”* Jun’ichirō Tanizaki, In Praise of Shadows

The evidence presented in this chapter provides a richer understanding of the significance of light offerings in a ritual context. While artificial light does afford a protective environment for the objects to which it is presented, I would propose that this light, more importantly, links to times of transition. This included the deceased’s transition to an *akh*, where lighting facilitated the correlation between the dead and Osiris, Foremost of the Westerners, in addition to opening a path for the deceased so that they could freely journey back and forth between the land of the living and the underworld. The use of artificial light at these stages of transition are evident not only in



textual material, but also in the placement of light offering scenes at liminal points of light and dark in tomb chapels and burial chambers or on the western walls of tombs. The association between light offerings and the *akhet*, both the western and eastern horizons, also speaks to transition in times of day and a correlation between a flaming artificial lighting device and the location for the rising and setting of the fiery Egyptian sun.

Lighting rituals also caused a transition, or alteration, in perception of the objects illuminated by an artificial lighting device. These rituals were multisensory experiences that made the most of contrasts. This included contrasting lightscapes, such as bright sunlight versus artificial light at a funeral (Chapter 6, Section 2.2), or the enclosed darkness of a temple sanctuary or shrine versus artificial illumination for New Year's Day or the *heb sed*. The timing of these rituals were also situated at complementary moments of the day: sunset for funerary light offerings or at night for festivities commemorating the end of a year, such as the Epagomenal Days and New Year's Eve, and sunrise for the beginning of the New Year or the *heb sed*.

As I proposed in Chapter 6, Section 2, differing lighting environments would not only have impacted on the visual perception of an object, but caused ritual performers and attendants to interact with objects in a different way, thus impacting on other senses. The light offering would likely have given off some amount of heat, but an isolated fleeting warmth different from the heat of the sun or the coolness of an enclosed sanctuary. The application of illuminants, as indicated in the relief at Soleb, would have put the offering bearer in contact with the smooth, greasy texture of various fats and oils, as well as any added perfumes. In all rituals discussed in this thesis, light is presented directly in front of an object, requiring the offering bearer to be in close proximity to the offering recipient. This would ensure that the full effect of the flickering light would be visible across the surface of the object and that the ritual performer would be able to witness this effect. This may also have put the offering bearer much closer to the statue of a god or a royal throne than they had ever been before, allowing them to pick out details in texture, carving or color that may not be visible from a distance. The effect of a lighting device on cult statues or thrones must have been particularly arresting, highlighting the glint of metal or the shimmer of a semi-precious stone. The enclosure of these objects within gilded or polished stone shrines would only have enhanced the interplay of light, dark, glitter and shadow. This interpretation supports my theory that lighting was an active agent in light offering rituals, not a passive source of illumination.

Significantly, the transformative effect of light offerings impacted on many senses in the ritual performer and attendants. This multisensory effect enhanced the perceived power of lighting implements, as well as the social status of the individual(s) worthy of using and presenting light offerings.

## Chapter 8 – CONCLUSION

This thesis provides new insight into the role of artificial lighting in ancient Egyptian culture from the 3<sup>rd</sup> to 1<sup>st</sup> millennium BC. In regard to the research questions set out in the Introduction, the thesis demonstrates that:

1., 2. There is no single vessel type or implement specifically designated as a lighting device. A lack of standardization in lamp vessels accompanied by minimal archaeological evidence suggest that lamps were relatively rare. There is more consistency in wick-on-stick and wick-in-stick implements but these are only found in ritual contexts, which also indicates that these were not commonly used objects. Lighting terminology is not particularly helpful in correlating textual evidence with physical remains as terms are usually descriptive in nature focusing on an objects appearance or process of manufacture. However, of the seven lexemes associated with artificial lighting devices, all but one are found in textual evidence relating to their use in tombs or temples. Only *hbs* is found in documents primarily related to a secular setting. This may indicate that lighting was used more in ritual space than domestic.

3. Lighting is reserved for the wealthy primarily because of access to fuel. Burning a vegetable oil or animal fat in ancient Egypt meant draining resources from cooking and medicinal or comestic applications. As a result, artificial lighting devices are primarily found in royal or elite tombs and used as ritual offerings.

4. The materials needed to produce a lighting device, a wick and illuminant, were not difficult to acquire, but the finest quality materials for artificial lights may have been attained in temples. Donation or offering of lighting devices in temples by royals and private, wealthy individuals is attested from the Old Kingdom through the Late Period. This arrangement was reciprocal as lighting implements used in temples were redistributed to priests for use in private tomb chapels. This not only conserved costly materials but also added to the prestige of those donating and receiving lighting implements. Ideally, ritual light offerings of wick-on-stick devices were provided for both gods and the dead on a daily basis. Iconographic evidence of this practice only begins in 18<sup>th</sup> Dynasty Theban tombs and temple. However, comparison of these images and their accompanying texts to Old and Middle Kingdom textual evidence suggest that the New Kingdom

scenes are recording much older ritual practices. The constancy of elements within the New Kingdom images also implies that they are drawing from an older religious tradition. Although the depiction of daily light offerings are more prevalent in 18<sup>th</sup> Dynasty tombs and light offerings for festival occasions are more common in 19<sup>th</sup> Dynasty tombs, this is likely due to matter of decorum, not a change in actual ritual practice.

