

# ON SIMPLE HOUSE ARCHITECTURE AT TELL EL-DAB<sup>a</sup> AND ITS PARALLELS IN THE LATE MIDDLE KINGDOM

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**Abstract:** Numerous examples of simple house ground plans of the late Middle Kingdom are discussed in this article and the line of development is traced as far as possible.

This type of domestic architecture consists exclusively of mud brick. Measurements as well as proportions are given as possible means for dating such dwellings. The point of departure is the late Middle Kingdom settlement in Area A/II at Tell el-Dab<sup>a</sup>, where a number of one and two room houses were excavated. While some of these houses are free standing, it is possible to find bipartite core-units, with one wide and one narrow room, embedded in other architectural assemblages in Egypt. These are known from at least the early Middle Kingdom onwards with a possible earlier tradition. At Tell el-Dab<sup>a</sup> itself, the bipartite ground plan exists from the Middle Kingdom to the New Kingdom. House models and other comparanda were also used to learn more about the distribution of this very simple architectural type used by non-elite individuals.

In an overall cultural comparison various other socio-economic topics such as subsistence strategies, placement and capacity of storage facilities and various influences on the assemblage found in Area A/II of the late Middle Kingdom are also discussed.

**Key words:** mud brick architecture, settlement, domestic housing, Middle Kingdom, Second Intermediate Period, Egyptian cubit, self-organised settlement

## 1. Introduction

This paper focuses on the simple house architecture built of dried mud brick with a high proportion of sand temper, which has been excavated *i.a.* in three late Middle Kingdom phases (H, G/4, G/3–1) in Area A/II at Tell el-Dab<sup>a</sup>.<sup>2</sup> After a detailed description of the one-room and bipartite house ground-plans with their measurements during the late Middle Kingdom, parallels for these architectural features are first sought at the site of Tell el-Dab<sup>a</sup> through the phases and then in contemporary Egypt. Also earlier Egyptian house architecture is surveyed as well as house models of the Middle Kingdom. In the same way, comparanda are sought in Syria-Palestine.

Area A/II is situated on the ancient tell, which today has almost disappeared, and was excavated in the 1960s, 1970s and 1980s.<sup>3</sup> A small excavation was furthermore conducted in 1997, which in part reached the phases treated here.<sup>4</sup> In Area A/II the occupation started in the late 12<sup>th</sup> Dynasty and continued into the Late Period.<sup>5</sup> After the settlement character of Phase G/3–1, Area A/II obtained a different function in the early to mid-Second Intermediate Period and was re-dedicated with temple precincts and tombs dominating. In the late Second Intermediate Period (Phases D/3–2) parts of the area were again used for domestic purposes.<sup>6</sup> Phases H, G/4 and G/3–1 belong to the late 12<sup>th</sup> Dynasty and continue into the first third of the 13<sup>th</sup> Dynasty as was ascertained by pottery seri-

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<sup>2</sup> I would like to thank M. Bietak for entrusting me with this material.

<sup>3</sup> BADER 2015b, 374; BIETAK 1991b, 27–35 with earlier bibliography; BIETAK 2010, 17–18.

<sup>4</sup> FORSTNER-MÜLLER 2001; FORSTNER-MÜLLER 2007.

<sup>5</sup> BIETAK 1991b, LEHMANN 2012.

<sup>6</sup> BIETAK 1996a, 36–48, fig. 30; BIETAK 2007, fig. 29.7 with the caption “shortly before the beginning of the Hyksos period”; MOELLER 2016, 325, fig. 8.49; it should be noted that the figure in MOELLER shows the collective plan of all features of Area A/II belonging to the early to mid-Second Intermediate Period (Phases F–E/2; e.g. Mortuary temple I (Phase E/2–1)). Perhaps due to some confusion, MOELLER’s caption suggests they belong to the late Middle Kingdom.



Fig. 1 Plan of the settlement of Area A/II in Phases G/3–1. Adapted from BIETAK 2010, fig. 14 and FORSTNER-MÜLLER 2001, fig. 5

ation. While three phases were distinguished, only the latest one of the three, Phase G/3–1, preserved the most comprehensive plan of them (Fig. 1). The older levels were quite destroyed by later building activities, thus the settlement layouts of Phases G/4 and H in Area A/II remain incomplete.

In the late Middle Kingdom, the presence of individuals from the Levant is already attested in other parts of the site.<sup>7</sup> They are attested almost exclusively by means of burial customs and not by features in the settlement areas.<sup>8</sup> The burials of adults within the settlement were assigned to immigrants, because burials within settlements are common in the Levant.<sup>9</sup> In contrast to Area F/I, where numerous burials were found,<sup>10</sup> the contemporary Phases H and G/4 of Area A/II yielded only a single child burial – not in a pottery vessel – without burial gifts below the floor of a house, as in the Nile valley.<sup>11</sup> The preconceived idea that burials within settlements must refer to immigrants needs to be abandoned until more information from contemporary Delta sites is available. It seems very likely the A/II quarter had a different character or function than other – contemporary – parts of the site from the very beginning.<sup>12</sup> A further difference can be cited, namely that in Phase G/3–1 Area A/II included only eight burials, fewer than expected for the size of this quarter and the number of the house compounds.<sup>13</sup> One unique tomb accommodates several people, probably a kinship-group. The others are single interments of

females.<sup>14</sup> Where the other inhabitants of A/II were buried is currently unclear.

The overall layout of the settlement of the late Middle Kingdom is notably irregular. While no remains of any encircling wall were found, which would provide evidence for a planning principle, this does not prove its absence. Study of the development of the settlement over the three phases mentioned showed instances where ‘properties’ and largely the core house plans remained the same, so that this could be ascertained. The houses themselves are of different sizes with different layouts suggesting at least a limited amount of social stratification among the inhabitants. Perhaps this pattern also reflects a certain dependency because some smaller dwellings are situated close to larger ones, especially around the largest building in A/II-I-n/10–11 (see Fig. 1 the dwellings around Compound 11). The existing ground-plans of houses show extremely simple one-room houses<sup>15</sup> (Fig. 2.7–11) and the typical, bipartite ground-plan (‘snail house’<sup>16</sup> or bipartite unit<sup>17</sup>), which is the main topic of this paper (Fig. 2.1–4, 6). In BIETAK’s typology it is represented by group A – type 1 and is characteristically subdivided into a broad stripe or ‘courtyard’ and an adjacent narrower stripe.<sup>18</sup> The narrower part of this plan may be further subdivided into smaller units, but this does not alter the overall concept of the ground-plan. Because of the bad preservation of the domestic houses with only between 3 and 6 brick courses

The dynastic equation with the ‘late 13<sup>th</sup> Dynasty’ creates more confusion because it seems increasingly unlikely that the 13<sup>th</sup> Dynasty ended everywhere in Egypt at the same time as RYHOLT suggests. Cf. RYHOLT 1997, table 1. Instead, the plan shown here as Fig. 1 represents the late Middle Kingdom settlement in Area A/II (I prefer not to give it a dynastic designation although some time in the (earlier) 13<sup>th</sup> Dynasty has been assumed before and is still likely), cf. RYHOLT 2016, 325–326, 347–356. It should be noted, however, that also in the later Second Intermediate Period domestic housing exists in other areas (e.g. A/IV and A/V).

<sup>7</sup> BIETAK 1996a, 10–21.

<sup>8</sup> Perhaps with the exception of ‘houses for the dead’, which are only attested in Area F/I from Phase F. Cf. BIETAK 1996a, 49, and the middle room house in Phase d/2, cf. BIETAK 1996a, fig. 8.

<sup>9</sup> SCHIESTL 2002, 329–330 with criticism. But also note the contemporary tombs and dwellings at Lisht. There, nothing hints at the presence of non-Egyptians and, thus, burials within settlements should not be used as an argument for the presence of a non-Egyptian population. Cf. ARNOLD 1996.

<sup>10</sup> SCHIESTL 2009.

<sup>11</sup> E.g. VON PILGRIM 1996, fig. 49, in house 69; fig. 69 in house 99b; PETRIE 1890, 24 in Lahun.

<sup>12</sup> Exemplified by the simple settlement layout in Phase G/4 in Area A/II, whereas in Area F/I at this point a large mansion with cemetery was in use. Cf. also BADER and MÜLLER, in preparation.

<sup>13</sup> BADER 2011a.

<sup>14</sup> BIETAK 1991b, 33–34, 36; FORSTNER-MÜLLER 2008, 129–137; BADER 2011a.

<sup>15</sup> For the type cf. MÜLLER 2012, fig. 3 reproduced by MOELLER 2016, fig. 9.1. The ground-plans were frequently not well enough preserved to locate the doorway. Only in one instance (Fig. 2.7) was it clear that the door was located on the long side close to the corner, providing evidence that a ‘broad house’ existed. This could be a very reduced version of the bipartite plan. However, the type is so reduced that it would be hazardous to try and ascribe a cultural background to it.

<sup>16</sup> BIETAK 1979, 238, fig. 2.

<sup>17</sup> ARNOLD 1996, 15 and notes 18 and 19.

<sup>18</sup> BIETAK 1996b, 24, fig. 1; MÜLLER 2012, 43.

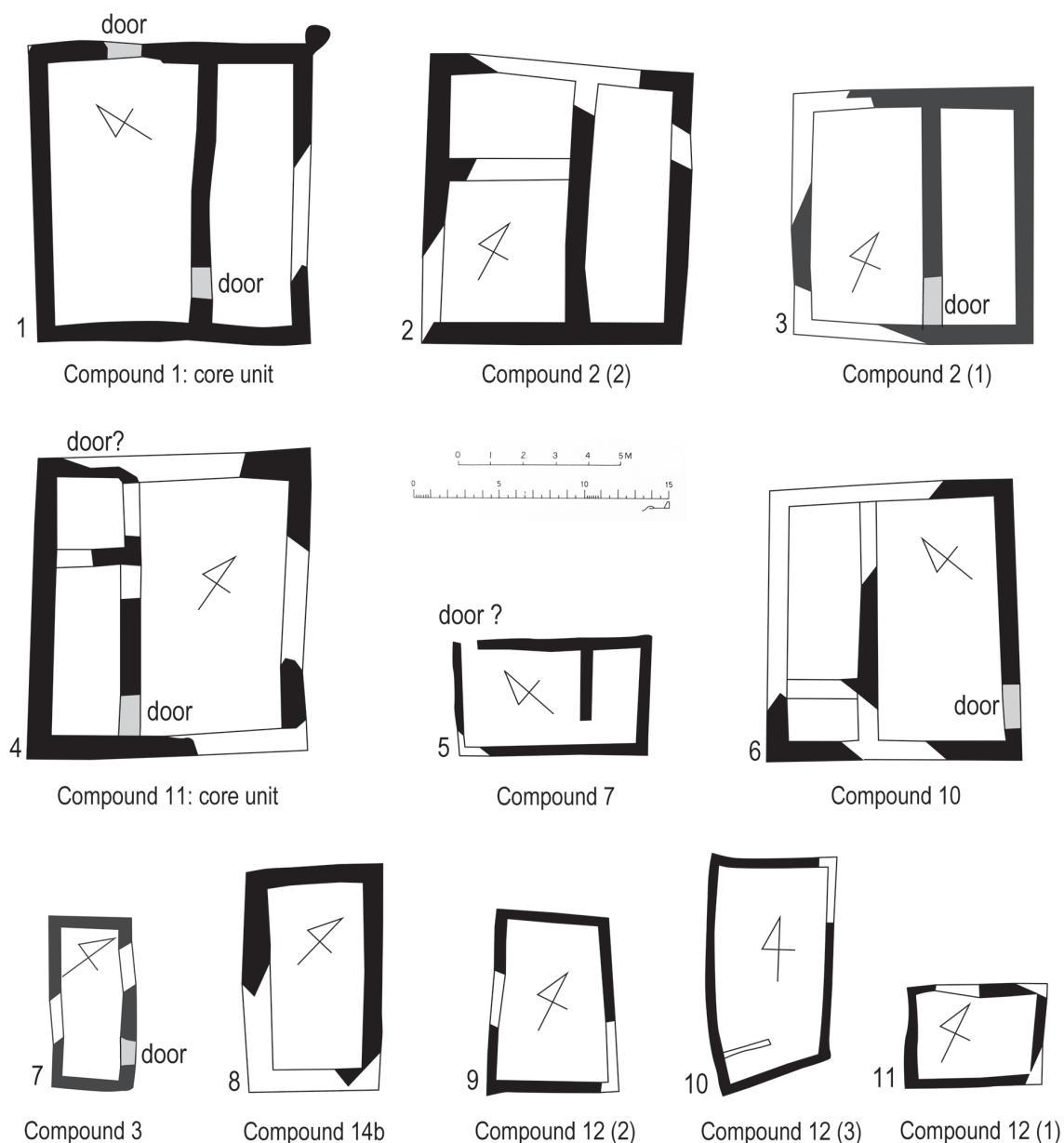


Fig. 2 House plans of Phases G/4-1, scale 1:200

standing, it remains impossible to judge in all cases whether both parts of the houses in question had a roof or if one part is to be identified as an open space or courtyard (wider than 4.0 m). Especially where this arrangement is only part of a larger building, this unresolved question gains greater importance, not the least for the parallels mentioned. The houses and precincts contain domestic installations such as rounded silos, fire places, benches and hearths either built from mud brick or made from disused jar bases. Fig. 1 shows the distribution of the one-room and bipartite

house type across Area A/II and in two cases this type forms the core of the precincts or buildings. Only in Compound 2 are two almost identically sized bipartite houses situated very close to each other, with just a narrow corridor between them.

