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TOWER HOUSES

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Manuela Lehmann

Turmhäuser
Maisons-tours

Egyptian tower houses are a type of dwelling that developed in the Third Intermediate Period. They were extensively used from the Late Period (26th Dynasty) through Roman times and remained in use in Late Antiquity from the Medieval Period onwards. They are still constructed in some parts of the Middle East today. These houses were often square at the base and consisted of several stories, thus giving a tower-like appearance. Many had so-called "casemate foundations." Our sources for tower houses derive from archaeology, house models, pictorial evidence, and texts. Tower houses were used as dwellings within cities, fortresses, and temple enclosures, and also functioned, themselves, as temples and administrative buildings.

منازل الأبراج المصرية هي نوع من المساكن تم تطويرها خلال عصر الانتقال الثالث. استخدمت تلك المنازل على نطاق واسع خلال العصر المتأخر (الأسرة السادسة والعشرون) وحتى العصر الروماني، حيث ظلت مستخدمة منذ أواخر العصور القديمة من العصور الوسطى فصاعدًا. ولا تزال حتى الآن مستخدمة في مناطق متفرقة من الشرق الأوسط. غالبًا ما كانت هذه المنازل مربعة القاعدة وتتكون من عدة طوابق، مما يعطيها مظهرًا شبيها بالبرج. العديد منها سمى بـ "ذات الاساسات المحصنة". مصادرنا الخاصة بالمنازل البرجية مستمدة من علم الآثار، ونماذج المنازل، والأدلة المصورة والنصوص. تم استخدام المنازل البرجية كمساكن داخل المدن والحصون وفى محيط منطقة المعابد، كما كانت تستخدم أيضًا كمعابد ومباني إدارية.

The tower house in Egypt was a structure used primarily as a dwelling—that is, as a building with a predominantly domestic function. The tower house is first attested in Egypt in the Third Intermediate Period (1086 – 664 BCE). It seems to have derived from the so-called Egyptian "town house" (Davies 1929; Roik 1988), which comprised two or three stories, known mainly from depictions in New Kingdom tombs, papyri, and from the excavation of settlement sites such as Lisht, Memphis, el-Amarna, and Amara West, among others (Davies 1929; Roik 1988: 13-29; F. Arnold 1996; Spence 2004; N. Spencer 2014a: 481).

Prior to the development of tower houses in Egypt, two other known house-types typically occurred there. The tripartite house (Ricke

1932: 13-20; Helck 1977; F. Arnold 1989; Bietak 1996; von Pilgrim 1996) was configured so that the rooms nearest the entrance, facing the street, were the most public, as this was where visitors would enter, while the areas farther inside the house were increasingly more private and less accessible (van der Bercken 2011; Spence 2004). The second house-type was the courtyard house, where the rooms were arranged around a central courtyard, which functioned as a distribution center. The courtyard house was especially common in the Middle Kingdom and was used less frequently after the New Kingdom (von Pilgrim 1996; F. Arnold 2003: 178).

Tower houses in the Delta were typically built entirely of sun-dried mud brick. In the Fayum and Nile Valley, stone was often employed in the foundations and sometimes in the ground floors. In general, the thickness of the brick walls of Egyptian houses increased considerably at the end of the Third Intermediate Period, from the formerly typical width of a half-brick or single brick, to up to one meter in thickness. These wider walls were able to carry much more weight, and consequently more floors, than could be erected in earlier times.

The former horizontal arrangement displayed in the tripartite house seems to have evolved into a vertical arrangement, exhibited in the multi-storied town house, with the more private rooms on the upper stories (F. Arnold 2003: 134; Lehmann 2021: 314). Although external influences for the development of tower houses are possible in theory, no conclusive evidence for them has been found so far, and an indigenous Egyptian development is most likely (F. Arnold 2003: 187; Lehmann 2021: 98-102).

In the Late Period (664 – c. 332 BCE) these multi-storied houses were often constructed with casemate foundations (A. J. Spencer 1979: 71-79; D. Arnold 1994: 281-282; Goyon et al. 2004: 112). Casemate foundations were essentially compartmentalized platforms constructed of brick-walled cells, or compartments, filled in with sand and rubble. Earlier this architectural feature had occurred in Egypt in ramps, fortresses, and palaces (Bietak 2010; Lacovara 1997), but was now for the first time employed in the construction of domestic houses. Often the upper stories of these buildings are not preserved, so that only the casemate foundations remain, and in these cases it cannot be said with certainty how high the buildings were originally.

The tower house continued to be built after the Late Period and remained the typical dwelling in Ptolemaic and Roman times in Egypt (F. Arnold 2003: 172), its shape having become much more standardized, and casemate foundations having become a fundamental component of its construction. Tower houses continued in use in the Byzantine and Medieval periods and were recorded by travelers to Egypt as recently as the eighteenth and nineteenth centuries CE. They are still constructed in the Middle East today in Saudi Arabia, Yemen, Oman, and Morocco.

History of Research

In recent years Egyptian tower houses have been increasingly excavated, mainly in the Delta, a result of growing interest in the Late Period, which had long been overlooked by archaeologists in favor of earlier periods. With this changing attitude, tower houses are increasingly being understood as an important feature of Egyptian architecture of the Late Period onward.

One of the first scholars to record the remains of tower houses was William Matthew Flinders Petrie, who excavated several examples at Memphis, Nebesheh, Defenneh, and other sites. Although he did not identify the architectural remains as tower houses, he realized the distinctive platforms were foundations (Petrie 1888, 1909).

The first extensive excavation of tower houses took place in the 1920s and 1930s with the excavation of Ptolemaic and Roman constructions in the Fayum at sites including Philadelphia, Oxyrhynchus, Karanis, and Soknopaiou Nesos (Viereck and Zucker 1926; Bowman et al. eds. 2007; Boak and Peterson 1931; Boak 1935). These projects were often undertaken by historians, philologists, or

classicists searching for papyri (Davoli 1998: 27-28). Tower houses were also excavated in the 1950s and 1960s at sites such as Athribis in the Delta (Leclère 2008: 233-278) and Medinet Habu (Hölscher 1954). An extensive period of recording of tower houses took place in the 1970s and 1980s, when increased excavation in the Delta exposed the foundations of these buildings at sites including Mendes, Tanis, and Tell el-Maskhuta (K. Wilson 1982; Leclère 2008: 393-486; Holladay 1982).

In the 1990s and early years of the new millennium, projects increasingly encountered tower houses in their excavations, again especially in the Delta. The Egypt Exploration Society (EES) Delta Survey by Jeffrey Spencer (A. J. Spencer 2001, 2016)—and especially his work focusing on the mud-brick architecture at sites such as Tell el-Balamun and Defenneh in the Delta, and Ashmunein in the Nile Valley (A. J. Spencer 1979, 1996a, 1999a, 1999b, 2010; Leclère and Spencer 2014)—made it possible to understand the nature of these houses better. Felix Arnold's (2003) publication of tower houses in Elephantine, with its detailed section on houses in Late Antiquity and Medieval times, covered the later usage of this architectural form. An increasing number of studies have since been dedicated to tower houses (e.g., Marchi 2014; Marouard 2012, 2014).

In general, tower houses from the Ptolemaic Period onward, for which there is the most available evidence, are the best understood. More research is needed on the tower houses of earlier periods and on their development from New Kingdom dwellings to the first Saite tower houses.

Typical Elements of an Egyptian Tower House

The typical architectural elements that define an Egyptian tower house do not always all occur in one building, but several of the features are usually present, some of which changed over time. First, as their name suggests, these constructions consist generally of several stories: between two and seven floors are attested. Often, but not always, a casemate foundation was used, although tower houses prior to the Late Period do not yet feature this type of foundation, suggesting it evolved over time. By the Ptolemaic Period, the casemate seems to have become a standard feature.

While the presence of casemate foundations does not necessarily imply that tower houses were always higher than one or two stories, the enormous effort and cost of building such a massive foundation would likely indicate that most tower houses had several stories. Since the upper stories are not preserved, it cannot be said with certainty how high the buildings were, but what can be calculated is the maximum height that the width of a wall would have been able to support (see F. Arnold 2003: 169, tab. 3).

The outer walls of tower houses were often sloping, the walls widening towards the base. The wall could have a width of over a meter above the foundation. The bricks were often not laid in horizontal courses but in so-called pan-bedded brickwork, meaning the courses rose to the corners of the building and sloped down slightly towards the middle of the walls (Husselman 1979: pls. 12b, 13b). Wooden beams were used in the masonry; often the heads of the beams were visible in the walls (ibid.: pl. 14b).

Our knowledge of windows and roofs is derived from house models and from the better-preserved houses at, for example, Karanis and Tebtynis. Windows were often arranged in rows of three on one side of the building. The entrance could be found either at ground-level or, more often in later times, elevated at the first floor with a staircase leading up to it (F. Arnold 2003: 172); raised entrances with ramps or stairs are known for houses in the New Kingdom (Spence 2004: 146-150, figs. 7-9). The roofs were mostly flat and were often employed as a terrace; sometimes a kiosk was present and occasionally the edges of the roofs were crenelated.

The Function of Tower Houses and other Buildings with Casemate Foundations

Tower houses constitute only one category of buildings constructed with casemate

foundations. These platform foundations were also used for storage in administrative buildings called *šnᶜ-wᶜb* (literally "pure storehouse") within temple enclosures. Examples of these can be found at Karnak, Medamud, and el-Hibis (Traunecker 1987).