5. The timing and setting of light offerings, as well as the identity of light bearers indicate that the giving of artificial light marked a point of transition. This included transitions from dark to light, dusk to dawn, or from an old year to a new one. Lighting was also used to facilitate and commemorate the transition of the deceased from a mummified body to an *ꜣḥ*. The use of artificial lighting at these times of transition likely also attributed symbolic values of rebirth and regeneration to light offerings.

6. The sensorial impact that artificial light had on the objects to which it was offered, as well as ritual performers and witnesses, reinforced the idea that light offerings marked and facilitated transition. Additionally, those who presented light offerings were likely seen as more important or powerful members of society as they were allowed to hold a *tk3* and use its flame to cause a visible change to an object. Ancient Egyptians seem to have experienced two different lightscapes created by natural versus artificial lighting conditions. The contrasts of these lighting environments are highlighted in artificial light offering rituals. This is evident in ritual timing such as sunset or day break when the balance of natural light and darkness would shift. Artificial light is also frequently shown being offered in dark interior spaces where its full impact on painted and/or coruscating surfaces would be apparent.

Although not as prominent as natural light, this thesis demonstrates that artificial lighting played a significant role in Pharaonic Period culture. Cost may have been a prohibitive factor for the use of artificial light on a daily basis for most people. However, it does appear to be used in both private and public cult centers by elites, as well as lower socioeconomic classes. Significantly, this thesis demonstrates that an interdisciplinary methodology incorporating archaeological, textual, iconographic and experimental evidence contributes to a richer understanding of light in ancient cultures. It also illustrates that incorporating, but ultimately moving beyond, a purely

archaeological or philological approach allows for fresh insights into Egyptian material culture, ritual practice and religious ideology.

In complement to previous discussions of light in ancient Egypt, which focus on the diurnal cycle and emphasize the period of sunrise, the beginning of a new day, this thesis demonstrates that the transitional moments of sunset and sunrise were equally important. These times of day coincided with changes in the ancient Egyptian lightscape—day versus night and natural light versus artificial light. Significantly, artificial light is used to mark these periods of transition and consequently becomes associated with the *3ht*, the physical point in the landscape where the lightscape would change. The soft orange glow of a *tk3* could even be said to actively participate in these changes. At sunset this light would herald the coming of night in the West and the ignition of the same light could be seen to announce the coming of a new day, year or cycle of kingship when lit in the East at daybreak. Additionally, the correlation between *s3hw* rituals, the *3ht* and the *3hw* suggest that artificial light played a transformative role in transfiguring the deceased into an *3h*. Artificial light, namely *tk3*, not only symbolized this transition but actively participated in the shimmering luminous appearance of the deceased. These findings are significant and suggest that artificial light played a much more prominent role in religious ideology, particularly in the formation of an *3h*, than previously recognized. Deeper examination of the links between artificial light, the *3ht* and the *3hw* would undoubtedly produce interesting results.

Inevitably, this research generates more questions that provide opportunities for future research. The impact of lighting on perception of spaces and objects would certainly repay further analysis. What effect, for example, does artificial lighting have in the experience of a tomb chapel? How much light is generated and what does this allow a viewer to see? How are different decorative surfaces, such as polychrome or monochrome painting or high/low relief affected by artificial light? Did craftsmen consciously choose different color palettes or carving styles to emphasize lighting effects? Building on the role of artificial light in Egypt prior to the 7<sup>th</sup> century BC, it would be interesting to investigate if there was any change in its usage after the introduction of Greek lighting methods and Ptolemaic oil monopolies. Herodotus' quote given at the beginning of Chapter 2, which references the burning of a multitude of lights around all homes in Egypt, seems quite incongruous with the evidence presented in this thesis. Were there social, economic or religious ramifications from such an increase in availability to lighting between the 7<sup>th</sup> and 5<sup>th</sup>

centuries BC? This thesis also now presents an opportunity for the development of lighting in ancient Egypt to be compared to contemporaneous ancient Mediterranean and Near Eastern cultures. This would not only enrich the discipline of lychnology but contribute to cross-cultural comparisons on the impact of lighting in the socioeconomic sphere, the built environment and the creation and perception of ancient material culture. As a result, this thesis can contribute to a wider discussion on the “anthropology of luminosity” as discussed in Section 6.3. This not only provides advances for Egyptological scholarship but creates the opportunity for Egyptological data to contribute to wider archaeological and anthropological discussions on the navigation and experience of night, darkness and luminosity by other cultures.