## 2. Description of house inventory in Area A/II, Phases H, G/4 and G/3-1

The measurements given for the size of the dwellings are always measured on the exterior, for the ease of comparison of the overall ground area



used. As most of the widths of the walls are fractions of the Egyptian Royal cubit (at least in the late Middle Kingdom settlement of Area A/II), the following widths result: 1/2 a brick's width = 17.5 cm = 1/3 of a cubit; 1 brick's width = 35.0 cm = 2/3 of a cubit and 1 1/2 bricks width = 52.5 cm = 1 cubit.<sup>19</sup> It follows that the inner dimensions of the rooms are also measurable in cubits (too detailed for the current study). Because deducting the wall thicknesses (twice) from the external measurements did not lead to even cubit numbers in all the instances listed (see below), either the measurements were not conducted accurately or the building process did not start from marking out an even number of cubits with the addition of the two walls' thicknesses on each side. It remains unknown if measuring ropes or rods were used.<sup>20</sup> It is also possible that the (very likely mould-made<sup>21</sup>) bricks and their measurements were the only help available for marking out a domestic house in terms of size. Although the measurements of the bricks vary to a certain degree, a cluster is usually visible, and very rarely larger bricks are used, at least in the early settlement phases of Area A/II. In contrast, in the settlement of Area A/V a wide array of brick sizes was used even in the same building.<sup>22</sup>

The proportional ratio between the side lengths of the houses was calculated in the following way: The longer side was always divided by the shorter side regardless which side of them might be considered the "length" and which the "width" as this distinction is difficult in almost square buildings. Only in the rectangular one-room ground-plans such a distinction is unequivocal. The numbers

have been rounded to one decimal place in the usual mathematical custom.

#### *Phase H*

From Phase H hardly any complete ground-plans of houses were recovered from Area A/II, because this elevation could only very rarely be reached due to the local water table. The intrusion of water inevitably led to the abandonment of the excavation of a square, because during the early excavations vacuum pumps to lower the water table were not available, except in the renewed 1997 excavation in one square.<sup>23</sup>

The only (fragmentary) ground-plans attested during this phase consist of one room only. Moreover, no single example of these flimsy one-room houses could be recovered in its entirety but only fragmentary walls, which were usually only half a brick's width wide. Thus, it cannot be ascertained where the entrance was situated, which in turn prevents an assignation within a house typology, namely to a roughly square or elongated house.<sup>24</sup> Theoretically, also a 'wide' house with the entrance in one of the long sides (in the middle<sup>25</sup> or close to the corners) is possible, but cannot be proven by the material presented here.

#### *Phase G/4*

The preservation in Phase G/4 is only slightly better, but the majority of the preserved mud brick walls also belonged to one-room houses as well as a complicated system of precinct walls and a number of silos.<sup>26</sup> It is hard to grasp the underlying system of this seemingly irregular settlement pat-

<sup>19</sup> ROIK 2000, 54 denies the relationship of the size of mud bricks with the Egyptian royal cubit, because it seems she does not consider its fractions/subdivisions into smaller units. The variations in the real brick sizes would allow for the use of either Roik's measurement or the royal cubit. It seems more reasonable, however, to use the established royal cubit in this instance, because Roik's measurements, although sometimes resulting in even Nebj-cubits, led to unsystematic unit fractions (instead of 1/3, 1/2 or 2/3), which seem very complicated to use for simple building projects. Moreover, Roik's measurement was based on measurements from Tausret's tomb, which dates much later than the current topic. Cf. also DORNER 2006.

<sup>20</sup> In Area F/I special stones seem to have been used to mark significant points of houses. I would like to thank M. Müller for drawing my attention to this. Cf. MÜLLER 2012, 34.

<sup>21</sup> Cf. RICKE 1932, 10; ENDRUWEIT 1994, 32–34.

<sup>22</sup> HEIN/JÁNOSI 2004, 66, 85, 87–89, 92: 38.0 by 18.0 cm and 41.0 by 20.0 cm; 39–40 by 15–20 cm, 37.0 by 17.0 cm; 38–39 by 17.5 by 9–10 cm; 45.0 by 18–22 cm, 36–37 by 18–19 cm, 48.0 by 17.0 cm and 42.0 by 18.0 cm etc.

<sup>23</sup> FORSTNER-MÜLLER 2001, 197–199, fig. 2 stratum k, A/II-p/14, contains only post holes and other kinds of pits. It is possible that this phase is even older than, or the earliest level of Phase H, because the following relative stratum j1 would fit much better with the known architectural layout for Phase H–G/4 in the remaining area. This is possible in view of the published pottery from stratum k (FORSTNER-MÜLLER 2007), but the final publication of the pottery and finds of the other phases must be awaited to come to a firmer conclusion.

<sup>24</sup> MÜLLER 2012, Abb. 3: the simplest forms introduced by MÜLLER.

<sup>25</sup> Like in the hieroglyph for *pr*: Gardiner O1.

<sup>26</sup> Cf. FORSTNER-MÜLLER 2001, 199–301 for the general character of this settlement.

tern because much of it was destroyed by later building activity (most notably tombs of Phases F and later). Only two one-room houses were sufficiently preserved to take secure measurements. The entrances to these one-room houses were not recognised. The proportional ratio of the sides is 1:1.2 and 1:1.7.

Square	Size in metres (external)	Size in cubits <sup>27</sup> (external)	Thickness of walls (m)
A/II-n/13	3.35 × 4.05 (13.57 m <sup>2</sup> )	6 1/3 × 7 2/3	0.35 = 2/3 cubit
A/II-p/14 <sup>28</sup>	8.50 × 4.90 (41.65 m <sup>2</sup> )	16 1/3 × 9 1/3	0.56 = 1 cubit

Table 1 Measurements of one-room houses in Phase G/4.

### Phase G/3 (Fig. 1)

In Phase G/3 bipartite houses can firmly be identified for the first time in Area A/II. There are at least three such ground-plans attested with one more one-room house, but again there are also many incomplete ground-plans. Most of these houses were built with mud brick walls of 1 1/2 brick's width amounting to one cubit. In one case bricks were obviously re-used, because the 1 brick's width often consisted of two broken bricks with an additional row of stretchers in front of it. The pattern is paralleled by SPENCER'S brick bond

pattern A2,<sup>29</sup> at least in the horizontal section. The front view was not sufficiently preserved (4–5 brick courses only).

The evaluation of the proportions of these houses confirms that the ground areas are almost square: all the bipartite houses show a proportion of the ground area of 1:1.1. The one-room houses show a proportion of 1:2.2, 1:1.4 and 1:1.2 for the last two in the table.

### Phase G/2–1 (Fig. 1)

In several cases the actual core units of the compounds were still in use in the next phase (e.g. Compounds 1, 2, 10), sometimes with additions and adaptations. The largest house unit (Compound 11) was found in the northwest of the excavated part of the tell. Due to destruction of the area north of this building, it is unclear whether it continues even further northwards.<sup>33</sup> In addition, because this house is almost exactly below Mortuary Temple I (Phase E/2–1), which was left standing, the earlier levels were not explored further. Thus, although it is likely that some older structure existed there, this cannot be proven without renewed work. Compound 11 consists of a core unit with an almost square element divided into two unequal parts with an additional “room” or space each to the southeast and the northwest.

Square	Size in metres (external)	Size in cubits (external)	Thickness of walls (m)	Fig.
Bipartite houses: Compounds 10, 1, 2 (1–2)				
A/II-k/11–12	8.70 × 7.90 (68.73 m <sup>2</sup> )	16 1/2 × 15	0.53–0.58 ~1 cubit	2.6
A/II-m–n/14–15	8.80 × 8.30 (73.04 m <sup>2</sup> )	16 2/3 × 15 2/3	0.55–0.60 ~1 cubit	2.1
A/II-o/16–17 (1)	7.90 × 7.35–7.40 (58.46 m <sup>2</sup> )	15 × 14	0.53–0.60 ~1 cubit	2.3
A/II-o/16–17 (2)	8.90 × 8.00 (71.20 m <sup>2</sup> )	17 × 15 1/3	0.53–0.60 ~1 cubit	2.2
One-room houses: Compound 3 and excavation 1997				
A/II-p/16–17	5.55 × 2.55 (14.15 m <sup>2</sup> )	10 2/3 × ~ 5	0.30–0.35 ~2/3 cubit	2.7
A/II-p/14 L464 <sup>30</sup>	4.40 × 3.10 (13.64 m <sup>2</sup> )	8 1/3 × 6	~0.38 ~2/3 cubit	1
A/II-p/15 L359 <sup>31</sup>	3.50 × 2.90 (10.15 m <sup>2</sup> )	6 2/3 × 5 1/3	0.30–0.35 ~2/3 cubit	1
A/II-p/15 L 408 <sup>32</sup>	5.80 × 2.80 (16.24 m <sup>2</sup> )	11 × 5 1/3	~0.30–0.35 ~2/3 cubit	1

Table 2 Measurements of houses in Phase G/3.

<sup>27</sup> The cubit is calculated here with 0.525 m. Taking into consideration that the mudbrick walls cannot be very exactly measured it seems unimportant whether this measurement is taken or 0.523 m. Calculating with the first value turned out to be easier. ARNOLD 1988, 9 also uses 0.525 m for a royal cubit. CZERNY 2015, note 69, 0.52 m but in fig. 38b as 0.525 m.

<sup>28</sup> FORSTNER MÜLLER 2001, 200, fig. 4, stratum j1. This house is not shown in Fig. 2. Neither is the previous one.

<sup>29</sup> SPENCER 1979, pl. 1.

<sup>30</sup> FORSTNER MÜLLER 2001, 202, fig. 5, not shown in Fig. 2.

<sup>31</sup> FORSTNER MÜLLER 2001, 202, fig. 5, not shown in Fig. 2.

<sup>32</sup> FORSTNER MÜLLER 2001, 202, fig. 5, not shown in Fig. 2.

<sup>33</sup> It is perhaps possible that a house unit may be imagined, which resembles the double unit of MK houses from Ezbet Rushdi, cf. CZERNY 2015, 42, fig. 5D reconstructed buildings XIII/XIV. I would like to thank an anonymous reviewer for drawing my attention to this possible parallel. The interesting part would be that a previously regular unit was later used quite outside of its rigid orthogonal scheme.