Similarly, what seem to be Ptolemaic and Roman priests' dwellings with casemate foundations occur at Tuna el-Gebel (Flossmann-Schütze 2011, 2014; Fassbinder et al. 2015), and earlier examples with probably several stories are attested at Karnak (Masson 2007, 2014). Buildings of a similar nature within a temple enclosure appear to be represented in the magnetometry survey of Tell el-Balamun (A. J. Spencer 1996a). Some temple buildings themselves were built with casemate foundations, with examples at Tell el-Dabaa, Tell el-Hebwa, and Tell el-Herr, and in the Fayum at Soknopaiou Nesos and Bacchias (Lehmann 2021: 184-188; Abd el-Maksoud and Valbelle 2005: 3; Valbelle and Abd el-Maksoud 2007: 80-103; Davoli 2008: 60-61; Pernigotti and Capasso 1998: 8; Pernigotti 2010: 302). Casemate foundations were also used in palatial buildings from the Second Intermediate Period (1640 BCE) onward, as for example at Tell el-Dabaa, Deir el-Ballas, Memphis (Apries Palace) (Petrie 1909; Kemp 1977), and Tell el-Herr (Defernez et al. 2017), and in buildings within fortresses such as those at Tell el-Herr, Tell el-Ghaba, and Tell el-Kedwa (Valbelle and Abd el-Maksoud 2007; Marchi 2014b; Fuscaldo and Lupo 2007; Oren 1984), which were probably used for administrative purposes and as accommodations for soldiers. These examples thus illustrate that casemate foundations were employed for buildings of varying form and function.

Sources for Egyptian Tower Houses

In addition to the remains of excavated tower houses, a number of pictorial sources for the houses are known—mainly three-dimensional models, and two-dimensional depictions on glazed tiles and in mosaics and paintings. There is also a possible ground plan of a tower house drawn on papyrus. Some written source material is known as well, mainly from the Ptolemaic and Roman Periods. These depictions and texts help us to understand the excavated structures, which are often poorly preserved so that in most cases only the foundations survive.

House models

Three-dimensional models of tower houses are difficult to date; they probably start in the Late Period and are more common from the Ptolemaic Period onward. While a few house models are solid, most are hollow; some still show traces of an oil-lamp set inside, suggesting a function in the *Lychnokaie*, a light festival mentioned by Herodotus (II.62.1-2; trans. Godley 1920).

Tower-house models occur in stone or terracotta and vary in height between 5 cm and 78 cm. At least 25 tower-house models, or fragments thereof, are known, providing important details of this type of architecture, showing such features as multiple stories, sloping walls, pan-bedded brickwork, wooden beams in the masonry, and elevated entrances on the first floor with staircases leading up to them. The ground floor usually contains only small windows placed high on the wall directly under the ceiling, as was known from the New Kingdom (Spence 2004: 131), while the other floors generally have two or three windows on each side of the house (Lehmann 2021: 66-74; Marouard 2014: 118-120). The number of stories varies between one and six. Five examples show one or two stories; four examples show three stories; three examples show four stories; three examples show five stories; and two examples show six stories. Most of the models have a square ground-floor, although some are rectangular and one example is L-shaped. The same shapes are found in excavated Egyptian tower-houses and in modern examples in Shibam, Yemen (Leiermann 2009: 52). Four of the models show a frontal staircase and three of them have a lateral staircase leading up to the entrance in the first floor.

Depictions of tower houses

With one exception, depictions of tower houses are known only after the Late Period,

appearing mainly outside Egypt in mosaics and drawings of Egyptian landscapes in Roman houses and places of worship. Prior to this, depictions of tower houses were mostly known from tomb scenes within Egypt. Following are the known sources depicting tower houses: glazed tiles from Nimrud, Assyria (N2067+N2069), c. 668 BCE; the Ptolemaic Nile mosaic of Palestrina, Italy, c. 110 – 120 BCE; Roman mosaics and paintings from Herculaneum and Pompeii, Italy, 79 CE; and the Roman Papyrus Oxyrhynchus XXIV 2406, 100 – 200 CE.

The oldest known depiction of a tower house was found at the site of the city of Nimrud, on a group of glazed tiles illustrating an Assyrian military campaign in Egypt c. 668 BCE (Lehmann et al. 2019). Two tile fragments from this group show structures that are possibly Egyptian tower houses. The better-preserved tile, N2067 (fig. 1), shows a tower house with sloping walls, consisting of four floors, including the ground floor, which is not elevated but at ground-level and which features a rectangular door. The stories are shown separated one from the other by a horizontal yellow band, in contrast to the white coloration (presumably representing white plaster) used for the rest of the building. Two square windows next to each other can be detected on the fourth floor. The roof is not preserved, but most other examples of this period show flat roofs, sometimes with a small kiosk on top. The house depicted on tile N2067 abuts a slightly lower wall with triangular crenellations that seems to link it, on the right, with a building with sloping walls, shown in a brown color.

A second tile, N2069b, shows parts of another tower house in the context of the same military campaign, but is only in small part preserved. Visible are a rectangular door, yellow bands dividing the stories, and white coloration used to represent the house's (plastered) walls. Not enough is preserved to be able to number the stories, but the house does seem to have a different arrangement of floors than that of the tower house shown on tile N2067. The best parallel for such a depiction is the Nile mosaic of Palestrina (fig. 2), which shows a temple enclosure-wall incorporating several tower houses. This mosaic, also known as the *Mosaic Barberini de Praeneste*, was discovered in the sanctuary of the Roman goddess Fortuna Primigenia in the town of Palestrina in central Italy (Meyboom 1995: 9). It can be dated to 110 – 120 BCE, based on details in the architecture, clothing, and weapons shown; its dating corresponds well with Ptolemaic tower houses excavated in Egypt. In its current state the mosaic measures 5.85 × 4.31 meters but, before being moved to Palestrina's Barberini Palace, it was originally about one meter larger (Meyboom 1995: 4). The arrangement of the parts as reconstructed by Whitehouse has been accepted by most scholars (Whitehouse 1976; Meyboom 1995, fn. 22, 198).

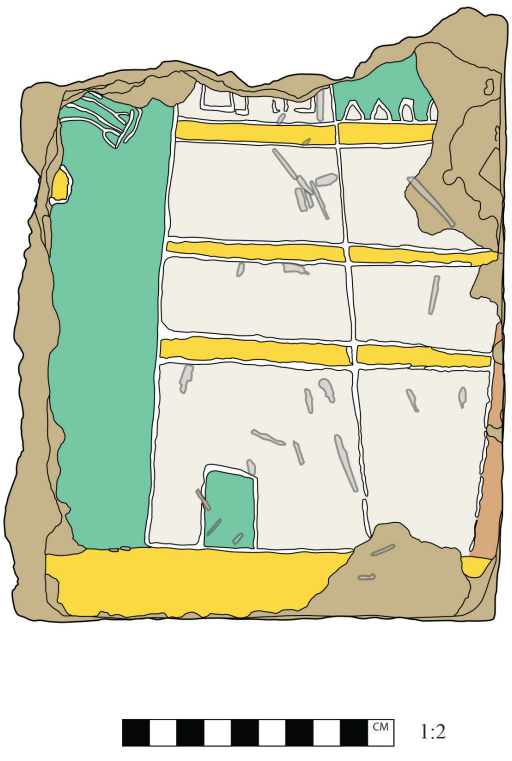

Figure 1. Drawing of glazed tile N2067 from Nimrud, now in the British Museum.

Figure 2. Detail of the Nile mosaic of Palestrina showing tower houses, some of them incorporated in the temenos wall of a temple. The mosaic is now in the Museo Nazionale Prenestino in Palazzo Barberini, Palestrina, Italy.

The mosaic shows a Nile landscape with eight free-standing tower houses and six tower houses incorporated into a temple enclosure wall. Scholars have discussed whether a specific temple in Egypt can be identified here; a comparison of the different identifications posited is given by Carrez-Maratray (2014). In general, the appearance of the houses in the mosaic is very similar to that of many Egyptian house models, showing pan-bedded brickwork, wooden beams in the masonry, and narrow, rectangular windows. The roofs are usually flat and rise towards the corners of the house. Houses within, or in close proximity to, temple enclosure walls are known from Egyptian texts (Thiers 1995: 495-501) and from excavations at Medinet Habu, Buto, Tell el-Balamun, Tell el-Dabaa, and Elephantine (Hölscher 1934, 1954; Ballet et al. 2011; A. J. Spencer 2004, 2010; Lehmann 2021; F. Arnold 2003).

Depictions of Egyptian tower houses amid Nilotic landscapes are also known from paintings and from other mosaics, for example in the Vigna Maccarani, or in the Casa dei Pigmei and Tempio di Iside in Pompeii (Versluys 2002: nos. 19, 61, 62), and in several of the landscapes catalogued by Versluys (2002). Sometimes two tower houses are depicted with a bridge between them. Such bridges are not preserved archaeologically but modern parallels can still be found in Yemen and occasionally in Egypt today (Lehmann 2013: 14, fig. 27).

A ground plan of a possible tower house is known from Papyrus Oxyrhynchus XXIV 2406 (fig. 3), dated to the second century AD. The drawing shows a small building with courtyard; though not certainly a tower house, it does have the typical staircase with pillar (F. Arnold 2003: 182-185).

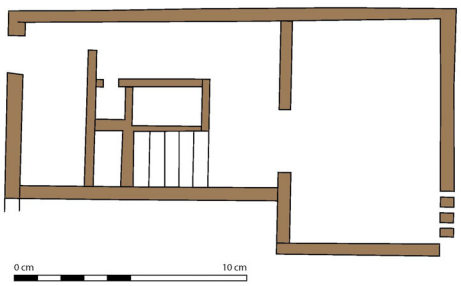

Figure 3. Drawing of the ground plan of a possible tower house, based on a representation in Papyrus Oxyrhynchus XXIV 2406, second century CE.