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## APPENDIX ONE – Lighting devices

Definite non-spouted lamps								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
unknown	unknown	Saqqara; mastaba of Kaemsenu, burial chamber	6th Dynasty	copper with linen wick	approx. 10 cm	unknown	spherical	round
unknown	unknown	Meir; burial of Nephthys	12th Dynasty	Nile silt ware with linen wick	bottom dish: 25 cm; central cup with wick: approx. 12 cm	9.5 cm	flat dish	flat
E 14571	Louvre Museum	Luxor; Qurnet Murai cemetery	18th Dynasty	Nile B2 with linen wick	18 cm	6.2 cm	hemispherical	flat
E 14672	Louvre Museum	Luxor; Qurnet Murai cemetery	18th Dynasty	Nile B2 with linen wick and mud wick anchor	unknown	unknown	hemispherical	flat
JE62111	Egyptian Museum	Luxor; Valley of the Kings (KV62)	18th Dynasty	calcite with wick remnants	max. width: 29.5 cm; approx. diameter of base of chalice: 10 cm	max. height of piece: 51.4 cm; height of central chalice: 33 cm	chalice	round
JE62112	Egyptian Museum	Luxor; Valley of the Kings (KV62)	18th Dynasty	calcite with wick remnants	max width of piece: 27 cm; approx. diameter of 2 side cups: 6 cm; approx. max. diameter of central chalice: 12 cm tapering to 6 cm at base	max. height: 27 cm	1 chalice, 2 spherical cups	round
25.3.180a, b	Metropolitan Museum of Art	Luxor; South Assasif, MMA 1008	Late Period (?)/ 18th Dynasty (?)	Nile silt ware with wick	17 cm	5 cm	conical	flat
E.13.1895	Fitzwilliam Museum	Naqada?	Late Period (?)	Nile silt with organic wick rest and illuminant	15 cm	9.2 cm	conical	round

Probable non-spouted lamps								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
unknown	unknown	Maadi; seabkh-holes	ca. 4000 BC	limestone	7 - 20 cm	unknown	8 spherical, 4 elliptical depressions	round bottomed depressions
UC5767	Petrie Museum	Naqada; tomb 815	ca. 3500-3200 BC	Nile silt ware	12.3 cm	4.9 cm	conical	flat
UC5771	Petrie Museum	Naqada; tomb 722	ca. 3500-3200 BC	Nile silt ware	13.5 cm	4.9 cm	conical	flat
unknown	unknown	Edfu; mastaba of Isi	6th Dynasty	copper	10 - 18 cm	unknown	conical and hemispherical	round
UC16794	Petrie Museum	Lahun; pyramid of Senuseret II	12th Dynasty	limestone	max. diameter of lamp bowl: 19.7 cm; max. diameter of interior well: 9.5 cm	max. height of piece: 43 cm; height of lamp bowl: 7 cm; depth of interior well: 5.7 cm	conical with fluted columnar stand	round interior well
UC16794	Petrie Museum	Lahun; pyramid of Senuseret II	12th Dynasty	Nile silt wick anchor with red slip	diameter: 7.5 cm; diameter of central perforation: 1.5 cm	.6 cm	flat	flat
15.4.3a, b	Metropolitan Museum of Art	Lahun; pyramid of Senuseret II	12th Dynasty	limestone	max. diameter of lamp bowl: 29.5 cm; approx. diameter of interior well: 10 cm	12.5 cm	conical	unknown
15.4.3a, b	Metropolitan Museum of Art	Lahun; pyramid of Senuseret II	12th Dynasty	Nile silt wick anchor with red slip	approx. diameter: 9.5 cm; approx. diameter of central perforation: 1.5 cm	unknown	flat	flat

Possible non-spouted lamps								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
UC14791	Petrie Museum	south pyramid, Mazguneh	13th Dynasty	limestone	max. diameter: 24 cm; inner well diameter 9.3 cm	height with inner well: 8.2 cm; height of outer circle: 7.3 cm	conical	flat
UC17250	Petrie Museum	Lahun	12th Dynasty	limestone	max. diameter: 17.7 cm; inner well diameter: 11.2 cm	9 cm	conical	flat
JE62125	Egyptian Museum	Luxor, Valley of the Kings (KV62)	18th Dynasty	calcite	max. width: 30 cm; max. diameter at top of cup: 17 cm; approx. diameter at base of cup: 8 cm	18 cm	spherical cup	round

Definitive spouted lamps								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
unknown	unknown	Hemamieh	ca. 4000 BC	Nile silt ware	approx. diameter with spout: 10 cm; approx. diameter without spout: 8 cm	approx. 4 cm	hemispherical	round
unknown	unknown	Saqqara; mastaba of Kaemsenu, <i>serdab</i>	6th Dynasty	Nile silt ware	unknown	unknown	conical	flat
JE38642	Egyptian Museum	Luxor; Deir el-Medina, tomb of Kha	19th Dynasty	bronze with reed wick and illuminant	18.1 cm	7 cm	hemispherical	round