While the house was initially reconstructed as a closed structure,<sup>34</sup> Cornelius VON PILGRIM proposed a reconstruction based on courthouses at Elephantine, assuming that two- or three-room units encircle a courtyard in the eastern space.<sup>35</sup> Whilst it was not possible to ascertain the nature of that eastern space – if closed or open – both reconstructions are possible. The width of the space is about 4.30m and can perhaps just about be bridged by wooden beams (no column bases or other emplacements were found). According to VON PILGRIM's research on Elephantine, a width of 4.0m can be covered by wooden roof beams without an additional column.<sup>36</sup> The main entrance is most probably on the western side of the building through some kind of corridor constituted by the westernmost wall of the building itself and the precinct wall of the next compound due west (Compound 14). Due to the reduced preservation of this precinct wall, no comments can be made as to whether the corridor had some kind of roofing (e.g. palm fronds) or not. In addition, the lack of secure identification of doorways hinders a comprehensive reconstruction of the inner layout of Compound 11. The same holds true for access to the rooms and possible open spaces and the interconnections between them.

Compound 12 lies to the southeast of Compound 11 and is constituted by what seems an arbitrary grouping of rooms north and south of an east-west running wall. Compound 12 has significantly thinner walls than the other buildings.<sup>37</sup> A possible bipartite structure (6.3m × 3.5m),<sup>38</sup> situated between the two rooms in squares A/II-n/13 and A/II-n-o/13 (Fig. 1), may be reconstructed according to a ground-plan like Compound 7 (Fig. 2.5) as the measurements are almost the same.

Noteworthy is the differing orientation of the buildings. Unfortunately, most structures of Compound 12 are too destroyed to be certain about doorways and therefore about the possible uses of this room assemblage. This compound is very different to the others, firstly because it has this rather unusual arrangement of single rooms and secondly, the two westernmost buildings (Fig. 2.9–2.10) seem to have been built to fit the boundary

towards the alleyway rather than the other way around. The space seems to have been there first (already established one phase earlier) because the houses use the precinct wall as their western exterior wall. All rooms of Compound 12 were enclosed by an irregular and quite thin precinct wall. Again, the position of the entrance into the precinct could not be determined due to the preservation of only a few brick courses. Beside household installations such as round silos one house contained a burial behind a screen wall. The extended supine burial of a woman was laid down in a good quality limestone sarcophagus with a bead necklace of carnelian, clay and faience beads and a kohl pot of calcite / 'alabaster.' Except for the jar with undulating rim laid down to the east of the coffin, no other traces of a cult for the dead could be discerned in this area.<sup>39</sup> A quern was found in this room, thus domestic activities could also have been conducted there, but the sequence of events remains unclear. Ritual practices may have taken the form of libations which did not necessarily leave material traces.

While Compound 1 saw the addition of two (store?) rooms to the south of the core unit and the creation of a group burial in the triangular open space<sup>40</sup> east of the doorway, Compound 2 consisted of two bipartite houses quite close to each other with some sort of closed-off area to the north of them. There was only a narrow passage between them and for this reason it seems unlikely that the entrance into those dwellings were in the east or the west wall, respectively. Whether the tomb to the north of this compound (A/II-n/16-tomb 2)<sup>41</sup> actually belonged to this group of buildings cannot be firmly ascertained as there is no stratigraphic connection between the buildings and the tomb, and no enclosure that would mark a relationship is preserved. Spatial closeness is the only hint in this case.

Compound 3 was not completely exposed. That it did not belong to Compound 2 is exemplified by the short stretch of wall running from the north into the southwestern corner of the western building of Compound 2 and thus closing off access to the western side of this compound. Access to the silos of Compound 3 is, thus, only possible from

<sup>34</sup> BIETAK 1991b, 27–28, plan 2.

<sup>35</sup> VON PILGRIM 1996, 200, fig. 86c.

<sup>36</sup> VON PILGRIM 1996, 200–203.

<sup>37</sup> The size of habitations and the thickness of walls constitute a status marker according to Bietak, BIETAK 1996b, 2010.

<sup>38</sup> See the reconstruction in Fig. 1.

<sup>39</sup> BIETAK 1991b, 33–34; BADER 2011a, 50.

<sup>40</sup> BADER 2011a, 51–54; BADER 2015b; FORSTNER-MÜLLER 2008, 134–137.

<sup>41</sup> FORSTNER-MÜLLER 2008, 137–139; BADER 2011a, 54–55.

Square	Size in metres (external)	Size in cubits (external)	Thickness of walls (m)	Fig.
Bipartite houses: Compound 11, <sup>42</sup> 7				
A/II-m/10–11 (core)	9.30 × 8.50 (79.05 m <sup>2</sup> )	17 2/3 × 16 1/3	0.65–0.70 ~ 1 1/3 cubit	2.1
A/II-m/17	6.00 × 3.65 (21.9 m <sup>2</sup> )	11 1/2 × 7	0.55–0.60 ~ 1 cubit	2.5
One-room houses: Compound 12 (irregular)				
A/II-n13	4.20 × 3.20 (13.44 m <sup>2</sup> )	8 × 6	0.30–0.40 ~ 2/3 cubit	2.11
A/II-n/12	6.50–7.0 × 3.70–3.90	12 1/2–7 1/3 × 7–7 1/3	0.30–0.35 ~ 2/3 cubit	2.10
A/II-n–o/12	5.50 × 3.50–3.90 (21.45 m <sup>2</sup> )	10 1/2 × 6 2/3–7 2/3	0.30–0.35 ~ 2/3 cubit	2.9
One-room house: Compound 14b				
A/II-n/10	7.00 × 4.20 (29.4 m <sup>2</sup> )	13 1/3 × 8	0.55–0.80 ~ 2/3–1 1/2 cubit	2.8

Table 3 Measurements of houses in Phase G/2–1.

the south (which remained unexcavated), while access into the one-room house was from the north (the wall was thinner and a stone door socket was found there). It is, therefore, very likely that these were installations belonging to an unexcavated compound core further south which was perhaps, also grouped around a bipartite house. The area further east was very badly preserved and the relationships of the walls remained quite unclear. It seems that the buildings were less durable than in the western part of the excavation and that there may have been more open spaces, but this may be a misconception due to the state of preservation in the east.

After looking at all well enough preserved house plans, the calculation of the proportion of the ground area shows a clear difference between the bipartite ground-plans (Fig. 2.1–5) with a uniform ratio of 1:1.1 and those – mostly irregular – one-room houses that have ratios from 1: 1.3 to 1:1.8. A notable exception is the ground-plan of Compound 7, which has a ratio of 1:1.6 and is much smaller and with thinner outside walls than the larger bipartite houses.

Summary: While the sizes and proportions of the bipartite houses and core units are quite uniform, the one-room houses show a greater variability. The doorways, where this could be ascertained, were situated in the north (2) Fig. 2.5, 2.7, in the east (1) Fig. 2.1 and in the south (1) Fig. 2.6. These are too few incidences to offer a valid generalisation. As for the case of the bipartite houses, where both doorways were preserved (1) Fig. 2.1, they were situated the furthest distance apart possible, presumably to keep an indirect access path

inside for the greatest possible privacy. The only instance of a long house showed the door close to the corner of the long wall, preserving the same principle (Fig. 2.7). As for the exactitude of the Egyptian cubit system or rather the existing measurements in congruence with the Egyptian cubit system, the greatest deviation from the calculated measurements is only 0.075 m with deviations of 0.025 m most common. This can be considered a good match in view of the irregularity of the mud bricks and the difficulties in excavations of mud brick in a wet mud environment. Although the measurements fit quite well, the use of the Egyptian royal cubit cannot be proven beyond doubt.<sup>43</sup>

### 3. Distribution of houses and pathways

The alleyways are narrow and run irregularly around the precincts (see Fig. 3). Marking out the precincts that could be sufficiently identified archaeologically, there are at least three roughly parallel alleys (1–3) running from the northwest towards the southeast, although in only one case all the way (Alley 2) through the excavated area. Alley 2 also provides the longest axis leading roughly in a north-south direction and it is, at the same time, the widest one. Unfortunately, there is a gap in the archaeological record in squares 1/12–13, which leaves open whether there were structures also delimiting this alley or an open space. Interestingly, the course of this axis remains unaltered until Phase E/2–1, when the area had changed its character to a temple/cemetery precinct.<sup>44</sup>

As the overall expansion of this settlement is not known, it remains a hypothesis that Alley 2

<sup>42</sup> The house units in continued use from Phase G/3 are not repeated in this list.

<sup>43</sup> Cf. BADER, in press, vol. 1, chapter 1.

<sup>44</sup> Cf. the relevant figure in BIETAK 2010, fig. 34. It seems unlikely that this ‘tradition’ is connected to kinship groups, but rather to a system of spatial distribution that was kept because it served its purpose well.



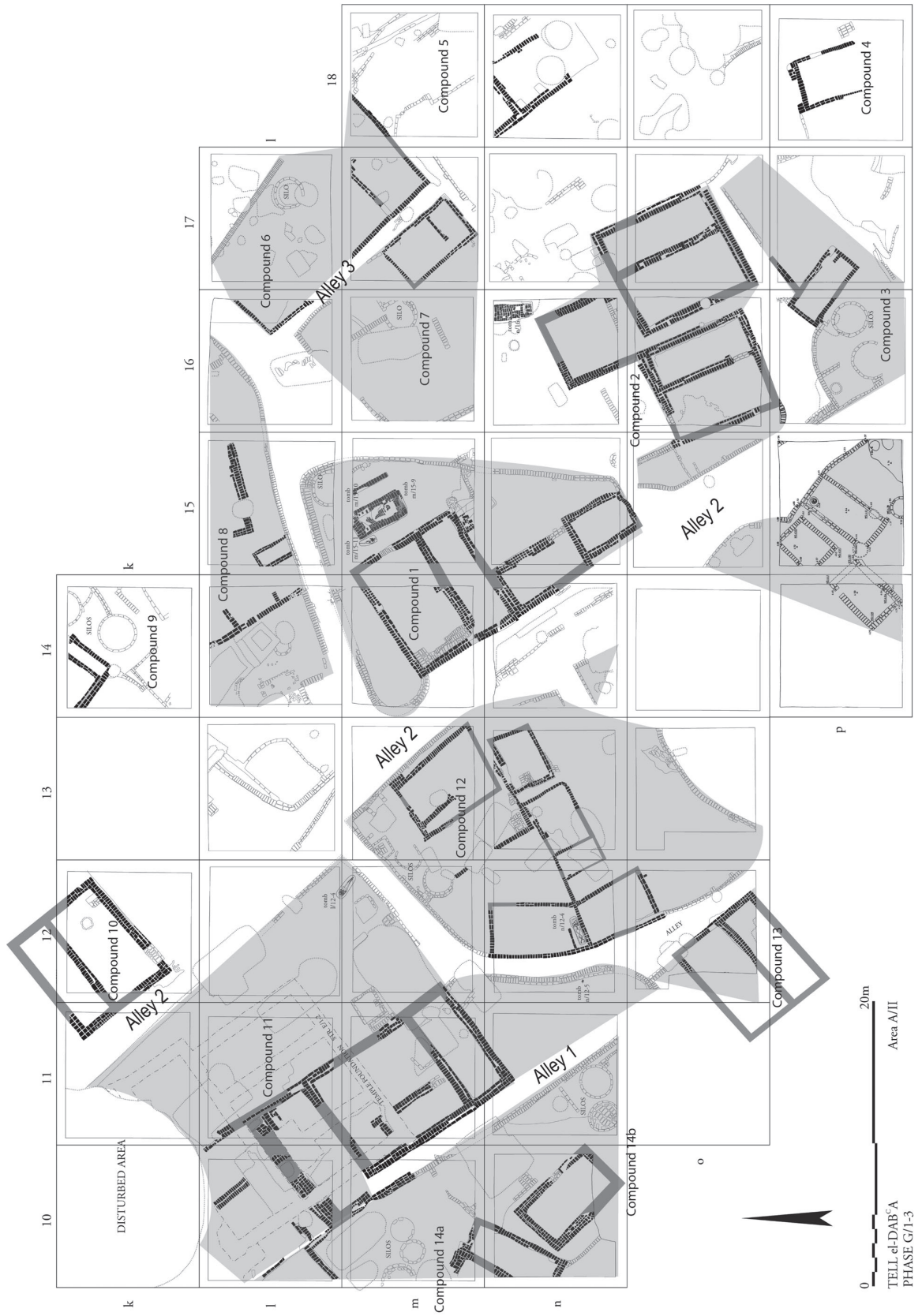


Fig. 3 Communication network in the settlement of Area A/II. Adapted from BIETAK 2010, fig. 14 and FORSTNER-MÜLLER 2001, fig. 5



Fig. 4 Distribution of silos in the settlement of Area A/II. Adapted from BIETAK 2010, fig. 14 and FORSTNER-MÜLLER 2001, fig. 5

may be the main north-south thoroughfare, even more so, as the renewed excavations from 1997 (A/II-p/14-15)<sup>45</sup> seem to show a continuation of this alleyway (see Fig. 3). Relative stratum h of the excavator has been matched to Phases G/4-1 and F by comparative pottery analysis.<sup>46</sup> The absolute elevations published and the layout of the extant architecture fit well with the remainder of the structures of Phase G/3-1 in Area A/II. Therefore, a tentative reconstruction of this part of the settlement in squares A/II-p/14-15 is presented in Figs. 1 and 3.