In what is now Ethiopia, a series of third-century CE monolithic tomb-stelae (sometimes referred to as obelisks) from the civilization of Axum were excavated (Krencker 1913; Weber 1914: 254; Leiermann 2009: 27). Although tower houses themselves have not been excavated in the region (but in neighboring Eritrea, see F. Arnold 2003: 176), the front faces of these large stelae look surprisingly similar to the facades of Egyptian tower houses. The excavators interpreted the representations on the stelae as the facades of palaces (Krencker 1913). The largest stelae stand 25 to 33 meters in height and show up to nine stories above the ground floor, remarkably similar to the tallest preserved tower houses at Karanis and to modern tower houses in Yemen. Most stelae show other typical details of tower houses as well, such as wooden beams in the masonry, sloping walls that widen at the base, and a general absence of windows in the ground floor except directly under the ceiling. These stelae were perhaps influenced by early Yemeni tower houses, as discussed below.

Written sources

Pre-Ptolemaic written sources for tower houses are difficult to identify as tower houses do not seem to have been distinguished from houses in general (termed *pr* or ḥ), although high, tower-like buildings are mentioned in the Ptolemaic first story of Setne (Goldbrunner 2006: 21-22, pl. 5) and in the Late Period story of Petesis (Vittmann 1998: 133). Only from the early Ptolemaic Period is the word πύργος (*pyrgos*) documented in papyri in specific reference to tower houses, a term used until Byzantine times (Luckhard 1914: 71-73; Weber 1914: 252).

Classical authors such as Herodotus and Diodorus mention tower houses in their descriptions of their travels. Herodotus reports in *The Histories* (II.95; trans. Godley 1920), in the fifth century BCE, that in Egypt the inhabitants of tower houses slept on the roofs to escape the mosquitoes. That people used the roofs for sleeping is confirmed in Papyrus Giessen 67 from the first half of the second century CE (Nowicka 1970: 60). Diodorus Siculus, writing in the first century BCE, mentions Egyptian houses of four and five stories in Diospolis Magna (i.e., Thebes) (*Bibliotheca historica* I.45; trans. Murphy 1985). A seven-story building (οἰκία ἑπτὰ σντεγός) at Hermopolis is mentioned in Papyrus Oxyrhynchus 34, 2719, of the third century CE (Bowman 1986: 146). Otherwise, legal documents occasionally mention different rooms of houses and their functions (F. Arnold 2003: 134-138).

Archaeology and chronological development

A large number of Late Period, Ptolemaic, and Roman tower houses have been excavated, especially in the Nile Delta and Fayum, although some are also known from the Nile Valley. Particularly in the Delta, levels above the foundations or ground floors are rarely preserved due to the actions of the *sebakhin* (those who dig up ancient mud brick for use as fertilizer), who removed massive amounts of earth, for use as fertilizer, from archaeological sites in the nineteenth and early twentieth centuries (Bailey 1999: 211-213). The ground plans of the excavated structures are square, rectangular, or L-shaped, paralleling shapes already seen in the house models and which are still seen in tower houses in Yemen today (F. Arnold 2003: 183, fig. 113).

Archaeology helps elucidate the development of the Egyptian tower house over time. The earliest excavated examples of Egyptian tower houses date to the end of the Third Intermediate Period at el-Ashmunein,

where the shift towards houses with much wider walls can be seen in the archaeological stratigraphy (across excavation levels 3 and 1b, Spencer 1996b: 216, 219). Similar changes can be found at Elephantine (Krekeler 1996: 109; F. Arnold 2015: 160, fig. 7.5) and Karnak (Lauffray 1995; Masson 2007, 2014). It seems that the next step in their architectural development was a foundation divided into three rectangular compartments, as found in buildings of probably Persian date (ca. 525 – 404 BCE) from Tell el-Dabaa (Lehmann 2021: 313-314). Thereafter, these rectangular spaces were subdivided into smaller square or rectangular compartments, and the typical casemate foundation evolved (fig. 4). This brought advantages in terms of the conservation of labor and materials, as the compartments were filled with soil or rubble instead of solid brick. Earlier houses were often built standing separately, while later they more often abutted other buildings.

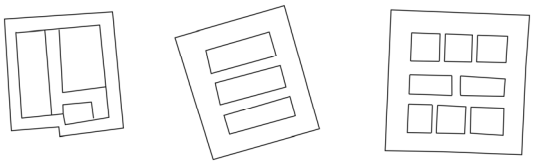

Figure 4. Chronological development of the casemate foundation in Egypt: earliest at left, more recent at right.

Excavated examples of casemates deriving from different building types from Late Period levels are known mainly in the Delta (Table 1).

Table 1. Sites of known Late Period tower houses, or their foundations.

Site	Source
Kom Firin	N. Spencer (2014b)
Naukratis	A. J. Spencer (2011); Thomas and Villing (2013); Thomas et al. (2013); Thomas (2015)
Buto	Hartung et al. (2003); Hartung et al. (2007); Hartung et al. (2009); Ballet et al. (2011); Marouard (2014)
Sais	P. Wilson (2006, 2011)
Tell el-Muqdam	Redmount and Friedman (1993, 1997)
Kom el-Ahmar	Kenawi ed. (2019)
Tell el-Balamun	A. J. Spencer (1996a, 1999a, 2004); Spencer and Herbich (2006)
Tell Tebilla	Mumford (2002, 2013)
Mendes	K. Wilson (1982); Redford (2005, 2010)
Tanis	Leclère (2008: 447-449); Montet (1933, 1942); Brissaud and Zivie-Coche (1998, 2000)
Tell Iswid	Midant-Reynes and Buchez (2014)
Nebesheh	Petrie (1888)
Defenneh	Petrie (1888); Leclère and Spencer (2014)
Tell el-Dabaa	Lehmann (2021)
Bubastis	Lange (2011); Lange-Athinodorou (fc.)
Tukh el-Qaramus	Snape (1986: 17-27)
Tell Retaba	Rzepka et al. (2011); Rzepka et al. (2015); Rzepka et al. (2017)
Tell el-Maskhuta	Holladay (1982, 2004); Paice et al. (1996)
Tell Ghaba	Fuscaldo and Lupo (2007); Herbich (2013); Lupo ed. (2016)
Tell el-Herr	Valbelle and Abd el-Maksoud (2007); Marchi (2014a, 2014b); Defernez et al. (2017)

In the Ptolemaic Period the increase in population led to the foundation of new cities in the Fayum and the repopulation of abandoned settlements in the Delta (Lehmann 2021: 43-47). At this time casemate structures were often built with vaulted basements that were used as cellars. Entrances of the houses were therefore mainly erected in the first floor, with staircases leading up to them. This remained the case in the Roman Period.

Ptolemaic tower houses were often built with surrounding annexes, not found in earlier times, containing silos, ovens, or stables (Boak and Peterson 1931; Krekeler 1996; Fassbinder, Kühne, and Flossmann-Schütze 2015). Some of the best-preserved examples of tower houses derive from the Ptolemaic Period and still have upper stories preserved at sites such as Karanis (Boak and Peterson 1931) and Tebtunis (Gallazi and Hadji-Minaglou 2000; Rondot 2004; Hadji-Minaglou 2007).

Most of the Late Period settlements listed above continued to be inhabited in the Ptolemaic Period, thus preserving tower houses from the Late Period. Resettled sites with Ptolemaic tower houses can be found in the Delta at, for example, Kom el-Gir and Mit Ya'ish. In the Fayum, better preserved examples can be found, and some tower houses are known from the Nile Valley (see Table 2). Roman Period examples are known from Palestine.

Table 2. Sites of known Ptolemaic and Roman Period tower houses, or their foundations.

Site	Source
Kom el-Gir	Schiestl and Herbich (2013); Schiestl (2013)
Mit Ya'ish	Farid (1966)
Qasr Qarun	Davoli (1998: 301-323)
Soknopaiou Nesos	Boak (1935)
Karanis	Boak and Peterson (1931); Davoli (1998: 73-116)
Tebtunis	Gallazi and Hadji-Minaglou (2000); Rondot (2004); Hadji-Minaglou (2007)
Bacchias	Piacentini (1996); Davoli (1998: 117-137)
Philadelphia	Viereck and Zucker (1926); Viereck (1928); Nowicka (1969); Davoli (1998: 139-148)
Kom Medinet Ghoran	Davoli (1998: 217-222)
Oxyrhynchus	Petrie (1925); F. Arnold (2003: 174)
Memphis	Petrie (1909: pl. XXVII); Belova (2012); Belova and Ivanov (2016)
Tuna el-Gebel	Flossmann-Schütze (2011, 2014); Fassbinder, Kühne, and Flossmann-Schütze (2015)
Luxor	Abdul-Qader (1968); Grossmann (1973)
Medinet Habu	Hölscher (1934; 1954: 38-39)
Edfu	Alliot (1933: 12-14; 1935); Bruyère et al. (1937); Michałowski et al. (1938); Michałowski et al. (1950)
Elephantine	Krekeler (1996); F. Arnold (2003)
Syene	Müller (2012)
Philae	Haeny (1985: 214-215)
Tafeh	Weigall (1907: 64, pl. XXIII.1)
Palestine	Hirschfeld (1998); F. Arnold (2003: 174)

In Late Antiquity and the Medieval Period, changes occurred in the development of tower houses in Egypt and Sudan (described in detail, and with further literature, by F. Arnold 2003: 174-175). Pan-bedded brickwork fell out of use, the outer walls were built straight rather than sloping, and the basements were not employed as cellars so that the entrances were once again found at street level. The tower house was now often integrated into monasteries or hermitages. While the Islamic courtyard-house slowly superseded the tower house (F. Arnold 2003: 190), scattered examples could still be found in later times, for example at Rosetta and Dakhla, and in Suakin (Sudan), where examples dating from the

sixteenth to the nineteenth centuries were documented (Lézine and Abdul Tawab 1972; Greenlaw 1995; F. Arnold 2003: 176; Schijns 2008).