Probable spouted lamps								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
240	Amarna	Amarna; north suburb, T35.12	18th Dynasty	Nile silt ware	approx. max. diameter: 15 cm	approx. height: 5 cm	hemispherical	round
241	Amarna	Amarna; main city North, P46.10	18th Dynasty	Nile silt ware	max. diameter: 16 cm	5.2 cm	hemispherical	round
242	Amarna	Amarna; main city North, Q45.114	18th Dynasty	Nile silt ware	approx. diameter without spout: 18 cm	approx. 7 cm	hemispherical	round

unknown	unknown	Soleb; New Kingdom cemetery	18th Dynasty	Nile silt ware	approx. 8 cm	unknown	hemispherical	unknown
unknown	unknown	Aniba; New Kingdom cemetery, tomb 57	18th Dynasty	Nile silt ware	12.5 - 16.2 cm	4.5 - 5.2 cm	hemispherical	3 round, 2 flat

Possible spouted lamps								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
UC41260	Petrie Museum	unknown	1st Dynasty (?)	serpentine	6 cm; with spout 7.2 cm	1.8 cm	spherical	round
UC41263	Petrie Museum	unknown	2nd Dynasty (?)	limestone	11 cm; with spout 13.6 cm	2.8 cm	hemispherical	round
EA14301	British Museum	Giza; east of pyramid of Khufu	4th Dynasty (?)	limestone	6.78 cm	3.78 cm	spherical	flat
UC18199	Petrie Museum	Sediment	9th - 10th Dynasty	Nile silt	max diameter 15 cm	max height 4 cm	hemispherical	round

Wick-on-stick devices								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
JE62356	Egyptian Museum	Luxor; Valley of the Kings (KV62)	18th Dynasty	reed and linen	approx. 1 cm	approx. 38 cm	N/A	N/A

Wick-in-stick devices								
Accession Number	Current Location	Provenance	Date	Material	Diameter	Height	Body Shape	Base
EA41544	British Museum	Luxor (?); tomb of Henutmehyt	19th Dynasty	reed and linen	approx. 2 cm	19.5 cm	N/A	N/A
JE62357	Egyptian Museum	Luxor; Valley of the Kings (KV62)	18th Dynasty	reed and linen	1.2 cm	13.2 cm	N/A	N/A



## APPENDIX TWO – Theban tombs with light offering scenes

Tomb Number	Date	No. of single wick-on-stick devices	No. of large wick-on-stick devices	Location	Wall (symbolic orientation)	Notes / Publication of scene
2	19th/ Ram II	unknown		Entryway into chapel	N	Not published, no longer visible
3	19th	4		Tympanum of burial chamber	W	(Zivie 1979: 47, plate 18)
5	19th	6		Tympanum of burial chamber	W	(Vandier 1935: plate XX, XXI)
		3		Subterranean chamber	N	(Vandier 1935: plate VII)
10	19th/ Ram II		4 visible, but originally 6 (?), pyramidal	Chapel - right wall	N	(N. de G. Davies 1924: 12, plate VI)
			4 - pyramidal	Chapel - left wall	S	(N. de G. Davies 1924: 12, plate VI)
23	19th/ Mereneptah	5	1 - mound shaped	Court	E	(N. de G. Davies 1924: 12–13, plate VII; Haikal 1985)
		2	1 - pyramidal	Transverse hall	W	(N. de G. Davies 1924: 12 note 2, plate VII)
31	19th/ Ram II	3	2 - pyramidal	Transverse hall	S	(N. de G. Davies 1924: 12, plate VII; N. de G. Davies 1948: plate XI)
33	Saite	4		Room 12	S	(Dümichen 1894: plate I, II)
39	18th/ TIII	3		North chapel	E	(N. de G. Davies 1922: plate XLVI)
		1		Shrine of central chapel	E	(N. de G. Davies 1922: plate LVII)
41	19th/ Ram I - Seti I		2 - pyramidal	Chapel - Transverse hall	W	(Assmann 1991: 100, plate 40)
42	18th/ TIII - Amen II	3 or 4?		Chapel - Passage	W	Not published
51	19th/ Seti I	3	2 - pyramidal	Chapel - Transverse hall	S	(N. de G. Davies 1924: 9, plate V; 1927: plate V, XII B)
52	18th/ TIV	4		Chapel - Transverse hall	N	(N. de G. Davies 1917: plate XIII)
54	early 19th		1 - diamond shaped	Chapel - Transverse hall	S	(N. de G. Davies 1924: 10, plate V)