Whilst the north-south connections are shown to be multiple and even parallel to a certain extent, the east-west connections are nowhere near as clear cut and more irregularly placed with several open spaces and bent pathways. The exact position of irregular compounds in the northeast and the southeast remains very patchy due to the bad preservation and erosion of the earlier settlement phases there.

The settlement conveys the impression of organic growth and self-organisation along Alley 2 rather than a master-planned layout. How this development came about in Area A/II is rather difficult to ascertain, because the previous phases are too patchy to make a firm statement. The irregularity of the compounds and rather loose arrangement represents the major difference to the planned Middle Kingdom settlements, such as Lahun or Abydos. In addition, the presence of silos within almost all of the compounds (see Fig. 4) hints at self-organisation rather than commodities being delivered from elsewhere in a

redistributive system.<sup>47</sup> This is not to say that no other 'organically grown' settlements existed, but they are rather elusive at present due to the general scarcity of (non-state managed) rural settlement excavations in Egypt.

#### 4. Parallels for simple housing from other areas at Tell el-Dab<sup>a</sup> (especially bipartite ground-plans)

##### The 12<sup>th</sup> Dynasty

In stratum e of Area F/I a number of almost square dwellings were excavated. They were laid out in rows back to back with only one back wall. One completely excavated housing unit in square F/I-1/20 shows exterior measurements of 5.80 m (= 11 2/3 cubits) m by 5.40-5.60 m (= 10 1/3-10 2/3 cubits) (Fig. 5.1).<sup>48</sup> While the smaller measurement results in a proportional ratio of the side lengths of 1:1.1 the other is 1:1.04 and therefore it remains inconclusive if a precursor of the bipartite house plan in terms of proportion can be found here. Another instance in F/I-j/22 seems to imply that this house was almost square.<sup>49</sup> Unfortunately, apart from those two no further complete ground-plans from this period are available.

At Ezbet Rushdi, the phases of the mid-12<sup>th</sup> Dynasty only yielded a few complete ground-plans of dwellings to provide measurements and thus glimpses into the intra-site development of the bipartite ground-plan. In strata e/4 to e/1 several houses with a bipartite core unit came to light in this area (Fig. 5.2-5.5).<sup>50</sup>

Square (Stratum)	Size in metres (external)	Size in cubits (external)	Thickness of walls (m)	Proportion of side lengths	Fig.
R/I-1/61 (e/4) <sup>51</sup>	6.00 × 5.50 (33.0 m <sup>2</sup> )	11 1/2 × 10 1/2	~0.30 (~2/3 cubit)	1:1.1	5.2
R/I-k/61 (e/1-e/3) <sup>52</sup>	5.30 × 4.60 (24.38 m <sup>2</sup> )	10 × 8 2/3	~0.30 (~2/3 cubit)	1:1.2	5.3
R/I-m/62 (e/2) <sup>53</sup>	6.00 × 4.90 (29.4 m <sup>2</sup> )	11 1/2 × 9 1/3	~0.42-0.56 (~2/3-1 cubit)	1:1.2	5.4
R/I-m/62 (e/1) <sup>54</sup>	6.60 × 5.70 (37.62 m <sup>2</sup> )	12 1/2 × ~11	~0.30-0.35 (~2/3 cubit)	1:1.2	5.5

Table 4 The measurements of houses in the mid-12<sup>th</sup> Dynasty, Ezbet Rushdi.

<sup>45</sup> FORSTNER-MÜLLER 2001, 202, fig. 5.

<sup>46</sup> FORSTNER-MÜLLER 2007, especially stratigraphic chart of fig. 2, again it has to be stressed that this reconstruction is tentative until the full analysis of the finds is published.

<sup>47</sup> Cf. MOELLER 2016, 258.

<sup>48</sup> CZERNY 1999, 22, fig. 4, the measurements were taken from the published plan. This equals approx. 31.9 m<sup>2</sup>.

<sup>49</sup> CZERNY 1999, 25, fig. 7, no scale. Tentative measurements 5.7 m by 5.6 m (= ~11 by 10 2/3 cubits), proportion 1:1.0178.

<sup>50</sup> It is possible that the small scale of the published plans distorted the measurements somewhat.

<sup>51</sup> CZERNY 2015, vol. 2, 529, plan 11.

<sup>52</sup> CZERNY 2015, vol. 2, 526-528, plans 8, 9 and 10 + an additional room to the east.

<sup>53</sup> CZERNY 2015, vol. 1, 41, vol. 2, 527 and plan 9; perhaps this also represents a core unit but the plan is not completely preserved.

<sup>54</sup> CZERNY 2015, vol. 2, 526, plan 8.

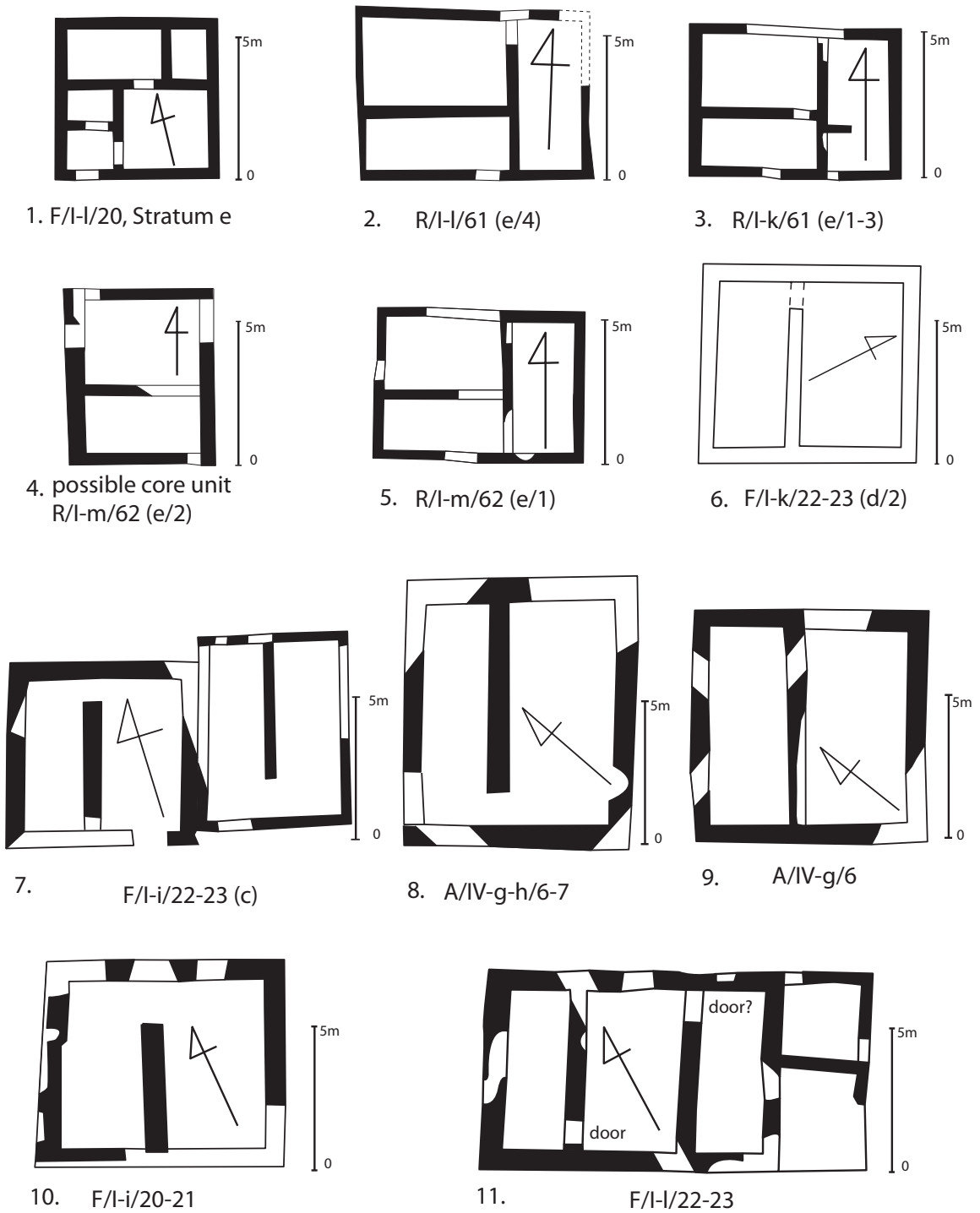


Fig. 5 5.1: after CZERNY 1999, fig. 4; 5.2 after CZERNY 2015, plan 11; 5.3. after CZERNY 2015, plan 8; 5.4. after CZERNY 2015, plan 9; 5.5 after CZERNY 2015, plan 8; 5.6 after BIETAK 1996, fig. 7; 5.7. after BIETAK 2010, fig. 13; 5.8–5.9 after HEIN [www.auaris.at/html/areal\\_a4](http://www.auaris.at/html/areal_a4) fig. 2; 5.10–5.11 after BIETAK 2010, fig. 15



The evidence is not entirely conclusive, thus it remains unclear whether the proportion of 1:1.2 is an intentional choice, which then led to the ground-plan of type Group A.IIa,<sup>55</sup> where the core units often, but importantly not always, share this proportion of length to width or *vice versa* (1:1.2).<sup>56</sup>

### The late Middle Kingdom in Area F/I

In area F/I in Phase H (late 12<sup>th</sup> Dynasty) there was only one single building with a bipartite ground-plan and the single preserved middle room house of Syro-Palestinian type.<sup>57</sup> The bipartite ground-plan in square F/I-k/22–23 measures approximately 7.60 by 7.20 m/54.72 m<sup>2</sup> (= 14 1/2 by 13 2/3 cubits). Length to width are in a relation of 1:1.1 (Fig. 5.6). The next phase in this area is occupied by the large mansion of Phase G/4.<sup>58</sup>

Moving to Phase G/3–1 in area F/I (=stratum c),<sup>59</sup> in which the housing units were built into the ruins of the large mansion of the previous Phase G/4. One compound consisting of two bipartite houses in Phase G/3–1, very close to each other, fulfils the criteria of the bipartite ground-plan in square F/I-i/22–23 (Fig. 5.7).<sup>60</sup> The measurements are 6.70 m by 6.50 m/43.55 m<sup>2</sup> (= 12 2/3 by 12 1/2 cubits) with a wall thickness of 1 1/2 brick's width (= 1 cubit). The proportional ratio of length to width is almost 1:1 in this case (1:1.03). The second building to the east consists only of walls of 1 brick's width. The exterior measurements are 6.60 m by 5.25 m/34.65 m<sup>2</sup> (12 2/3 by 10 cubits). The proportions of the second building are 1:1.3 and thus, do not equal the proportion of most of the bipartite building units in area A/II.