Many travelers to Egypt in the eighteenth and nineteenth centuries saw not only contemporary tower houses but also ancient examples that had not yet been leveled, at sites such as Esna, visited by Denon in 1802 (fig. 5; Denon 1802), and Bubastis, recorded by Naville in the 1880s (fig. 6; Naville 1891).

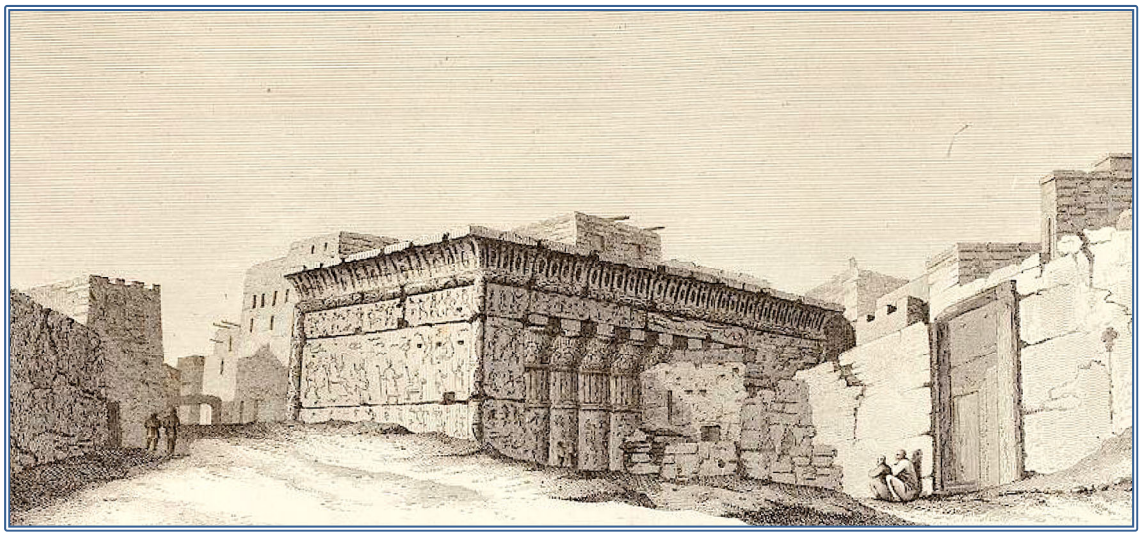

Figure 5. Tower houses in the background of the Esna Temple, drawn by Denon in 1802.

Figure 6. Remains of tower houses in Bubastis in 1880.

Modern parallels and trade links

The distribution of known tower houses, plotted on a map, shows their spread across the Nile Delta and Valley, the southern Arabian Peninsula, in what is today Saudi Arabia, Yemen, and Oman, and in Ethiopia, with the above-mentioned representations on Axumite stelae. It becomes clear that these places were all linked anciently through the incense trade route across the Red Sea and through the Nile Valley (Groom 1981; Singer 2007; Willeitner 2013).

The oldest confirmed traces of tower houses in the Arabian Peninsula date to around 800 BCE (F. Arnold 2003: 176-177; Leiermann 2009: 24-26). Tower houses are still built today in many countries of the Middle East such as Yemen, Oman, Saudi Arabia, and Morocco, either with mud bricks or with rammed earth (*jalus*) (see Table 3, which sorts known tower houses by time period). Numerous variants and local styles are apparent (Lehmann 2013: 19-24). Some of the modern tower houses are still remarkably similar in some respects to the tower houses of ancient Egypt. This is especially the case in southwestern Saudi Arabia, particular Najran and the region of the Hadramaut in Yemen, where the tower houses of Shibam, Sanaa, and Tarim are located. A detailed comparison has to take into account that the modern Islamic societies of Yemen and Saudi Arabia are of course fundamentally different from those of Pharaonic Egypt. Nevertheless study, especially of the upper stories and the arrangement of the roofs, can give interesting insights into features no longer preserved in the ancient houses (Lehmann 2013; 2021: 605-615). In addition, the ways in which people use, and interact with, architecture, as well as technical details of building methods and materials, can be explored.

Table 3. Sources of known tower houses by time period.

Tower House Sources	Third Inter-mediate Period	Late Period	Ptolemaic Period	Roman Period	Late Antiquity	Medieval Period	1800 – 1900 CE	Modern
Depictions	Nimrud tile	House models	House models, Nile mosaic of Palestrina	Herculaneum, Pompeii, Papyrus Oxyrhynchus XXIV 2406			Denon (1802)	
Texts			Herodotus, Diodorus	Papyrus Oxyrhynchus XXXIV 2719				
Architectural remains excavated in Egypt and Nubia	Ashmunein, Lisht, Karnak	Throughout the Delta	Delta, Fayum, Nile Valley	Delta, Fayum, Nile Valley	Medinat Habu, Edfu, Philae	Akoris, Edfu, Thebes, Esna, Nubia	Esna, Thebes, Rosetta	
Architectural remains and functional architecture in Arabia and Eritrea	Shabwa, Raybun, Tamna, and Hajar Bin Humeid in Yemen and Saudi Arabia	Saudi Arabia and Yemen	Saudi Arabia and Yemen	Axum, Eritrea, Saudi Arabia, and Yemen	Saudi Arabia and Yemen	Saudi Arabia and Yemen	Saudi Arabia and Yemen	Saudi Arabia, Yemen, Oman, Morocco

Why Tower Houses Developed

Various explanations for the appearance of tower houses in Egypt have been offered. One common explanation is that the inundation of the Nile was higher in the Late Period, which resulted in the placement of buildings on a higher platform as protection against the flood and moisture (Nowicka 1969: 52; Szafranski 2003; Małecka-Drozd 2012: 81-82). This reasoning weakens, however, when one considers that historically settlements tended to be built in areas where a normal inundation would not reach the dwellings. Mud brick as a construction material is not water-resistant without further coating. A mud-brick building would not be able to withstand lengthy exposure to water, and the damage to the foundation would result in the building's collapse. The tower houses in the Nile Valley and the Fayum were not as adversely affected by the floods as were those in the Delta, and yet they had similar massive foundations.

An alternative explanation for the presence of tower houses takes into account the increase in population in the later periods of Egyptian history, especially in the cities, the lack of space perhaps forcing people to build taller houses (Butzer 1976: 81-98; Kraus 2004: 233; Müfid 1932: 1-3; Ricke 1932: 4). This argument rests on three main assumptions: that the tower house was mainly a "city" form; that there was a lack of available space for building; and that land was more expensive in cities. Scholars have often considered buildings with several stories to have been mainly a city phenomenon, with houses in villages being larger and consisting of just one or two stories (Badawy 1968: 15-35; Nowicka 1969: 105-139; Roik 1988: 51; D. Arnold 1994: 100; Busch-Sperveslage 1999: 13). This differentiation is difficult to test, however, as complete settlements in Egypt are rarely excavated and upper stories are often not preserved; therefore reconstruction of house and inhabitant numbers are merely speculative. From the Late Period onward it can be shown that tower houses were built in larger and smaller settlements alike (Nowicka 1970: 56). Similarly, in modern Yemen tower houses are built in both cities and villages (Leiermann 2005: 4).

Lack of space might indeed have been a factor in some places such as the island of Elephantine. It cannot, though, have been the only factor, as tower houses were built in areas where there seems to have been minimal restriction of space, for example at Syene and Buto, and also Tell el-Dabaa, where a large area of a formerly abandoned settlement was reoccupied using tower houses. That a higher population led to an increase in prices of land, with some texts indeed showing that the prices in cities were higher than in the countryside, would conceivably have made houses with more stories a popular choice (Luckhard 1914: 40; Maehler 1983: 120-121).

A further explanation for the development of the tower house in Egypt relates to its potentially defensive nature. From the end of the New Kingdom onward, more and more cities began to have perimeter walls, and dwellings were more often built inside temple enclosures, suggesting a growing need for defence at a time when foreign powers were increasingly conquering Egypt (F. Arnold 2003: 177, 190; Nowicka 1970: 57; Assmann 1996: 435; Leiermann 2009: 4). The compact and massive character of the tower house, combined with the lack of windows in the basement, suggests it was more easily defendable than the tripartite or courtyard house of earlier times. Tower houses were also advantageous for storing larger volumes of goods (F. Arnold 2003: 177). It is noteworthy, too, that the defensive aspect of tower houses seems to have played a role in their functionality in modern Yemen (Leiermann 2009: 4).

Climatic conditions may constitute an additional potential factor in the development of Egyptian tower houses, as the high rooms are conducive to a more pleasant room-temperature (as paralleled, for example, in modern Yemen: Leiermann 2009: 91), although dramatic climatic change is not attested in the period in which the houses become popular.

Finally, it can be posited that the tower house was a natural outcome of gradual technological advances that may have allowed for the vertical growth of dwellings over time.

Already in the Middle Kingdom, and especially in the New Kingdom, examples of two- and sometimes three-story houses are known (Spence 2004). Unfortunately, the poor preservation of upper stories impedes the study of these buildings, but the step from buildings with two or three floors in the New Kingdom to four or five in the Late Period would not be so big.

In general, it can be said that no one reason alone is likely to have influenced the evolution of the tower house, but that it was rather the result of a combination of factors. Increasing population and the ability to build taller buildings, along with the need for better defence, seem generally to be the most convincing factors.