69	18th/ TIV		2 - diamond shaped	Chapel - Transverse hall	W	(N. de G. Davies 1924: 10-11, plate V)
		X		Chapel - Transverse hall		Not lights. Think this is a confusion of priests placing other items (leg of cow) onto a pile of burnt offerings.
75	18th/ TIV		2 - diamond shaped	Chapel - Inner room	N	(N. de G. Davies 1924: 10, plate V)
82	18th/ TIII	8 (likely more originally)		Chapel - Inner room	N	(N.M. Davies & Gardiner 1915: plate XXIII)
		1		Burial chamber	W	(N.M. Davies & Gardiner 1915: plate XLVI)
89	18th/ AIII	4 + 1		Chapel - Transverse hall	N	(N. de G. Davies 1924: plate VII; N.M. Davies & Davies 1941)
90	18th/ TIV - AIII	2		Chapel - Transverse hall, around stela	N	(N. de G. Davies 1923a: plate XXXV)
93	18th/ AII	2		Chapel - column of transverse hall	S	Not published
95	18th/ AII	4		Chapel - pillar of transverse hall	N	Not published
96	18th/ AII	2		Inner hall - pillar	S	Not published
		2		Antechamber of burial chamber	W	Not published
		X		Hall of burial chamber		If these are meant to be torches they're very strange looking; 3 priests each holding two red/brown wavy sticks (?)
100	18th/ TIII - AII	3		Chapel - passage	S	(N. de G. Davies 1943: LXXXIII)
112	18th/ TIII, usurped in Ramesside	5		Chapel - Transverse hall	E	(N.M. Davies 1933: plate XXIX)
113	Ram VIII	X		Chapel - Transverse hall	N	Hall now destroyed; not published
127	TIII (?), usurped in Ramesside	10		Chapel - thickness of door to inner room	N	Not published

151	18th/ TIV	X		Chapel - Inner room	S	Tomb unfinished; not published
153	Seti I (?)	X		Chapel - Transverse hall	W	Not published
159	19th		2 - pyramidal	Chapel - Transverse hall	E	(N. de G. Davies 1924: 12 note 2, plate VI)
181	18th/ AIII - AIV	2		Chapel - Transverse hall	E	(N. de G. Davies 1925: plate V)
211	19th	2 (originally 4)		Burial chamber	W	(Bruyère 1952: plate XXII)
214	19th	6		Burial chamber	E	Chapel destroyed, burial chamber no longer accessible; (Bruyère 1952: plate XXIX)
		3		Burial chamber	E	Chapel destroyed, burial chamber no longer accessible; (Bruyère 1952: plate XXIX)
218	19th	4		Outer chamber (original burial chamber)	W	(Saleh 1984: 75)
219	19th	3		Burial chamber	E	Not published
247	18th		1 - mound shaped	Chapel - Transverse hall	W	(N. de G. Davies 1924: 11, plate VI)
254	late 18th	2	1 - diamond shaped	Chapel - Transverse hall	E	(N. de G. Davies 1924: 11, plate VI; Strudwick 1996: 254)
259	Ramesside	2	1 - pyramidal	Chapel - Transverse hall	W	(N. de G. Davies 1924: 12 note 2, plate VII)
264	19th		X	Chapel - Transverse hall	E	Not published
271	18th/ Ay	1		Chapel	S	(Habachi & Anus 1977: 22, fig. 13); very odd form, possibly a censer. Resembles a flame rising from the center of a <i>shen</i> -sign
276	TIV (?)	3		Chapel - Inner room	W	Not published
277	Ramesside	4	1 - mound shaped	Chapel	S	(Vandier d'Abbadie 1954: plate VIII)
278	Ramesside	2	1 - pyramidal	Chapel - Transverse hall	E	(Vandier d'Abbadie 1954: plate XXXV)

283	RII - Seti II	1	1 - pyramidal	Chapel (?)	S	(N. de G. Davies 1924: 11–12, plate VI); Scene now destroyed
296	Ramesside	4	1 - pyramidal	Chapel	W	(Feucht 1985: plate 26)
331	Ramesside	X		Chapel – transverse hall	W	(N. de G. Davies 1948: 53)
333	AIII (?)		X	Chapel - Inner room	W	Not published
335	19th		1 - pyramidal	Subterranean chamber	N	(Bruyère 1926: fig. 85)
		6		Subterranean chamber	W	(Bruyère 1926: fig.87)
345	18th/ TI	X		Chapel - Transverse hall	E	(Cherpion 1999)
353	18th/ Hatshepsut	1		Chapel - False door	W	(Dorman 1991: 137, plate 70, 71)
356	19th	12		Burial chamber	E and W	Not published
359	Ram III/IV		4 - conical	Burial chamber	S	(Cherpion and Corteggiani 2010: plate )
375	Ramesside		X	Chapel - hall	E	Not published
409	Ram II		X	Chapel - Transverse hall	W	Not published

## APPENDIX THREE – Fitzwilliam Museum Coffin Experiment

### Risk Assessment

#### Description of Activity / Experiment / Work Area:

Groups of people (3 – 5 max) each time to review the panels which have been erected in Grove Lodge garden
Replica Egyptian torches will be lit – naked flame
Access for guests to designated area
Guests will be invited and between the ages of 18 – 45 years of age.
Guests will be asked to complete a short questionnaire
Guests will be on the designated volunteers list and have volunteered in the museum at some point.
Some post graduates may be invited

**SECTION 1:** Identify all significant hazards, who or what may be affected by each individual hazard and controls in place to reduce risk to a minimum.