### The late Middle Kingdom in Area A/IV

Area A/IV,<sup>61</sup> situated in the north western part of the original tell, was excavated between 1989 and 1991. In addition to tombs, settlement structures were also uncovered. A published plan representing presumably Phases G–F<sup>62</sup> also shows two bipartite houses (Fig. 5.8–5.9) of the kind seen in the other areas, which are well enough preserved to provide measurements. The wall thicknesses seem to have varied between one and a half and two brick's width.<sup>63</sup>

Square	Size in metres (external)	Size in cubits (external)	Proportion of side lengths	Fig.
A/IV-g-h/6–7	8.40 × 8.10 (68.04 m <sup>2</sup> )	16 × 15 1/2	1:1.04	5.8
A/IV-g/6	9.40 × 7.90 (74.26 m <sup>2</sup> )	18 × 15	1:1.2	5.9

Table 5 Measurements of houses in Area A/IV.

### The early Second Intermediate Period in Area F/I

In the later phases in Area F/I house units become increasingly more complex and bipartite units occur only rarely. In Phases F and E/3 one bipartite house with an extra room for the dead and a front room attached was situated in square F/I-i/20–21 (Fig. 5.10).<sup>64</sup> The measurements are 8.70 m by 7.40 m/64.38 m<sup>2</sup> (= 16 1/3 by 14 cubits), the walls of which are 1 1/2 brick's width and the ratio of length to width of 1:1.2. Another building from Phase F in squares F/I-l/22–23 (Fig. 5.11), can also be divided into two bipartite units, although it had

<sup>55</sup> BIETAK 1996b, 24, fig. 1.

<sup>56</sup> Calculated from the published examples in BIETAK 1996b; BIETAK 2010.

<sup>57</sup> BIETAK 2010, fig. 12; So far, only one middle room house has been excavated in parts and reconstructed. However, over the years an impression seems to prevail that there are many such buildings, which is not the case. Thus, the connection of the layout of one single house ground-plan with the origin of all inhabitants of the site of Tell el-Dab<sup>a</sup>, as seems to have been the impression of MOELLER 2016, 325–326, 347–356, neglects other evidence.

<sup>58</sup> BIETAK 2010, fig. 20a. The core units without the third room in squares F/I-i-j/21–22 have a proportion of side length of 1:1.1. Cf. plan in EIGNER 1985, fig. 2. The measurements are 12.40 × 10.85 m (= 23 2/3 by 20 2/3 cubits). VON PILGRIM 1996, 200 considers the whole unit of three

rooms as his “Hofhaus” ground-plan, although it remains uncertain whether these square rooms were open or roofed. Their size would have made a support necessary if roofed.

<sup>59</sup> BIETAK *et al.* 2010; MÜLLER 2012, fig. 13. MÜLLER 2015a, fig. 15.2; MÜLLER 2015b, fig. 3.

<sup>60</sup> BIETAK 2010, fig. 13; MÜLLER 2012, 264, fig. 64, Faltplan 2.

<sup>61</sup> HEIN 1992; see also I. Hein on [www.auaris.at](http://www.auaris.at) [accessed on 4 November 2016]. BADER 2009, 49.

<sup>62</sup> HEIN on [http://www.auaris.at/html/areal\\_a4.html](http://www.auaris.at/html/areal_a4.html), fig. 2.

<sup>63</sup> The plan is too small in scale to measure the walls with any confidence. Most probably they relate to the measurements in the other areas.

<sup>64</sup> BIETAK 1994, 432, fig. 11; BIETAK 2010, fig. 15; MÜLLER 2012, 276, fig. 67, Faltpläne 3 and 4.



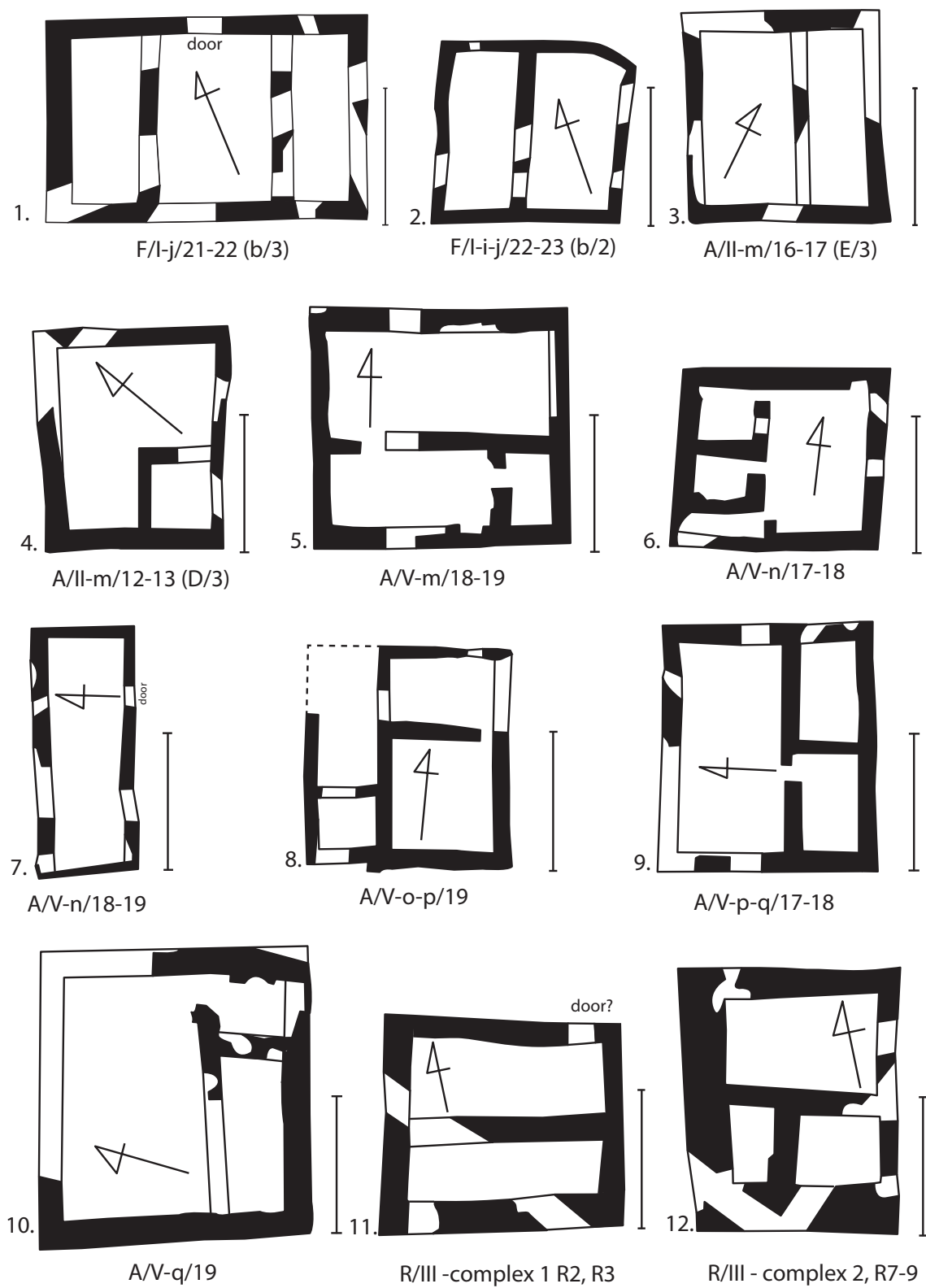


Fig. 6 6.1–2: after BIETAK 2010, fig. 15; 6.3 after BIETAK 1996, fig. 30; 6.4 after BIETAK 1991, plan 7; 6.5–6.10 after HEIN/JÁNOSI 2004, plan 1A–B; 6.11–12 after FORSTNER-MÜLLER *et al.* 2015, fig. 3

Square	Size in metres (external)	Size in cubits (external)	Thickness of walls (m)	Proportion of side lengths	Fig.
One-room house					
A/V-n/19	9.00 × 3.75 (33.75 m <sup>2</sup> )	17 × 7	0.15–0.20 m ~ 1/3 cubit	1.2.4	6.7
Bipartite houses					
A/V-m/18–19	9.40 × 8.75 (82.25 m <sup>2</sup> )	~18 × 16 2/3	0.30–0.37 m ~ 2/3 cubit	1:1.1	6.5
A/V-n/17–18	7.50 × 6.50 (48.75 m <sup>2</sup> )	14 1/3 × 12 1/3	0.30–0.37 m ~ 2/3 cubit	1:1.1	6.6
A/V-o-p/19	7.875 × 7.40 (58.28 m <sup>2</sup> )	15 × 14	0.30–0.37 m ~ 2/3 cubit	1:1.1	6.8
A/V-p-q/17–18	9.00 × 7.70 (69.30 m <sup>2</sup> )	17 × 14 2/3	0.30–0.37 m ~ 2/3 cubit	1:1.2	6.9
A/V-q/19	10.50 × 9.75 (49.64 m <sup>2</sup> )	20 × 18 1/2	0.30–0.37 m ~ 2/3 cubit	1:1.1	6.10

Table 6 Measurements of houses from Area A/V.

been classified previously as a tripartite ground-plan. Perhaps this view is admissible because in Phase E/3 the southeastern room was dismantled.<sup>65</sup> Looking at the measurements of the house as if each of the bipartite elements were a single one (measuring the back or middle wall with each unit), they can also be classified as two bipartite units back to back (one with a sub-division in the narrower room). The measurements of the western unit are 7.30 m by 6.70 m/48.91 m<sup>2</sup> (= 14 by 12 2/3 cubits) and those of the eastern unit are 6.70 m by 6.30 m/42.21 m<sup>2</sup> (= 12 2/3 by 12 cubits). Both units' walls are 1 1/2 brick's wide, while both length to width proportional ratios are 1:1.1. The core unit of the larger building in square F/I-j/21–22 (Fig. 6.1) also has a proportional ratio of 1:1.1 even when the larger middle room is measured with one of the adjacent rooms each.<sup>66</sup> Finally, a rather flimsy building with one brick's wide walls from Phase E/3, which still existed in E/2 in squares F/I-i-j/23 (Fig. 6.2)<sup>67</sup> could be measured at 6.70 m by 6.50 m/43.55 m<sup>2</sup> (= 12 2/3 by 12 1/3 cubits). Such a case already occurred before in Phase G/3–1 in this area. Again, the proportional ratio of the side lengths is almost square (1:1.03). As mentioned before, core units of larger house types more frequently show a proportion of 1:1.2 or more and might therefore suggest another line of development. The latest settlement phase in Area F/I is dominated by very large buildings with a complicated room plan.<sup>68</sup> If the core units of these buildings are taken together in the form of a bipartite house (with possible subdivisions), a proportion of 1:1.1 sometimes occurs.

<sup>65</sup> BIETAK 2010, fig. 15; MÜLLER 2012, 275–276.

<sup>66</sup> MÜLLER 2012, 268–270, Faltplan 3; BIETAK 2010, fig. 15.

<sup>67</sup> MÜLLER 2012, Faltplan 4; BIETAK 2010, fig. 15–16 although one room contains a tomb.

<sup>68</sup> BIETAK 2010, fig. 16; MÜLLER 2012, 314–332.

<sup>69</sup> BIETAK 1994, fig. 1: A/II-m/16–17, fig. 12.