Bibliographic Notes

The analysis of Ptolemaic and Roman texts mentioning houses and specific terms related to them was already the subject of research early in the twentieth century (Luckhard 1914), followed later by Nowicka (1969, 1970) and Traunecker (1987). Detailed information on excavated tower houses and their publications is given in Tables 1 and 2, above. Felix Arnold (2003) gives an extensive overview of tower-house architecture, with examples at Elephantine and Karanis, and analyzes their development until Medieval times, as well as their distribution within the Near East. The first conference on tower houses took place in 2014; the conference proceedings (Marchi ed. 2014) sum up the state of research at that time. Further in-depth analysis was achieved for the Late Period by Lehmann (2021) and for the Ptolemaic Period by Marouard (2010).

References

Abd el-Maksoud, Mohamed, and Dominique Valbelle
2005 Tell Héboua-Tjarou: L'apport de l'épigraphie. *Révue d'Égyptologie* 56, pp. 1-22.
Abdul-Qader, Muhammad
1968 Preliminary report on the excavations carried out in the temple of Luxor: Seasons 1958 – 1959 and 1959 – 1960. *Annales du Service des Antiquités de l'Égypte* 60, pp. 227-279.
Alliot, Maurice
1933 *Rapport sur les Fouilles de Tell Edfou (1932)*. Fouilles de l'Institut français d'archéologie orientale 9(2). Cairo: Institut français d'archéologie orientale.
1935 *Rapport sur les Fouilles de Tell Edfou (1933)*, Fouilles de l'Institut français d'archéologie orientale 10(2), Cairo: Institut français d'archéologie orientale.
Arnold, Dieter
1994 *Lexikon der ägyptischen Baukunst*. Zurich: Artemis and Winkler.
Arnold, Felix
1989 A study of Egyptian domestic buildings. *Varia Aegyptiaca* 5, pp. 75-93.
1996 Settlement remains at Lisht-Nord. In *Haus und Palast im alten Ägypten*, Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Instituts 14, ed. Manfred Bietak, pp. 13-21. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
2003 *Elephantine XXX: Die Nachnutzung des Chnumtempelbezirks: Wohnbebauung der Spätantike und des Frühmittelalters*. Archäologische Veröffentlichungen, Deutschen Archäologisches Institut, Abteilung Kairo 116. Mainz: Philipp von Zabern.

2015 Clean and unclean space: Domestic waste management at Elephantine. In *Household studies in complex societies: (Micro) Archaeological and textual approaches*, University of Chicago Oriental Institute Seminars 10, ed. Miriam Müller, pp. 151-168. Chicago: Oriental Institute of the University of Chicago.

Assmann, Jan
1996 *Ägypten: Eine Sinngeschichte*. Munich: Hanser.

Badawy, Alexander
1968 *A history of Egyptian architecture: The Empire (the New Kingdom), from the Eighteenth Dynasty to the end of the Twentieth Dynasty 1580 – 1085 B.C.* Berkeley and Los Angeles: University of California Press.

Bailey, Donald M.
1999 Sebakh, sherds and survey. *Journal of Egyptian Archaeology* 85, pp. 211-218.

Ballet, Pascale, Guy Lecuyot, Grégory Marouard, Martin Pithon, and Bérangère Redon
2011 Et la Buto tardive? *Bulletin de l'Institut français d'archéologie orientale* 111, pp. 75-100.

Belova, Galina
2012 Memphis: Correlation between written sources and archaeological data. In *Achievements and problems of modern Egyptology: Proceedings of the international conference held in Moscow on September 29 – October 2, 2009*, ed. Galina Belova and Sergej Ivanov, pp. 23-39. Moscow: Russian Academy of Sciences.

Belova, Galina, and Sergej Ivanov
2016 Kom Tuman: Season 2016. *Egypt and Neighbouring Countries, Online Journal* 4, pp. 23-30.

Bietak, Manfred
1996 Zum Raumprogramm ägyptischer Wohnhäuser des Mittleren und des Neuen Reiches. In *Haus und Palast im alten Ägypten*, Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Instituts 14, ed. Manfred Bietak, pp. 23-43. Vienna: Österreichische Akademie der Wissenschaften.
2010 Houses, palaces and development of social structure in Avaris. In *Cities and urbanism in Egypt*, ed. Manfred Bietak, Ernst Czerny, and Irene Forstner-Müller, pp. 11-68. Vienna: Österreichische Akademie der Wissenschaften.

Boak, Arthur E. B.
1935 *Soknopaiou Nesos: The University of Michigan excavations at Dimê in 1931-32*. University of Michigan Studies, Humanistic Series 39. Ann Arbor: University of Michigan Press.

Boak, Arthur E.B., and Enoch Peterson
1931 *Karanis: Topographical and architectural report of excavations during the seasons 1924-28*. University of Michigan Studies, Humanistic Series 25. Ann Arbor: University of Michigan Press.

Bowman, Alan K.
1986 *Egypt after the pharaohs, 332 BC – AD 642: From Alexander to the Arab conquest*. Berkeley: University of California Press.

Bowman, Alan K., Revel A. Coles, Nikolaos Gonis, Dirk Obbink, and Peter Parsons (eds.)
2007 *Oxyrhynchus: A city and its texts*. Graeco-Roman Memoirs 93. London: Egypt Exploration Society.

Brissaud, Phillippe, and Christiane Zivie-Coche
1998 *Tanis: Travaux récents sur le tell Sân el-Hagar: Mission française des fouilles de Tanis 1987 – 1997*. Paris: Noêsis.
2000 *Tanis: Travaux récents sur le tell Sân el-Hagar 2: Mission française des fouilles de Tanis 1997 – 2000*. Paris: Agnès Vienot.

Bruyère, Bernard, Jerzy Manteuffel, Kazimierz Michałowski, Jean Sainte Fare Garnot, and Charles Kuentz
1937 *Fouilles Franco-Polonaises, Rapports I: Tell Edfou 1937*. Cairo: Institut français d'archéologie orientale.

Busch-Sperveslage, Antje
1999 Hausmodelle im ptolemäisch-römischen Ägypten. In *Architektur, Struktur, Symbol: Streifzüge durch die Architekturgeschichte von der Antike bis zur Gegenwart*, Festschrift für Cord Meckseper zum 65. Geburtstag, ed. Maike Kozok, pp. 11-26. Petersberg: Imhof.

Butzer, Karl
1976 *Early hydraulic civilization in Egypt: A study in cultural ecology*. Chicago: University of Chicago Press.

Carrez-Maratray, Jean-Yves
2014 Les tours et maisons à tours sur la mosaïque de Palestrina. In *Les maisons-tours en Égypte durant la Basse Époque, les périodes Ptolémaïque et Romaine: Actes de la table-ronde de Paris, Université Paris-Sorbonne (Paris IV), 29 – 30 Novembre 2012,* Nehet 2: Revue numérique d'Égyptologie, ed. Séverine Marchi, pp. 1-8. Paris: Sorbonne; Brussels: Université Libre de Bruxelles.

Davies, Norman de Garis
1929 The town house in ancient Egypt. *Metropolitan Museum Studies* 1(2), pp. 233-255. New York: The Metropolitan Museum of Art.

Davoli, Paola
1998 *L'Archeologia Urbana nel Fayyum di età Ellenistica e Romana.* Missione Congiunta delle Università di Bologna e di Lecce in Egitto. Napoli: Generoso Procaccini.
2008 Archaeological research in Roman Soknopaiou Nesos: Results and perspectives. In *Tradition and transformation: Egypt under Roman Rule: Proceedings of the international conference, Hildesheim, Roemer- and Pelizaeus-Museum, 3 – 6 July 2008*, ed. Katja Lembke, Martina Minas-Nerpel, and Stefan Pfeiffer, pp. 53-77. Leiden: Brill.

Defernez, Catherine, Giorgio Nogara, Dominique Valbelle, Pascale Ballet, Louis Chaix, Nathalie Favry, Séverine Marchi, Julie Masquelier-Loorius, and Élodie Rotté
2017 *Tell el-Herr: Les niveaux de la fin du V^e^ et du IV^e^ siècle av. J.-C., Tome I: Un palais oriental à Migdol.* Paris: Presses de l'Université Paris-Sorbonne.

Denon, Dominique Vivant
1802 *Voyage dans la Basse et la Haute Égypte pendant les campagnes du Géneral Bonaparte.* 3 volumes. Cairo: Institut français d'archéologie orientale.

Farid, Shafik
1966 Rapport sommaire sur les fouilles du Service des Antiquités à Mit-Ya'ish. *Annales du Service des Antiquités de l'Égypte* 59, pp. 23-25.

Fassbinder, Jörg, Lena Kühne, and Mélanie Flossmann-Schütze
2015 The Hellenistic settlement of Tuna el-Gebel. *Archaeologia Polona* 53, pp. 276-280.

Flossmann-Schütze, Mélanie
2011 Grabungsbericht Tuna el-Gebel: Die Turmhäuser von Tuna el-Gebel: Zu Den Anlagen der ptolemäerzeitlichen Tempel- und Friedhofsverwaltung. *THOTs* 6, pp. 26-37.
2014 Les maisons-tours de l'association religieuse de Touna el-Gebel. In *Les maisons-tours en Égypte durant la Basse Époque, les périodes Ptolémaïque et Romaine: Actes de la table-ronde de Paris, Université Paris-Sorbonne (Paris IV), 29 – 30 novembre 2012,* Nehet 2, Revue numérique d'Égyptologie, ed. Séverine Marchi, pp. 9-31. Paris: Sorbonne; Brussels: Université Libre de Bruxelles.

Fuscaldo, Perla, and Silvia Lupo
2007 *Tell el-Ghaba I: A Saite settlement in North Sinai Egypt (Argentine Archaeological Mission 1995 – 2004).* Colleción Estudios 5. 2 volumes. Buenos Aires: Consejo Nacional Investigaciones Científicas Técnicas.