What could cause HARM? <sup>1</sup>	Who might be HARMED and HOW? <sup>2</sup>	CONTROL MEASURES <sup>3</sup> What control measures are in place to reduce risk?	What further actions could help reduce the risk? <sup>4</sup> Who will carry this out?	Probability	Risk	Category
				Low	Low	Low
Naked flame on torches	Guests & staff	The torches will only be handled by trained staff and kept at a distance from the visitors	There will be a bucket of water available at all times. Staff member can easily immerse the torch to extinguish the flame.	Low	Low	Low
Uneven surface	Slip, trip or fall	Trained staff in attendance, at all times.	Supervision of guests at all times. Threshold to grass is raised – this will be pointed out by a designated staff member.	Low	Low	Low
Emergency Evacuation, Fire/bomb alert	All involved- slip, trip fall, panic.	Trained staff in attendance to instruct on evacuation procedure and to direct members of the public to the nearest evacuation route.	Evacuation procedure is planned and tested.	Low	Low	Low

Sudden Illness	All involved- person becoming unwell and needing help.	There will not be a trained first aider on site but an emergency first aid bag containing routine plasters and minor ailment fixes will be available. If the situation dictates an ambulance will be summoned.	All supervision staff will have a mobile phone available to them.  Drinking water will be available.	Low	Low	Low
Guests	Damage to the building- by misuse of building.	Trained museum staff in attendance, at all times.	Museum staff are available to be deployed where necessary to help with supervision.	Low	Low	Low
Guests	Too many visitors in one area causing restrictions to exits.	The numbers of guests will be restricted to 3 – 5 at any one time.  There will be one staff member deployed at the end of Grove Lane, one member of staff at Grove Lodge garden gate, and one in the car park. Plus three members of staff in the garden area.	Staff are deployed on the access routes to the area and will have radios for communication. Fluorescent jackets will be provided for staff on the access areas only.  Should the need arise University Security, who have been informed of the event, can be summoned via the phone link.	Low	Low	Low
Fire	Guests and Staff	There will not be any flammable elements close to the flame on the torches and a bucket of water is available at all times. The areas have no flammable items.	Evacuation procedure is planned and tested.  No combustible items will be near to the flame.	Low	Low	Low
Smoke from torches	Guests and Staff inhalation & smoke damage	The torch wicks are covered with beef tallow and this is not expected to produce smoke.	If the torches produce smoke then it will be immediately extinguished by immersing in the water bucket.	Low	Low	Low
Interaction with the invited guests.	All – Aggressive/ dangerous behaviour from guest.	Trained museum staff in attendance, at all times who will recognise any build-up of numbers. All staff have radios and can summon assistance if necessary.	All staff have radios and can summon first aid and other assistance, if necessary.	Low	Low	Low
Security	All	The university security team will be informed about the event. They will be contacted at the start and end of the event.	Mobile phones will be available and the security number programmed onto a phone.	Low	Low	Low
Manual Handling & lifting of equipment; transit of equipment	Staff – injury through incorrect techniques.  Collections/Building – through contact with equipment	Staff should be trained in and follow correct Manual Handling techniques at all times. Continuous supervision by trained gallery staff, who will be in attendance at all times. All gallery staff have radios and can summon	The individual or their supervisor.  To help further reduce the risk the individual needs to have appropriate experience or training of lifting, pushing or pulling.	Low	Low	Low

		first aid and other assistance, if necessary.	They need to have familiarity with the job.  Carried out an individual risk assessment if the job is unusual or the individual is unfamiliar with either the object or the environment where the work will be carried out.			
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## SECTION 2: Emergency Procedures

- In the case of an emergency all non-Museum staff will follow the directions of the Museum staff that are trained in the evacuation of the building under emergency situations and to the policies set out by the Museum.
- First Aid Kit and Biological Hazards kit held in the museum.
- Defibrillator and trained First Aiders available on site.
- Fire and Evacuation procedures reviewed on a regular basis. In event of an evacuation emergency exits are clearly marked and all visitors issued with audio instructions.
- Fill out an accident or incident report form.

**SECTION 3: Equipment incl. PPE required** (e.g. overalls, gloves, respiratory protection, eye protection)? You must ensure that any PPE specified is suitable for the purpose.

Signature of Assessor(s)	Date:	Helen Strudwick
Signature of Approver (Line Manager)	Date:	Lucilla Burn

<sup>1</sup>A list of hazards is provided below to help you, but this may not be exhaustive. If any of these hazards can be eliminated altogether, or can be reduced at source by making an inherent change then we must consider doing so. Hazards in **bold** will also need an additional, more technical assessment on a specialist form.