### The early Second Intermediate Period in Area A/II

One bipartite core of a housing unit was found in Phase E/3 in Area A/II, where it was identified as a “Priest's house” because it is situated close to Temples III and II (Fig. 6.3). The entrance was marked by a limestone threshold in the north.<sup>69</sup> The measurements are approximately 7.60 m by 7.10 m/53.96 m<sup>2</sup> (= 14 1/2 by 13 1/2 cubits), the proportional relation of length to width amounts again to 1:1.1. The same holds true for another bipartite house ground plan excavated in 1997, which is equivalent to Phase E/3. The measurements are 8.45 m by 8.0 m/67.6 m<sup>2</sup> (16 x 15 1/3 cubits).<sup>69a</sup>

### The late Second Intermediate Period in Area A/II and A/V

In the late Second Intermediate Period only a few complete house ground-plans of the bipartite type or related plans can be presented. One is situated in Area A/II, Phase D/3 in square A/II-m/12–13 (Fig. 6.4).<sup>70</sup> It is slightly irregular and instead of a wall dividing off one narrow room, there is a square cubicle in the western part of the plan. The measurements are 7.875 m by 6.50–7.25 m/~57.09 m<sup>2</sup> (= 15 by 11 1/3–13 2/3 cubits). The wall is 1 1/2 brick's width and the proportion of length to width 1:1.1 (1.2).<sup>71</sup>

In Area A/V, a late Second Intermediate Period settlement of Phase D/2 was uncovered with five basic bipartite ground-plans (Fig. 6.5–6.10), although the narrower room is sometimes further subdivided (Table 6).<sup>72</sup>

<sup>69a</sup> FORSTNER-MÜLLER 2001, fig. 6; FORSTNER-MÜLLER 2007, fig. 2; plan not shown.

<sup>70</sup> BIETAK 1991b, plan 7.

<sup>71</sup> Depending on which measurement is used: 6.5 m or 7.25 m.

<sup>72</sup> HEIN/JÁNOSI 2004, Plans 1A and 1B; BIETAK 2010, fig. 18.

The proportional ratio of the side lengths of these buildings is again 1:1.1 except for that in squares A/V-p-q/17–18 (1:1.2) and the one-room house that is totally different but comparable to the earlier simple ground-plans of the settlement (1:2.4). Only for the one-room house the location of the entrance is ascertained, it is situated in the southern long wall close to the southeastern corner of the building (Fig. 6.7).

### The later Second Intermediate Period in Area R/III<sup>73</sup>

In contrast to the areas mentioned above, the character of the settlement in Area R/III is markedly different, furthermore several phases are shown in the same plan. The space is used by rectangular, densely arranged housing units, which are larger and more complex than in other parts and phases. Most notably, an orthogonal organisation seems to have been achieved here, with wider north-south running streets and narrower east-west running paths. The resulting ‘insulae’ do not repeat a single house ground-plan pattern (as far as the area was excavated). It must also be said that the destruction of the walls and floors makes it difficult to reconstruct single house units or to distinguish unequivocally rooms from courts, except when they are too wide to be covered and no supports were found. However, each unit seems to consist of a larger courtyard with several rooms around it, including some round silos. The walls are mostly one and a half to two brick’s width. The impression conveyed by the layout is of structures developed over some time, rather than built with an underlying intention in a single instance, because the walls are not always exactly parallel or perpendicular to each other, creating irregular rooms.<sup>74</sup> Two features within the larger complex ground-plans may be addressed as bipartite core units (Fig. 6.11–12): one in Complex 1, rooms R1 and R2 (8.9 m by 7.9 m/70.91 m<sup>2</sup> = 17 by 15 cubits, proportional ratio 1:1.1) and the other in Complex 2, rooms R7, R8 and R9 constituting a bipartite plan with further subdivision of the narrower unit

(9.5 m by 7.6 m/72.2 m<sup>2</sup> = 18 by 14 1/2 cubits).<sup>75</sup> Furthermore, it may be possible to consider the two parts of ‘Gebäude 2’ as two bipartite units, the western one of which would have a courtyard with a round silo (R8, R9)<sup>76</sup> and the eastern one a subdivided narrow room (R2, R3, R4), but the latter is too incomplete to obtain measurements. In Complex 3, Gebäude 7 may also display a similar ground-plan but it is incomplete and the rooms are not of regular shape. In any case, it is difficult to ascertain which units were roofed and which were not. The doorways were often difficult to identify, which makes it impossible to reconstruct the access routes.

### From the Second Intermediate Period to the early 18<sup>th</sup> Dynasty

In the area of Ezbet Helmi, one bipartite ground-plan was excavated, which was later adapted to a tripartite plan<sup>77</sup> similar to group B.II but with the division of the room in the middle ‘stripe’ instead of in the last one.<sup>78</sup> The core unit of the second phase is a nearly square bipartite unit with one subdivision and its proportional ratio of length to width is 1:1.1, interestingly the older unit shows a proportion of 1:1.3 (Fig. 7.1–2).

Square	Size in metres (external)	Size in cubits (external)	Thickness of walls (m)	Fig.
H/I-1/25–26 <sup>79</sup> (earlier)	9.20 × 7.10 (65.32 m <sup>2</sup> )	17 1/2 × 13 1/2	~0.56–0.65 ~1–1 1/3 cubit	7.1
H/I-1/25–26 <sup>80</sup>	7.30 × 6.80 (49.64 m <sup>2</sup> ) <sup>81</sup>	~14 × 13	0.35–0.68 ~2/3–1 1/3 cubit	7.2

Table 7 Measurements of houses from Area H/I.

### 5. Parallels for the bipartite ground-plan in temple architecture

The structure from Area A/II, Phase E/3, in square m/11 is identified as a temple;<sup>82</sup> beside the bipartite core unit a third room had been attached to the north forming an ante-room. The core unit is again

<sup>73</sup> FORSTNER-MÜLLER *et al.* 2015.

<sup>74</sup> FORSTNER-MÜLLER *et al.* 2015, 21–28, plan fig. 3.

<sup>75</sup> It is possible that the eastern rooms R5 and R6 have to be assigned as well. The proportional ratio of side lengths including these is 1:1.1 without them it is 1.25.

<sup>76</sup> 9.5 m by 8.6 m/81.7 m<sup>2</sup> = 18 by 16 1/3 cubits, proportion 1:1.1.

<sup>77</sup> JÁNOSI 1996, 89, fig. 4; 90, fig. 5.

<sup>78</sup> BIETAK 1996b, fig. 2.

<sup>79</sup> JÁNOSI 1996, 90, fig. 4, measurements given in text fit the plan.

<sup>80</sup> JÁNOSI 1996, fig. 5 without scale. I am assuming that the grid was 10.0 m square.

<sup>81</sup> This is only correct if the grid is 10.0 m in square.

<sup>82</sup> BIETAK 1991b, 78–80, plan 4, phase E/3.

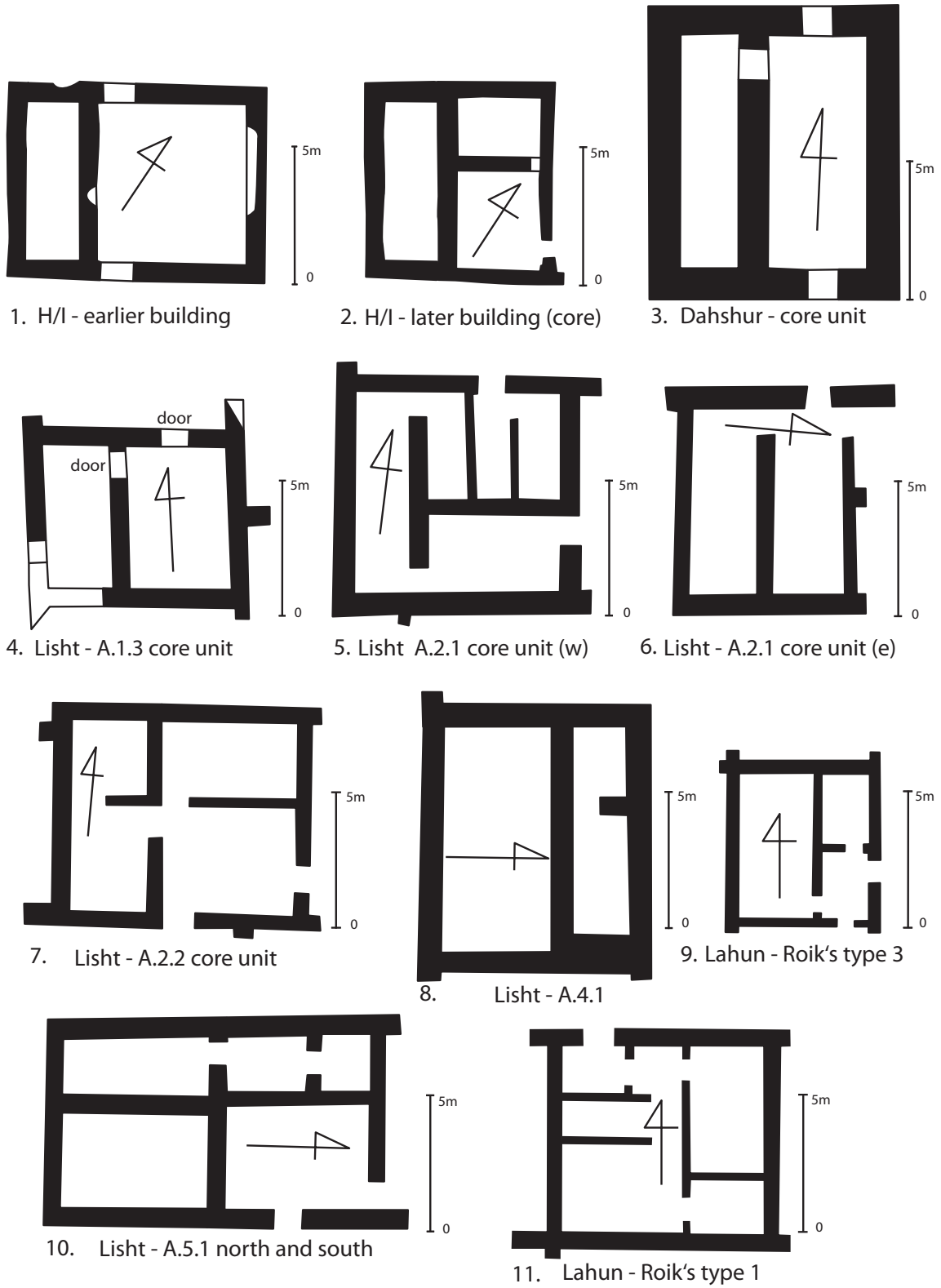


Fig. 7 7.1–2: after JÁNOSI 1996, fig. 4–5; 7.3 after BIETAK 1996b, fig. 8; 7.4–7.8 and 7.10 after ARNOLD 1996, plan 1 and fig. 4; 7.9 and 7.11 after ROIK, fig. 10–11

almost square and measures 7.80 m by 6.40 m/49.92 m<sup>2</sup> (= ~15 × 12 1/3 cubits<sup>83</sup>). The proportional ratio of this building is 1:1.2. For the later Mortuary Temple I from Stratum E/2–1<sup>84</sup> with three cellae the core unit model with two rooms of unequal width does not work out in the same proportional ratio of the housing units. They are almost square.

## 6. Comparanda for bipartite house plans and core units from late Middle Kingdom and Second Intermediate Period settlements in Egypt

In order to see whether the bipartite house ground-plan is common in Egyptian architecture, various settlements all over Egypt were examined in addition to those previously listed.<sup>85</sup> Difficulties arose in as far as the rural and self-organised character of the late Middle Kingdom phases in Area A/II was not paralleled by many excavated settlements, because most of the known ones are state founded and therefore mostly orthogonal or at least regular, suggesting a master plan. Complete house ground-plans are hitherto not always available, for example at Memphis/RAT, Edfu or Karnak East. It is hoped that future work will provide more data.

### Dahshur

A core unit in the complex ground-plan of one of the priests' houses in the pyramid complex of Amenemhat III includes the bipartite ground-plan with unequal width of the rooms (Fig. 7.3).<sup>86</sup> This

core unit (~10.5 by 8.9 m/93.43 m<sup>2</sup> = 20 by 17 cubits) is located in the centre of the house. The proportional ratio is 1:1.2. The (reconstructed) location of the doorways does not conform to the indirect access of the houses at Tell el-Dab<sup>a</sup>.