Gallazi, Claudio, and Gisèle Hadji-Minaglou
2000 *Tebtynis I: La Reprise des fouilles et le quartier de la chapelle d'Isis-Thermouthis.* Fouilles de l'Institut français d'archéologie orientale 42. Cairo: Institut français d'archéologie orientale.

Godley, Alfred D. (trans.)
1920 *Herodotus, with an English translation by A. D. Godley: Books I and II.* London: Heinemann; New York: Putnam's Sons.

Goldbrunner, Sara
2006 *Der Verblendete Gelehrte: Der Erste Setna-Roman (P. Kairo 30646),* Demotische Studien 13. Sommerhausen: Zauzich.

Goyon Jean-Claude, Jean-Claude Golvin, Claire Simon-Boidot, and Gilles Martinet
2004 *La construction pharaonique du Moyen Empire à l'époque gréco-romaine: Contexte et principes technologiques.* Paris: Picard.

Greenlaw, Jean-Pierre
1995 *The coral buildings of Suakin: Islamic architecture, planning, design, and domestic arrangements in a Red Sea port.* London and New York: Kegan Paul International.

Groom, Nigel
1981 *Frankincense and myrrh: A study of the Arabian incense trade.* Arab Background Series. London and New York: Longman; Beirut: Librairie du Liban.

Grossmann, Peter
1973 Eine vergessene frühchristliche Kirche beim Luxor-Tempel. *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* 29, pp. 167-181.

Hadji-Minaglou, Gisèle
2007 *Tebtynis IV: Les habitations à l'est du temple de Soknebtynis*. Fouilles de l'Institut français d'archéologie orientale 56. Cairo: Institut français d'archéologie orientale.
Haeny, Gerhard
1985 A short architectural history of Philae. *Bulletin de l'Institut français d'archéologie orientale* 85, pp. 197-233. Cairo: Institut français d'archéologie orientale.
Hartung, Ulrich, Pascale Ballet, Frédéric Béguin, Janine Bourriau, Peter French, Tomasz Herbich, Peter Kopp, Guz Lecuyot, and Anne Schmitt
2003 Tell el-Fara'in-Buto: 8. Vorbericht. In *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* 59, pp. 199-267. Berlin and New York: De Gruyter.
Hartung, Ulrich, Pascale Ballet, Frédéric Béguin, Janine Bourriau, Delphine Dixneuf, Angela von den Driesch, Peter French, Rita Hartmann, Tomasz Herbich, Chiori Kitagawa, Peter Kopp, Guz Lecuyot, Marie-Dominique Nenna, Anne Schmitt, Gonca Şenol, and Ahmet Şenol
2007 Tell el-Fara'in – Buto: 9. Vorbericht. In *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* 63, pp. 97-119. Berlin and New York: De Gruyter.
Hartung, Ulrich, Pascale Ballet, Andreas Effland, Peter French, Rita Hartmann, Tomasz Herbich, Heike Hoffmann, Estelle Hower-Tilmann, Chiori Kitagawa, Peter Kopp, Wiebke Kreibig, Guy Lecuyot, Sandra Lösch, Grégory Marouard, Andreas Nerlich, Martin Pithon, and Albert Zink
2009 Tell el-Fara'in – Buto: 10. Vorbericht. In *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* 65, pp. 83-190. Berlin and New York: De Gruyter.
Helck, Wolfgang
1977 Haus. In *Lexikon der Ägyptologie*, Vol. II (columns 1055-1061), ed. Wolfgang Helck and Wolfhart Westendorf. Wiesbaden: Harrassowitz.
Herbich, Tomasz
2013 "Geophysical" survey at Tell el-Ghaba, 2010. *Polish Archaeology in the Mediterranean* 22, pp. 121-130.
Hirschfeld, Yizhar
1998 Early Roman manor houses in Judea and the site of Khirbet Qumran. *Journal of Near Eastern Studies* 57, pp. 161-189.
Holladay, Jr., John S.
1982 *Cities of the Delta III: Tell el-Maskhuta*, Preliminary Report on the Wadi Tumilat Project 1978-1979, ARCE Reports 6. Malibu: Undena Publications.
2004 Judaeans (and Phoenicians) in Egypt in the late seventh to sixth centuries B.C. In *Egypt, Israel, and the ancient Mediterranean world: Studies in Honor of Donald B. Redford*, Probleme der Ägyptologie 4, ed. Gary N. Knoppers and Antoine Hirsch, pp. 405-437. Leiden: Brill.
Hölscher, Uvo
1934 *The excavation of Medinet Habu, Volume I: General views and plans*. Oriental Institute Publications 21. Chicago: The University of Chicago Press.
1954 *The excavation of Medinet Habu, Volume V: Post-Ramesside remains*. Oriental Institute Publications 66. Chicago: The University of Chicago Press.
Husselman, Elinor
1979 *Karanis excavations of the University of Michigan in Egypt 1928 – 1935, topography and architecture: A summary of the reports of the director, Enoch E. Peterson*. Kelsey Museum of Archaeology Studies 5. Ann Arbor: The University of Michigan Press.
Kemp, Barry
1977 The palace of Apries at Memphis. *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* 33, pp. 101-108.
Kenawi, Mohamed (ed.)
2019 Kom al-Ahmer – Kom Wasit I: Excavations in the Metelite Nome, Egypt, ca. 700 BC – AD 1000. Oxford: Archaeopress.
Kraus, Jürgen
2004 *Die Demographie des Alten Ägypten: Eine Phänomenologie anhand altägyptischer Quellen*. Dissertation: Georg-August-Universität, Göttingen. http://webdoc.sub.gwdg.de/diss/2004/kraus/index.html
Krekeler, Achim
1996 Stadtgrabung am Westkom von Elephantine/Wohnbauten des 1. Jahrtausends v. Chr. In *Haus und Palast im alten Ägypten,* Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Instituts 14, ed. Manfred Bietak, pp. 107-115. Vienna: Österreichische Akademie der Wissenschaften.

Krencker, Daniel
1913 *Ältere Denkmäler Nordabessiniens: Deutsche Aksum-Expedition*. Berlin: Reimer.
Lacovara, Peter
1997 *The New Kingdom royal city*. New York: Routledge.
Lange, Eva
2011 The EES Amelia Edwards Projects Fund: Tell Basta. *Egyptian Archaeology* 39, pp. 7-9.
Lange-Athinodorou, Eva
fc. Preliminary report on the excavation in the precinct of the temple of Bastet in Bubastis / Tell Basta (Area A), seasons 2009 – 2017. In *Proceedings of the Delta Survey Workshops: Alexandria 2017 and Mansoura 2019*, ed. Penelope Wilson, A. Wahby, and M. Seguiny. Mansoura University Research Papers.
Lauffray, Jean
1995 Le rempart de Thoutmosis III à l'est du Lac Sacré. *Cahiers de Karnak* X, pp. 301-341.
Leclère, François
2008 *Les villes de Basse Égypte au I^er^ millénaire av. J.-C.: Analyse archéologique et historique de la topographie urbaine*. 2 volumes. Bibliothèque d'Étude 144. Cairo: Institut français d'archéologie orientale.
Leclère, François, and A. Jeffrey Spencer
2014 *Tell Dafana reconsidered: The archaeology of an Egyptian frontier town*. Research publication British Museum 199. London: The British Museum.
Lehmann, Manuela
2013 Skylines, bridges and mud in the Delta and elsewhere: A comparison of Egyptian and Yemeni tower houses. *Proceedings of the Delta Survey Workshop, 22-23 March 2013, British Council, Cairo*. Cairo: The Ministry of State for Antiquities and the Egypt Exploration Society.
2021 *Tell el-Dab'a XXV: Die materielle Kultur der Spät- und Ptolemäerzeit im Delta Ägyptens am Beispiel von Tell el-Dab'a*. Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Instituts 40. Vienna: Österreichische Akademie der Wissenschaften.
Lehmann, Manuela, and Nigel Tallis, with Duygu Camurcuoglu and Lucia Pereira-Pardo
2019 Esarhaddon in Egypt: An Assyrian-Egyptian battle scene on glazed tiles from Nimrud. *British Museum Studies in Ancient Egypt and Sudan* 24, pp. 1-102.
Leiermann, Tom
2005 Die Geschichte des südarabischen Turmhauses. *Jemen-Report: Mitteilungen der Deutsch-Jemenitischen Gesellschaft* e.V. 36(2), pp. 4-13.
2009 *Shibam: Leben in Lehmtürmen*. Jemen-Studien 18. Wiesbaden: Reichert.
Lézine, Alexandre, and Abd al-Raḥmāan Abdul Tawab
1972 Introduction a l'étude des maisons anciennes de Rosette. *Annales Islamologiques* 10, pp. 149-205, pl. 34-54.
Luckhard, Fritz
1914 *Das Privathaus im ptolemäischen und römischen Ägypten*. Giessen: Hof- und Universitäts dr. O. Kindt.
Lupo, Silvia (ed.)
2016 *Tell el-Ghaba III: A Third Intermediate-early Saite Period site in the Egyptian eastern* Delta; with the collaboration of Claudia Kohen. BAR International Series 2756. Oxford: BAR Publishing.
Maehler, Herwig
1983 Häuser und ihre Bewohner im Fayum in der Kaiserzeit. In *Das römisch-byzantinische Ägypten: Akten des internationalen Symposions, Trier, 26. – 30. September 1978,* Aegyptiaca Treverensia II, ed. Günter Grimm, Heinz Heinen, and Erich Winter, pp. 119-137. Mainz: Philipp von Zabern.
Małecka-Drozd, Natalia
2012 The emergence and development of architecture on the casemate foundation platforms in the Nile Delta. *Recherches Archéologiques Nouvelle Series* 4, pp. 69-96.
Marchi, Séverine
2014a Les maisons-tours et édifices sur soubassement à caissons de Tell el-Herr. In *Les maisons-tours en Égypte durant la Basse Époque, les périodes Ptolémaïque et Romaine: Actes de la table-ronde de Paris, Université Paris-Sorbonne (Paris IV), 29 – 30 novembre 2012,* Nehet 2, Revue numérique d'Égyptologie, ed. Séverine Marchi, pp. 85-104. Paris: Sorbonne; Brussels: Université Libre de Bruxelles.
2014b *L'habitat dans les forteresses de Migdol (Tell el-Herr) durant les V^e^ et IV^e^ siècles avant J.-C.: Étude archéologique*. Paris: PUPS.