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Slipping      Tripping      Sharp objects      Falling Down      Machinery hazards      **Chemical Hazards**  
**Manual Handling**      **Heat**      Noise      Falling objects      Collapsing structures      Work at heights Choking

# Ancient Egyptian Coffins Experiment Questionnaire

**Rank the four panels from least to most shiny:**

Least shiny	<input style="width: 50px; height: 50px;" type="checkbox"/>	<input style="width: 50px; height: 50px;" type="checkbox"/>	<input style="width: 50px; height: 50px;" type="checkbox"/>	<input style="width: 50px; height: 50px;" type="checkbox"/>	Most shiny
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**Rank the four panels from least to most yellow:**

Least yellow	<input style="width: 50px; height: 50px;" type="checkbox"/>	<input style="width: 50px; height: 50px;" type="checkbox"/>	<input style="width: 50px; height: 50px;" type="checkbox"/>	<input style="width: 50px; height: 50px;" type="checkbox"/>	Most yellow
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**Please tick the box that indicates the extent to which you agree with the following descriptions for each panel:**

***Panel 1***

	Very	A bit	Neutral	A bit	Very	
Matte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shiny
Looks inexpensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Looks expensive
Dull	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bright
Special	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ordinary
Suggests high status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suggests low status



**Panel 2**

	Very	A bit	Neutral	A bit	Very	
Matte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shiny
Looks inexpensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Looks expensive
Dull	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bright
Special	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ordinary
Suggests high status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suggests low status

**Panel 3**

	Very	A bit	Neutral	A bit	Very	
Matte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shiny
Looks inexpensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Looks expensive
Dull	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bright
Special	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ordinary
Suggests high status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suggests low status

**Panel 4**

	Very	A bit	Neutral	A bit	Very	
Matte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shiny
Looks inexpensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Looks expensive
Dull	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bright
Special	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ordinary
Suggests high status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suggests low status

**Please tick the box that indicates the extent to which you agree with the following statements:**

1) The torchlight creates more visual impact on panels 3 and 4 in comparison to panels 1 and 2.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) Panels 1 and 3 appear more golden than panels 2 and 4.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and other observations:

We would welcome any other thoughts you had during the experiment that were not specifically addressed in the questionnaire. What feelings/objects/smells, etc. do you associate with the color yellow? Did any of the panels elicit a particularly strong emotional reaction? Did the appearance of the panels remind you of another type of object or material?

## Transcription of participant comments

47 – 4 looked more golden with speckles in it. Does the direction of the paint strokes affect this?  
Different base?

46 – It is hard to distinguish the color of 3 and 4 when the torches are not fully on the panel. 1 is lighter and looks less expensive to produce, but the effect in the dark makes it the one that stands out the most because it is lighter in color.

44 – Panel 4 reminded me of a plaque, the type of which might be found on a building denoting something important, or alternatively a temporary memorial at a cemetery. Yellow elicits a feeling of the ordinary, maybe because it reminds me of the sun – it comes up every morning, this ordinary. Thought this may have very different connotations for the ancient Egyptians on account of this relationship with the sun. Taste – something unpleasant. Would be interesting to ask this taste question to somebody with gustatory kinesthesia.

43 – The smell of the torches had more of an impact than I expected. Did not enjoy glittery panel (4) the most – surprising. Instead subtle shine more appealing.

42 – Yellow was very much richer.

41 – 4 looked like varnish. Could I use it for my own coffin? Wanna go out in style!

39 – Panel 4 reminded me of tree sap oozing from a tree, or like honey.

38 – Darker could represent gold (wealth, higher status, etc.) but unsure if the color paint was harder to achieve. Yellow representing sun (power, life) which could also represent higher status, particularly in Egypt (hot country).

37 – Not enough time to fully appreciate/think about questionnaire. Warming – heat. Reminded me of sand.

36 – Associations of yellow – sunlight, gold, richness. The darker and shinier panels looked the richest. The color also reminded me of the Egyptian landscape under bright sunlight.

35 – The last panel (4) looked gold/gold leaf. The streaks on panel 2 and 4 made them look less expensive.

34 – Panel 4 was highly suggestive of gold – the metallic lustre as well as the color. There was a warmth to the color, unlike panel 1 – which had a cooler, lemony feel. 4 felt cosy!

33 – I felt I didn't really have long enough to fill in the questionnaire and compare the colors. The panels did not remind me of anything. I equated shiny with golden.

32 – With the more concentrated shades (3 and 4) they seemed warmer. Panel 1 was more like imperial yellow in China? I didn't think of it with an Egyptian context as much. Darker panels 3 and 4 seemed more expensive as though had been lacquered over more times.

28 – Having been in the tombs in Egypt I felt right back there with 4 and 3, the deep warmth. Yellow for me doesn't resonate but gold – special, delicate, and royal. Gloss and shiny made it look cheaper, less cared for.

26 – The flickering light changed my perception of how shiny and bright the pigments were. Eg – on first look I thought 4 was the shiniest but as the candles died it looked less special. The thicker paints felt more luxurious or special – number 1 reminded me of the wallpaper at my mom's house!

25 – Yellow/gold – wealth, ostentation, Panel 4 especially. Duller panels appeared more wooden, shinier panels gave appearance of being made out of metal. Shinier panels slightly eerier in the torchlight, more evocative.

24 – To me panel 2 resembled unpolished gold, it appeared luxurious. Panels 2 and 4 had the biggest visual impact as they suggested affluence/high status. Panel 4 also drew my attention to the last remnants of sunlight reflected in the clouds. Whereas panel 2 seemed a bit cold and unreachable, panel 4 exuded warmth, comfort and a sense of vitality. Panel 1 made me feel calm. Panel 3 had no effect on me apart from visual. Panel 2 evoked memories of incense and warm spice like cinnamon. Panel 1 reminded me of wallpaper. Panel 2 reminded me of antique jewelry/artifacts. Panel 4 was reminiscent of the sun, which suggested power. I immediately linked it to religion but also thought of female figures when looking at it.