### Lisht

The settlement developed around the pyramid of Amenemhet I in Lisht-North<sup>87</sup> some time in the 13<sup>th</sup> Dynasty is to date most similar to the irregular settlement at Tell el-Dab<sup>a</sup>, although it lacks open spaces or courtyards and precinct walls. The houses themselves are often more complex and comprise more rooms, but still bipartite house plans used as core units do occur,<sup>88</sup> albeit not exclusively (see Table 7, Fig. 7.4–7.8, 7.10). Some of these examples differ in that they have more rooms than just two (multiple sub-divisions of the interior). B 1.1. from a later period has an annexe at the back. The thickness of the walls is hard to glean from the plan. The extraordinary density of the houses around the pyramid is one notable difference to the late Middle Kingdom settlement of Tell el-Dab<sup>a</sup>, while the presence of contemporary (shaft) tombs<sup>89</sup> provides a similarity.

House A 1.3 also has a different arrangement of the doorways: the door to the narrower room is situated close to the entrance to the core unit. Furthermore, the narrow room or 'private chamber' according to F. Arnold, in which a window was

House unit	Measurements (exterior) m	Measurements (exterior) cubits	Proportional ratio of side lengths	Fig.
A 1.3 <sup>90</sup>	8.00 × 6.50 (52.00 m <sup>2</sup> )	15 1/3 × 12 1/2	1:1.2	7.4
A 2.1 west	9.20 × 8.80 (80.96 m <sup>2</sup> )	17 1/2 × 16 2/3	1:1.1	7.5
A 2.1 east	8.40 × 6.80 (57.12 m <sup>2</sup> )	16 × 13	1:1.2	7.6
A 2.2	9.60 × 8.40 (80.64 m <sup>2</sup> )	18 1/3 × 16	1:1.1	7.7
A 4.1	10.40 × 8.80 (91.52 m <sup>2</sup> )	19 2/3 × 16 2/3	1:1.2	7.8
A 5.1 north	7.68 × 6.80 (52.22 m <sup>2</sup> )	14 2/3 × 13	1:1.1	7.9
A 5.1 south	7.68 × 6.80 (52.22 m <sup>2</sup> )	14 2/3 × 13	1:1.1	7.10
B 1.1	8.00 × 6.40 (51.20 m <sup>2</sup> )	15 1/3 × ~12 1/3	1:1.3	
C 3.1	8.80 × 7.40 (65.12 m <sup>2</sup> )	16 2/3 × 14	1:1.2	

Table 8 Approx. measurements of house plans from Lisht (ARNOLD 1996, plans 1–2).

<sup>83</sup> BIETAK 1994, 414: gives the interior measurements as 5 and 6 cubits by 10 cubits. With the addition of the walls the measurements as expected tally.

<sup>84</sup> BIETAK 1991b, 108–116, 167–169, plans 5–6.

<sup>85</sup> BIETAK 1996b.

<sup>86</sup> ARNOLD/STADELMANN 1977, fig. 2; ARNOLD 2012, fig. 1; BIETAK 1996b, fig. 8. The measurements of these plans are not entirely congruent.

<sup>87</sup> See also MOELLER 2016.

<sup>88</sup> ARNOLD 1996, plans 1 and 2; scale 1:400. Due to the tiny scale the measurements cannot be overly accurate and the identification of core units cannot be proven in all cases.

<sup>89</sup> It appears very likely that the type of tomb used depends on the topographic circumstances of the site.

<sup>90</sup> ARNOLD 1996, fig. 4 and 15–17; MOELLER 2016, 361–362.



preserved, was roofed by means of a vault. It is interesting that even in the 18<sup>th</sup> Dynasty (with pre-fix B) and even later (pre-fix C) houses sometimes still show similarities to the earlier ground-plan, although most of them are modelled after the different ground-plan found at Amarna.<sup>91</sup>

### Lahun

The orthogonal settlement of Lahun, planned by architects of Senwosret II in order to conduct the building programme of the king, continued to be in use during the 13<sup>th</sup> Dynasty.<sup>92</sup> Remains of the 18<sup>th</sup> Dynasty have also been found there.<sup>93</sup> There are several distinguished zones with a number of house plans, from very small ones, to the large elite mansions in the northeastern part of the settlement.<sup>94</sup> Several scholars have analysed the settlement according to different criteria.<sup>95</sup> Unfortunately, the plan published by PETRIE<sup>96</sup> is at a very small scale so that measurements taken from this plan appear very unreliable. The nature of the settlement, where the walls of one dwelling were used by the neighbouring one, also complicates obtaining accurate measurements on the exterior.<sup>97</sup> Considering nearly square ground-plans as core units, there may be some parallels of bipartite ground-plans in all of the size classes.<sup>98</sup> The normalised plans used by DOYEN suggest exactly square core units of 15 cubits length.<sup>99</sup> Although these are subdivided into more rooms than just one narrow and one wider one, the underlying principle of a fundamental division into these two basic units may be

recognised.<sup>100</sup> Some of them show the indirect access route of the 'snail house'. Such dwellings were found in the so-called "western ranks" (Fig. 7.9, 7.11), which were erected in a second stage.<sup>101</sup> Considering the spatial closeness of the dwellings to each other and the need to conform, unified measurements are of course, fundamental. Also in the larger size classes some parallels may be found, e.g. in the seventh rank counting from the north.<sup>102</sup> Even in the largest mansion there are square units in the bipartite layout with a size of about 16 1/2 cubits.<sup>103</sup> Also in BIETAK's plan there are at least two instances of a bipartite unit: rooms 7 with a column and 8 in Lahun house I<sup>104</sup> (measurements ca 9.40 by 8.40 m/~78.96 m<sup>2</sup>; ~ 18 by 16 cubits; proportion 1:1.1). The measurements must be considered an approximation because RICHKE's plan, on which it is based, is a reconstruction.<sup>105</sup> Also in the second row of the mansions (DOYEN's E VIII)<sup>106</sup> at least one almost square unit can be discerned in the preserved centre of the house.

### Abydos

The large dwellings laid out quite regularly at Abydos do not provide many comparanda for the simple house plans due to their complexity within the planned town, which has been compared to Lahun.<sup>107</sup> The lack of smaller dwellings excavated may be seen as main reason for the missing evidence here, although again, single elements may represent the core unit described above even in the large houses, such as in Building A,<sup>108</sup> although

<sup>91</sup> ARNOLD 1996, 17–20.

<sup>92</sup> KEMP/MERRILLEES 1980, 102.

<sup>93</sup> BURTON-BROWN 1959, fig. 4–6; QUIRKE 2005, 85.

<sup>94</sup> PETRIE 1890; PETRIE 1891; QUIRKE 2005, 55–88.

<sup>95</sup> E.g. ARNOLD 1990; ARNOLD 2005b; MOELLER 2016, 271–290, 335–340; DOYEN 2010.

<sup>96</sup> PETRIE 1891, pl. XIV; QUIRKE 2005, 75 urges for caution in the use of this plan, because several stages present may not have been distinguished.

<sup>97</sup> For the purpose of this paper the walls of each unit were measured. Thus, if a single wall was used by two dwellings, it was measured with each dwelling in order to provide a common basis for comparison, cf. above.

<sup>98</sup> QUIRKE 2005, see plans and description from 74 to 86.

<sup>99</sup> DOYEN 2010, Fig. 6a, type 3a and the rear parts of types 9 and 14, for example. Taking measurements from Petrie's original published plan some of the core units turn out at a proportional ratio of 1:1.1, but the small scale makes this uncertain. Also, if the door openings of Petrie's plan are to be believed, very few of the housing units are really very

small because several units have multiple doorways connecting as many as four units (e.g. in rank G, H, J). But note that some house units are without any doorways. Therefore, the plan may not be too accurate.

<sup>100</sup> ROIK 1988, figs. 10–11, not to scale. The proportional ratio of core units is 1:1.1 for house types 1, 3, 4 and 5 if the measurements in ROIK's plans are accurate. Again, the walls were always included in the measurements. PETRIE 1890, pl. XV, scale 1:200.

<sup>101</sup> ARNOLD 2005b, 79–80.

<sup>102</sup> PETRIE 1891, pl. XIV.

<sup>103</sup> DOYEN 2010, fig. 11 in the rear part in the middle, but note that the reconstruction differs from Petrie's original plan.

<sup>104</sup> BIETAK 1996b, fig. 12.

<sup>105</sup> RICHKE 1932, 51.

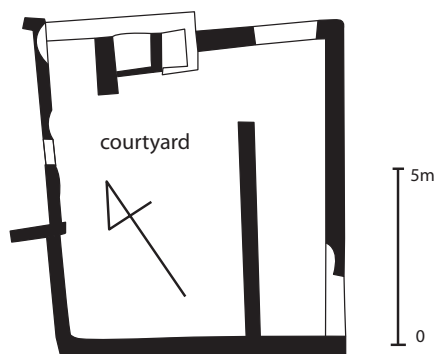
<sup>106</sup> DOYEN 2010, fig. 1.

<sup>107</sup> MOELLER 2016, 290 with bibliography and fig. 8.31 for convenience.

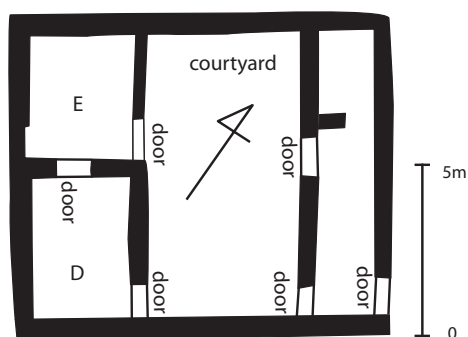
<sup>108</sup> WEGNER 1998, 11, fig. 6–11.7.



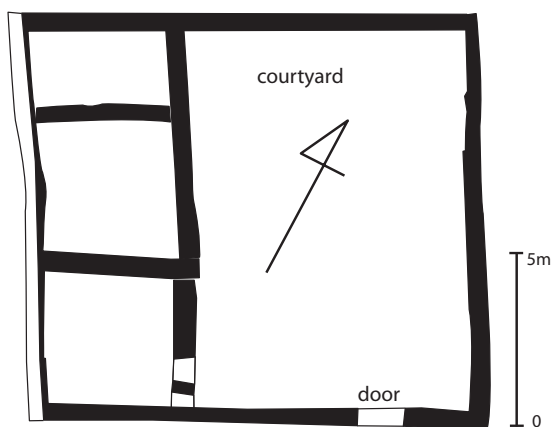
1. Abydos - core unit house E



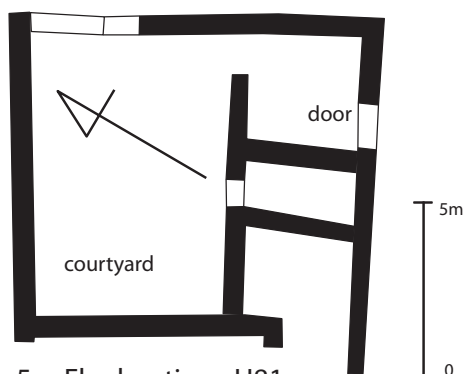
2. Elephantine - H25a



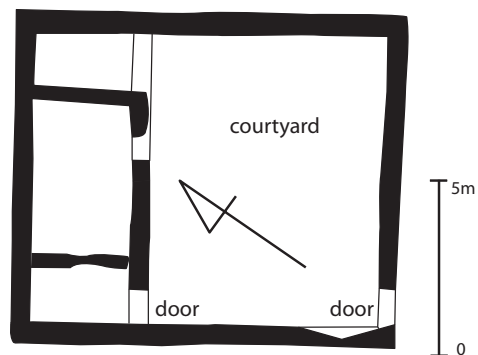
3. Elephantine - H53



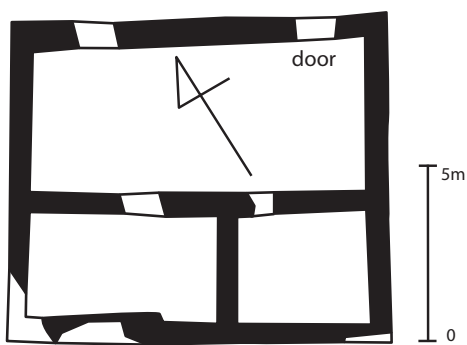
4. Elephantine - H84



5. Elephantine - H81



6. Elephantine - H49c



7. Tell el-Maskhuta building B



8. Abydos - temple plan 1st Dyasty

Fig. 8 8.1: after PICARDO 2015, fig. 11.5; 8.2–8.6 after VON PILGRIM 1996 fig. 4, 59, 25, 31, 65; 8.7 after PAICE *et al.* 1996, fig. 10; 8.8 after KNOBLAUCH/BESTOCK 2009, fig. 2

the proportional ratio of the side length amounts to 1:1.4 and therefore it is wider than long. The existence of a parallel third room makes an assignation to Bietak's group A – type IIIa perhaps more plausible. Building E (Fig. 8.1)<sup>109</sup> also sports a core unit similar to the plan of Bietak's group A – IIIa. Considering only the wider room in the middle with two column bases and one narrower side room, a bipartite unit each results, which both measure 10.00 m by 9.17 m/91.70 m<sup>2</sup> (= 19 by 17 1/2 cubits). These side lengths are in a proportional ratio of 1:1.1. The access way is indirect coming from the south. A doorway in the northern wall not exactly opposite the southern doorway of the main hall would comprise a more direct access. Moreover, the walls of Building E appear to be wider, probably another hint to the elevated status of the owner.