Marchi, Séverine (ed.)
2014 *Les maisons-tours en Égypte durant la Basse Époque, les périodes Ptolémaïque et Romaine: Actes de la table-ronde de Paris, Université Paris-Sorbonne (Paris IV), 29 – 30 novembre 2012,* Nehet 2, Revue numérique d'Égyptologie. Paris: Sorbonne; Brussels: Université Libre de Bruxelles.

Marouard, Grégory
2010 *Archéologie, architecture et images de la maison urbaine d'Époque Hellenistique et Romaine dans la chôra Égyptienne.* Unpublished PhD dissertation: Université de Poitiers.
2012 Les quartiers d'habitat dans les fondations et les refondations lagides de la chôra égyptienne. Une révision archéologique, ed. Pascale Ballet, *Grecs et Romains en Égypte. Territoires, espaces de la vie et de la mort, objets de prestige et d' quotidien, Actes du Colloque de la Société française d'archéologie classique, 15 mars 2008*, Bibliothèque d'Étude 157. Cairo: Institut français d'archéologie orientale.
2014 Maisons-tours et organisation des quartiers domestiques dans les agglomérations du Delta: L'exemple de Bouto de la Basse Époque aux premiers Lagides. In *Les maisons-tours en Égypte durant la Basse Époque, les périodes Ptolémaïque et Romaine: Actes de la table-ronde de Paris, Université Paris-Sorbonne (Paris IV), 29 – 30 novembre 2012,* Nehet 2, Revue numérique d'Égyptologie, ed. Séverine Marchi, pp. 105-133. Paris: Sorbonne; Brussels: Université Libre de Bruxelles.

Masson, Aurélia
2007 *Le quartier des prêtres du temple de Karnak: Rapport préliminaire de la fouille de la Maison VII.* In *Cahiers de Karnak XII,* fasc. 2, Études d'égyptologie 8, pp. 593-655. Cairo: Institut français d'archéologie orientale; Paris: Soleb.
2014 Offering magazines on the southern bank of the Sacred Lake in Karnak: The Oriental complex of the Twenty-fifth-Twenty-sixth Dynasty. In *Thebes in the first millennium BC*, ed. Elena Pischikova, Julia Budka, and Kenneth Griffin, pp. 587-602. Newcastle: Cambridge Scholars Publishing.

Meyboom, Paul
1995 *The Nile mosaic of Palestrina: Early evidence of Egyptian religion in Italy.* Religions in the Graeco-Roman World 121. Leiden: Brill.

Michałowski, Kazimierz, Joseph de Linage, Jerzy Manteuffel, and Jean Sainte Fare Garnot
1938 *Fouilles Franco Polonaises, Rapports II: Tell Edfou 1938*. Cairo: Institut français d'archéologie orientale.

Michałowski, Kazimierz, Christiane Desroches, Joseph de Linage, Jerzy Manteuffel, and Stanislas Żejmo-Żejmis
1950 *Fouilles Franco Polonaises, Rapports III: Tell Edfou 1939.* Cairo: Institut français d'archéologie orientale.

Midant-Reynes, Béatrix, and Nathalie Buchez
2014 *Tell el-Iswid 2006 – 2009*. Fouilles de l'Institut français d'archéologie orientale 73. Cairo: Institut français d'archéologie orientale.

Montet, Pierre
1933 *Les nouvelles fouilles de Tanis (1929 – 1932).* Publications de la Faculté des Lettres de Strasbourg 10. Paris: Les Belles Lettres.
1942 *Tanis: Douze années de fouilles dans une capitale oubliée du Delta égyptien.* Bibliothèque Historique. Paris: Payot.

Müfid, Arif
1932 *Der Stockwerkbau der Griechen und Römer.* Berlin: De Gruyter.

Müller, Wolfgang
2012 Domestic structures in Graeco-Roman Syene (modern Aswan). In *Städtisches Wohnen im östlichen Mittelmeerraum, 4. Jh. v. Chr. - 1. Jh. n. Chr.: Akten des Internationalen Kolloquiums v. 24. – 27. Oktober 2007 an der Österreichischen Akademie der Wissenschaften*, ed. Sabine Ladstätter and Veronika Scheibelreiter, pp. 429-448. Vienna: Österreichische Akademie der Wissenschaften.

Mumford, Gregory
2002 Reconstructing the ancient settlement at Tell Tebilla (East Delta). *Bulletin of the American Research Center in Egypt* 182, pp. 18-23.
2013 A Late Period riverine and maritime port town and cult center at Tell Tebilla (Ro-nefer). *Journal of Ancient Egyptian Interconnections* 5(1), pp. 38-67.

Murphy, Edwin (tr.)
1985 *Diodorus "On Egypt": Bibliotheca historica, Book 1.* Translated by Edwin Murphy. Jefferson: McFarland.

Naville, Edouard
1891 *Bubastis (1887 – 1889).* Eighth Memoir of The Egypt Exploration Fund. London: Kegan Paul, Trench, Trübner and Co.

Nowicka, Maria
1969 *La maison privée dans l'Égypte ptolémaique*. Bibliotheca Antiqua 9. Wrocław: Polska Akademia nauk.
1970 À propos des tours: PYRGOI dans les papyrus grecs. *Archeologia* 21, pp. 53-61.
Oren, Eliezer
1984 A new fortress on the edge of the Eastern Nile Delta. *Bulletin of the American Schools of Oriental Research* 256, pp. 7-44.
Paice, Patricia, John Holladay Jr., and Edwin Brock
1996 The Middle Bronze Age/Second Intermediate Period houses at Tell el- Maskhuta. In *Haus und Palast im alten Ägypten,* Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Instituts 14, ed. Manfred Bietak, pp. 159-173. Vienna: Österreichische Akademie der Wissenschaften.
Pernigotti, Sergio
2010 Archaeological research in Roman Bakchias: Results and perspectives. In *Tradition and transformation: Egypt under Roman rule: Proceedings of the international conference, Hildesheim, Roemer- and Pelizaeus-Museum, 3 – 6 July 2008*, ed. Katja Lembke, Martina Minas-Nerpel, and Stefan Pfeiffer, pp. 299-311. Leiden: Brill.
Pernigotti, Sergio, and Mario Capasso
1998 *Bakchias V: Rapporto Preliminare della Campagna di Scavo del 1997*. Pisa: Istituti editoriali e poligrafici internazionali.
Petrie, William Matthew Flinders
1888 *Tanis, Part II: Nebesheh (Am) and Defenneh (Tahpanhes)*. Fourth Memoir of The Egypt Exploration Fund. London: Trubner & Co.
1909 *Memphis I*. British School of Archaeology in Egypt 15. London: British School of Archaeology in Egypt.
1925 *Tombs of the courtiers and Oxyrhynkhos*. British School of Archaeology in Egypt 37. London: British School of Archaeology in Egypt.
Piacentini, Patrizia
1996 Excavating Bakchias. In *Archaeological research in Roman Egypt: The proceedings of the Seventeenth Classical Colloquium of the Department of Greek and Roman Antiquities, British Museum, held on 1 – 4 December, 1993*, Journal of Roman Archaeology Supplementary Series 19, ed. Donald M. Bailey, pp. 57-60. Ann Arbor: Cushing-Malloy.
Redford, Donald B.
2005 Mendes: City of the ram-god. *Egyptian Archaeology* 26, pp. 8-12.
2010 *City of the ram-man: The story of ancient Mendes*. Princeton: Princeton University Press.
Redmount, Carol, and Renée Friedman
1993 Tell el-Muqdam: City of lions. *Egyptian Archaeology* 3, pp. 37-38.
1997 Tales of a Delta site: The 1995 field season at Tell el-Muqdam. *Journal of the American Research Center in Egypt* XXXIV, pp. 57-83.
Ricke, Herbert
1932 *Ausgrabungen der Deutschen Orient-Gesellschaft in Tell el-Amarna IV: Der Grundriss des Amarna-Wohnhauses*. Wissenschaftliche Veröffentlichungen der deutschen Orient-Gesellschaft 56. Leipzig: Hinrichs.
Roik, Elke
1988 *Das altägyptische Wohnhaus und seine Darstellung im Flachbild*. Europäische Hochschulschriften, Reihe XXXVIII: Archäologie, Band 15. Frankfurt am Main: Peter Lang.
Rondot, Vincent
2004 *Tebtynis II: Le Temple de Soknebtynis et son dromos*. Fouilles de l'Institut français d'archéologie orientale 50. Cairo: Institut français d'archéologie orientale.
Rzepka, Sławomir, Anna Wodzińska, Claire Malleson, Jozef Hudec, Łukasz Jarmużek, Krzysztof Misiewicz, Wiesław Małkowski, and Miron Bogacki
2011 New Kingdom and the Third Intermediate Period in Tell el-Retaba: Results of the Polish-Slovak Archaeological Mission, Season 2009 – 2010. *Ägypten und Levante/Egypt and the Levant* XXI, pp. 129-184.
Rzepka, Sławomir, Jozef Hudec, Anna Wodzińska, Łukasz Jarmużek, Lucia Hulková, Veronika Dubcová, Malwina Piorun, Alena Šefčáková
2015 Tell el-Retaba from the Second Intermediate Period till the Late Period: Results of the Polish-Slovak Archaeological Mission, Seasons 2011 – 2012. *Ägypten und Levante/Egypt and the Levant* XXIV, pp. 39-120.