23 – 1, 2 and 3 appeared to be more yellow in tone, whereas 4 had more golden tones – however 3 and 4 appeared to be more shiny. Panel 4 seemed to be more special, more golden and more mysterious. Panel 1 felt ordinary and boring. Panel 4 reminded me of gilding.

22 – 1 seemed most vibrant, 2 almost wooden, 4 seemed like dull bronze.

21 – I think this was missing saturation level from the questionnaire. Too little time to answer, probably my answers are contradictory. Sorry.

20 – Could not smell anything much – yellow feels quite royal, very much like gold.

19 – I think they are reminiscent of gold (metal) and the color of wheat/flowers (sunflowers) and the sun. The bright yellow is more like wheat, flowers and the sun. The dull brownier yellow (2 and 4) looks more like metal. The bright yellow (1 and 3) is more youthful/ dark (2 and 4) is more old/ancient. The shinier it is the more it looked like real gold (4). The shiny bright yellow (3) was more like sun/daylight. The bright yellow “smells” warm and toasty, the dark yellow smells earthy. The brightest yellow was like impressionist painting, yellow sunflowers, van Gogh. The bright golden shiny yellow (3) is more like Klimt. I reacted strongest to 1 and 4 emotionally, 1 = happy and 4 = somber/reverent.

18 – Color yellow and lighting suggested warmth and glow e.g. of gold or of sun when low in the sky. Panel 1 seemed light and brighter than they others. The shinier surface (3 and 4) evoked a more metallic appearance than 1 and 2, which were more matte.

17 – Yellow is like gold – regal color. Especially the shiny color, vibrant yellow.

16 – For me, panel 4 evoked the greatest sense of grandeur and richness. It reminded me of the gilt color often seen on Egyptian coffins.

15 – Golden color suggests warmth and wealth. Candlelight on the panels was meditative and calming, evoked a religious feeling.

14 – Yellow = happiness/warmth/sunshine/the sun/ burning candles. Panel 4 seemed the most illustrious/illuminated. The panels reminded me of golden object, grand things.

13 – As some torches had gone out, I noticed the scent of the torches at the paintings that had stayed lit. It added a level of luxury not leant to the others. Panel 1 had a very bright color, very “sunshine”-like. It gave more of a daytime lightness to it. Panel 4 was somewhat of a tan color, less rich than panel 3. Panel 4 reminds me of dull bronze or copper. Visually I prefer panel 3, the richness and warmth just seems more appealing.

12 – Why was yellow so special? I'm curious now! Panel 2 reminded me of a color in my paint set when I was a kid, a color I never understood, so I always avoided using it in my work. Would hate to be buried in it! I also liked the way the varnish on the ornamental pieces of coffin on the tables made them come alive, the shimmer certainly added some magic, like being painted by fire.

11 – It was difficult to do the experiment because the tallow was proving difficult to keep alight. My feelings of the color yellow are that of light, fresh, new things like spring daffodils, sun, bees, honey. It promotes a feeling of happiness in me. Panel 4 drew me in the most, mainly the richness of texture, the shine it elicits in the torches in particular. The golden hue gave me a sense of wealth also.

10 – Love it. Very special. Can feel the smell of the torch quite strong. The color makes me feel warm. No particular object was recalled from the panel.

9 – Panels 3 and 4 felt much more special mostly because of the shades of yellow.

7 – The appearance of the last two panels reminded me of old linen, albeit shiny. Yellow = sunlight, flowers, positivity.

6 – Smell was of meat, nothing to do with yellow. Feeling of light/sun/fire and gold. Happy emotional reaction.

5 – 1 and 3 appear happier, more joyful and fresh. 2 and 4 appear more metallic. As light (natural) faded, candle had bigger and bigger impact on 3. 4 = more golden than yellow. I'd choose number 3 on my coffin!

4 – Panel 1 would be the one I like the most because it is a bit less vivid than the others. Panel 3 stood out the most to me as it had a lot of texture and it was complemented by the torches better than the others.

3 – Panel 4 seemed most glittery. It reminded me of fools' gold or sand when it's damp in the sunlight. Panel 2 was rather mudlike, like clay or river silt. There were only flies on panel 3 which tend to be attracted to yellow. I thought that they were in agreement with me that panel 3 was the most yellow.

2 – Panels 1 and 3 were more attractive and drew my attention more. I preferred the yellow color as matte and dull more than the shiny one. The panels just looked like they had been painted by modern paint. Yellow makes me feel happy, but the darker panels (2 and 4) were more unwelcoming despite being more reminiscent of gold.

1 – The smell of the tallow was quite evocative. I associate yellow with happiness, not death. It was quite a peaceful experience. The paint reminded me of an oil painting.