Rzepka, Sławomir, Jozef Hudec, Łukasz Jarmużek, Veronika Dubcová, Lucia Hulková, Anna Wodzińska, Alena Šefčáková, and Eva Stopková
2017 From Hyksos tombs to Late Period tower houses: Tell el-Retaba, Seasons 2015 – 2016. *Ägypten und Levante/Egypt and the Levant* XXVII, pp. 19-86.
Schiestl, Robert
2013 *Report on the sixth season of the Regional Survey in the Governorate of Kafr esh-Sheikh*, pp. 1-10: https://www.academia.edu/10277698/Regional_Survey_around_Buto_-_Report_2014.
Schiestl, Robert, and Tomasz Herbich
2013 Kom el-Gir in the western Delta. *Egyptian Archaeology* 42, pp. 28-29.
Schijns, Wolf
2008 *Vernacular mud brick architecture in the Dakhleh Oasis, Egypt, and the design of the Dakhleh Oasis Training and Archaeological Conservation Centre*. Dakhleh Oasis Project: Monograph 10. (Reprinted 2018.) Oxford: Oxbow.
Singer, Caroline
2007 The incense kingdoms of Yemen: An outline history of the South Arabian incense trade. In *Food for the gods: New light on the ancient incense trade*, ed. David Peacock and David Williams, pp. 4-27. Oxford: Oxbow.
Snape, Steven
1986 *Six archaeological sites in Sharqiyeh Province*. Liverpool: University of Liverpool Press.
Spence, Kate
2004 The three-dimensional form of the Amarna house. *Journal of Egyptian Archaeology* 90, pp. 123-152.
Spencer, A. Jeffrey
1979 *Brick architecture in ancient Egypt*. Warminster: Aris & Phillips.
1996a *Excavations at Tell el-Balamun: 1991 – 1994*. London: British Museum.
1996b Houses of the Third Intermediate Period at el-Ashmunein. In *Haus und im alten Ägypten,* Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Instituts 14, ed. Manfred Bietak, pp. 215-223. Vienna: Österreichische Akademie der Wissenschaften.
1999a *Excavations at Tell el-Balamun: 1995 – 1998*. London: British Museum.
1999b Casemate foundations once again. In *Studies of ancient Egypt, in honour of H.S. Smith*, Egypt Exploration Society Occasional Publications 13, ed. Anthony Leahy and John Tait, pp. 295-300. London: The Egypt Exploration Society.
2001 The Egypt Exploration Society Delta Survey. *Egyptian Archaeology* 16, pp. 25-27.
2004 *Excavations at Tell el-Balamun: 1999 – 2001*. London: British Museum.
2010 Tell el-Balamun 2010. *British Museum Studies in Ancient Egypt and Sudan* 16, pp. 149-168.
2011 The Egyptian temple and settlement at Naukratis. *British Museum Studies in Ancient Egypt and Sudan* 17, pp. 31-49.
2016 *The Delta Survey 2009 – 2015*. Egypt Exploration Society Excavation Memoir 112. London: Egypt Exploration Society.
Spencer, A. Jeffrey, and Tomasz Herbich
2006 Geophysical survey at Tell el-Balamun. *Egyptian Archaeology* 29, pp. 16-19.
Spencer, Neal
2014a Amara West: Considerations on urban life in colonial Kush. In *The Fourth Cataract and beyond: Proceedings of the 12th International Conference for Nubian Studies*, British Museum Publications on Egypt and Sudan 1, ed. Julie R. Anderson and Derek Welsby. Leuven: Peeters.
2014b *Kom Firin II: The urban fabric and landscape*. British Museum Research Publications 192. London: The British Museum.
Szafranski, Zbigniew
2003 The impact of the very high floods on platform constructions in the Nile Basin of the mid-second millennium BC. In *The synchronisation of civilisations in the Eastern Mediterranean in the second millennium BC*, Vol. II, Denkschriften der Gesamtakademie XXIX, ed. Manfred Bietak, pp. 205-218. Vienna: Österreichische Akademie der Wissenschaften.
Thiers, Christophe
1995 Civils et militaires dans les temples: Occupation illicite et expulsion. *Bulletin de l'Institut français d'archéologie orientale* 95, pp. 493-516.

Thomas, Ross
2015 Naukratis, 'Mistress of ships', in context. In *Thonis-Heracleion in context*, Oxford Centre for Maritime Archaeology Monograph 8, ed. Damian Robinson and Franck Goddio, pp. 247-265. Oxford: Oxford Centre for Maritime Archaeology, School of Archaeology.
Thomas, Ross, and Alexandra Villing
2013 Naukratis revisited 2012: Integrating new fieldwork and old research. *British Museum Studies in Ancient Egypt and Sudan* 20, pp. 81-125.
Thomas, Ross, Alexandra Villing, Marianne Bergeron, Giorgos Bourogiannis, and François Leclère
2013 *Naukratis: Greeks in Egypt*. British Museum Online Research Catalogue: https://webarchive.nationalarchives.gov.uk/20190801105436/https://www.britishmuseum.org/research/online_research_catalogues/ng/naukratis_greeks_in_egypt.aspx.
Traunecker, Claude
1987 Les "temples hauts" de Basse Époque: Un aspect du fonctionnement économique des temples. *Revue d'Égyptologie* 38, pp. 147-162.
Valbelle, Dominique, and Mohammed Abd el-Maksoud
2007 *Tell el-Herr: Les niveaux hellénistiques et du Haut-Empire*, Mission franco-égyptienne de Tell el-Herr (Nord-Sinai). Paris: Errance.
Versluys, Miguel John
2002 *Aegyptiaca Romana: Nilotic scenes and the Roman views of Egypt*. Religions in the Graeco-Roman World 144. Leiden: Brill.
Viereck, Paul
1928 *Philadelphia: Die Gründung einer hellenistischen Militärkolonie in Ägypten*. Morgenland: Darstellungen aus Geschichte und Kultur des Ostens, Heft 16. Leipzig: Hinrichs.
Viereck, Paul, and Friedrich Zucker
1926 Die Ruinen von Philadelphia. In *Papyri, Ostraka und Wachstafeln aus Philadelphia im Fayûm*, Ägyptische Urkunden aus den Staatlichen Museum zu Berlin, Griechische Urkunden VII, pp. 1-13. Berlin: Weidmann.
Vittmann, Günther
1998 *Der demotische Papyrus Rylands* 9. 2 volumes. Ägypten und Altes Testament: Studien zur Geschichte, Kultur und Religion Ägyptens und des Alten Testaments 38. Wiesbaden: Harrassowitz.
Von Pilgrim, Cornelius
1996 Elephantine im Mittleren Reich: Bemerkungen zur Wohnarchitektur in einer "gewachsenen" Stadt. In *Haus und Palast im alten Ägypten,* Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Instituts 14, ed. Manfred Bietak, pp. 253-264. Vienna: Österreichische Akademie der Wissenschaften.
Weber, Wilhelm
1914 *Die Ägyptisch-griechischen Terrakotten*. 2 volumes. Königliche Museen zu Berlin: Mitteilungen aus den ägyptischen Sammlungen II. Berlin: Verlag von Karl Curtius.
Weigall, Arthur E.P.
1907 *A report on the antiquities of Lower Nubia (the First Cataract to the Sudan frontier) and their condition in 1906-7*. Oxford: Oxford University Press.
Whitehouse, Helen
1976 *The Dal Pozzo copies of the Palestrina mosaic*. British Archaeological Reports Supplementary Series 12. Oxford: British Archaeological Reports.
Willeitner, Joachim
2013 *Die Weihrauchstraße*. Darmstadt/Mainz: Philipp von Zabern.
Wilson, Karen L.
1982 *Cities of the Delta II: Mendes: Preliminary report on the 1979 and 1980 seasons*. American Research Center in Egypt Reports 5. Malibu: Undena.
Wilson, Penelope
2006 *The Survey of Sais (Sa el-Hagar): 1997 – 2002*. Excavation Memoir 77. London: Egypt Exploration Society.
2011 *Sais I: The Ramesside-Third Intermediate Period at Kom Rebwa*. Excavation Memoir 98. London: Egypt Exploration Society.

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Figure 1. Drawing of glazed tile N2067 from Nimrud, now in the British Museum. (Drawing and copyright by the author.)

Figure 2. Detail of the Nile mosaic of Palestrina showing tower houses, some of them incorporated in the temenos wall of a temple. The mosaic is now in the Museo Nazionale Prenestino in Palazzo Barberini, Palestrina, Italy; (Public domain via Wikimedia Commons: https://commons.wikimedia.org/wiki/File:NileMosaicOfPalestrina.jpg)

Figure 3. Drawing of the ground plan of a possible tower house, based on a representation in Papyrus Oxyrhynchus XXIV 2406, second century CE. (Drawing by the author, after: http://163.1.169.40/cgi-bin/library?e=d-000-00---0POxy--00-0-0--0prompt-10---4-----0-1l--1-en-50---20-help---00031-001-1-0utf-00&a=d&c=POxy&cl=CL3.4&d=HASH2c7454ba6d7f9104daa235)

Figure 4. Chronological development of the casemate foundation in Egypt: earliest at left, more recent at right. (Drawing and copyright by the author.)

Figure 5. Tower houses in the background of the Esna Temple, drawn by Dominique Vivant Denon in 1802. (Denon 1802, Vol. 3: pl. XXXI, no. 1.)

Figure 6. Remains of tower houses in Bubastis in 1880. (Naville 1891: pl. II.)