### Elephantine

The settlement on the island of Elephantine, while not exactly orthogonal, is special in that it had to adapt to the available space of the island.<sup>110</sup> A comparison with the Tell el-Dab<sup>a</sup> alleyway network (Fig.3) shows that Elephantine was more organised with wider and somewhat straighter streets. In terms of house ground-plans there are two main house types: the tripartite house, where three 'rows' or 'stripes' of areas are laid out consecutively behind each other<sup>111</sup> (constituting intricate variations of Bietak's Group B – type II, developed out of three-room house Group B – I<sup>112</sup>) and the so-called courtyard houses, where rooms are arranged around a courtyard at least on two sides.<sup>113</sup> In general, courtyards seem to occur more often at Elephantine,<sup>114</sup> although it is often difficult to identify<sup>115</sup> them elsewhere. Still some similarities are sometimes visible, if the tripartite house is broken down into smaller units, and if just the ground-plan is considered, and the courtyard accepted as an element of the core unit as described above. In this sense, similar examples

can be found in H25a (Fig. 8.2),<sup>116</sup> H53 (Fig. 8.3),<sup>117</sup> H84 (Fig. 8.4),<sup>118</sup> H81 (Fig. 8.5),<sup>119</sup> and H49c (Fig. 8.6).<sup>120</sup> Although the proportional ratio of the side lengths is in these instances always 1:1.1, the access way is not as indirect as in the housing scheme at Tell el-Dab<sup>a</sup>. Also, there seem to be no irregular compound walls encircling the housing precincts.

### The Second Intermediate Period

#### Tell el-Maskhuta

At Tell el-Maskhuta, in a small area of the excavation a possible bipartite ground-plan of considerable size (Structure B) used over several phases was found (Fig. 8.7). The finds within this building suggested an industrial activity.<sup>121</sup> Although the structure was not completely excavated, a core unit of bipartite plan with one further subdivision in the narrow part may be identified. The walls are one and a half brick's width. The last two phases saw the addition of an elongated room to the north of the building.<sup>122</sup> It measures 10.625 m by 9.20 m/97.75 m<sup>2</sup> (= 20 1/3 by 17 1/2 cubits). The proportional ratio of the side lengths is 1:1.2. Simple one-room houses were identified in Phase 3 (Structure E and a thin walled hut). Unusually, Structure E had a wall of two brick's width. Its measurements are 10.20 m by 6.00 m/61.20 m<sup>2</sup> (=19 1/2 by 11 1/2 cubits). The proportional ratio of the side lengths is 1:1.7. It remains unclear where the entrance was located. The hut-like structure only consisted of 1/2 a brick's width wide wall and measured 5.00 m by 3.10 m/15.50 m<sup>2</sup> (= 9 by 6 cubits).<sup>123</sup> Again, the ratio of the side lengths is 1:1.7.

#### Memphis

In the excavation of Memphis/RAT a small number of incomplete houses or house parts were found. One of them may be reconstructed to a

<sup>109</sup> PICARDO 2015, fig. 11.5.

<sup>110</sup> VON PILGRIM 1996.

<sup>111</sup> VON PILGRIM 1996, 190–196.

<sup>112</sup> BIETAK 1996b, fig. 2; MOELLER 2016, 370.

<sup>113</sup> VON PILGRIM 1996, 196–204.

<sup>114</sup> MOELLER 2016, 373.

<sup>115</sup> VON PILGRIM 1996, 201–203.

<sup>116</sup> VON PILGRIM 1996, fig. 4, courtyard + room E together with the third room form a tripartite ground plan.

<sup>117</sup> VON PILGRIM 1996, fig. 59, units C (courtyard), D and E.

<sup>118</sup> VON PILGRIM 1996, fig. 25, rooms A, B, C and D constituting a courtyard and a narrow strip of subdivided rooms.

<sup>119</sup> VON PILGRIM 1996, fig. 31, rooms A, B, C, and D: courtyard and one suite of subdivided rooms.

<sup>120</sup> VON PILGRIM 1996, fig. 65, rooms A, B, C, and D, courtyards with a suite of subdivided rooms.

<sup>121</sup> PAICE *et al.* 1996.

<sup>122</sup> PAICE *et al.* 1996, fig. 10 and 12, note that the plans of Phase 5 and 6 were erroneously interchanged.

<sup>123</sup> PAICE *et al.* 1996, fig. 7.

bipartite house plan of 9.40 (+x) m by 8.00 m (= 18 (?) × 15 1/3 cubits).<sup>124</sup>

### Deir el-Ballas

The few dwellings documented at Deir el-Ballas from the transition of the late Second Intermediate Period to the New Kingdom were generally typed as the ‘Amarna ground-plan’ with open courtyards in front and a number of rooms attached around. They were quite sizable, and House A had a unit consisting of one wider and one narrower room (Rooms 1 and 2) in the last row,<sup>125</sup> but this did not constitute a ‘core’ and the proportional ratio of the external side lengths was 1:1.2.

Other partly excavated settlement sites, regardless if attached to temples or mortuary precincts, such as Karnak, Edfu or most of the fortresses in Nubia<sup>126</sup> are either too incompletely known or with multiple rooms and, thus, do not provide comparative ground-plans or even architectural core units and are therefore not further discussed here, as they do not (yet) provide comparanda.

### 7. Earlier comparanda for bipartite ground-plans and core units from Egypt

From very early on, rectangular house types are used in Egypt.<sup>127</sup> It is difficult to get a clear idea though, whether there are enormous differences between *settlement* types, because the records available to date do not allow such a judgement yet.<sup>128</sup> However, in early settlement areas a rectangular bipartite house plan has not yet been attested.

In contrast, from a cultic context at Abydos, an early instance of a bipartite plan became known (Fig. 8.8), which was dated to Hor Aha of the 1<sup>st</sup> Dynasty.<sup>129</sup> Although the plan also includes an additional room to the north of the unequal bipartite southern part, it clearly evokes the plan of the

older mortuary temple I at Tell el-Dab<sup>a</sup> (see above). The approximate measurements are 4.80 by 4.30 m equating ~9 by 8 1/3 cubits. The proportional ratio of the side lengths is 1:1.1. Thus, it is a very early attestation of such a ground-plan and with all due reserve suggests a root for it in early Egyptian history.

Almost square house plans but with a division exactly in the middle and further sub-divisions of one half of the plan are known from the 5<sup>th</sup> Dynasty priests’ houses at Abu Rawash.<sup>130</sup> The same may hold true for a dwelling at Kom el-Hisn of the 5<sup>th</sup> and 6<sup>th</sup> Dynasty,<sup>131</sup> and possibly a building that was identified through the finds as part of a bakery at Giza.<sup>132</sup> Also at Giza, in the eastern town a core unit of a larger dwelling,<sup>133</sup> which shows an unequal division into two parts but is not exactly square (proportion 1:1.4), can be listed as at least similar. It is not quite certain which parts of this house were supplied with a roof. Lehner considers this ground-plan as modelled on the hieroglyph for *h*,<sup>134</sup> and it is thus at least similar to those being the topic of this paper. In contrast though, the core unit is placed very much in the centre of a larger and complex series of interconnected rooms and open spaces.<sup>135</sup> All of these house types were situated in densely built up areas and are therefore hard to identify and of only limited comparability with the bipartite house plan of the late Middle Kingdom that appears so frequently in Phase G/3–1 at Tell el-Dab<sup>a</sup>. While not a direct development is suggested here, the presence of similar concepts is at least noteworthy.

MOELLER’s suggestion that one of the house ground-plans in the valley temple complex of Snofru’s Bent Pyramid at Dahshur may belong to the Middle Kingdom<sup>136</sup> gains more credence due to the fact that it is almost square, divided in two unequal halves with several subdivisions in each of them. The measurements are approx. 8.60 m by 7.90 m/67.94 m<sup>2</sup> (= 16 1/3 by 15 cubits). The pro-

<sup>124</sup> GIDDY 2012, pl. 6, Level VIb.

<sup>125</sup> LACOVARA 1990, plan 3.

<sup>126</sup> The fortress of Buhen yields two units, which may constitute bipartite plans, although this holds only true if the first row is disregarded. The almost square units are situated to both sides of a courtyard or hall. If entered from the courtyard, they would function conceptually like the bipartite core unit, with indirect entries. Also, the proportional ratio of the side lengths is 1:1.1. Cf. plan in VON PILGRIM 1996, fig. 84b.

<sup>127</sup> HOFFMAN 1980.

<sup>128</sup> MOELLER 2016, 59–112.

<sup>129</sup> KNOBLAUCH/BESTOCK 2009, fig. 2.

<sup>130</sup> MOELLER 2016, fig. 5.5.

<sup>131</sup> REDDING 2015, fig. 10.1; MOELLER 2016, cf. fig. 6.1 rooms 12, 10 and 15 if they can be considered to belong together.

<sup>132</sup> SADARANGANI/YUKINORI 2015, fig. 14.1; MOELLER 2016, fig. 5.15.

<sup>133</sup> LEHNER *et al.* 2009, 16–18, fig. 8; MOELLER 2016, fig. 5.16.

<sup>134</sup> LEHNER *et al.* 2009, 17.

<sup>135</sup> Cf. MOELLER 2016, 211–212.

<sup>136</sup> MOELLER 2016, 142–143, and fig. 5.20.

portion of length to width is 1:1.1 and the thicknesses of the walls of 0.3–0.4 m suggest a measurement of 2/3 of a cubit, which is for example very well attested in the late Middle Kingdom settlement at Tell el-Dab<sup>a</sup>.

After the end of the Old Kingdom there are not many complete house plans available for comparison, except at Dendara, Abydos and Ayn Asyil.<sup>137</sup> At Dendara at least one almost square structure was found, which fits the description of an unequal partition into two (although further subdivided), in a proportion of 1:1.1 (measurements are 7.50 m by 6.30 m/47.25 m<sup>2</sup> (= 14 1/3 by 12 cubits). It has to be said though, that this core unit belongs to a far more complex house ground-plan.<sup>138</sup> Therefore, it is also difficult to ascertain whether this ‘core’ was intended as such or not. At Abydos, again as part of complex structures, similar units can be identified (e.g. the northeastern part in building 5),<sup>139</sup> although it does not exactly fit the proportional relations pointed out above. Although the workshop at Ayn Asil is also roughly square, and although the main internal division creates two unequally wide spaces, the similarity may only be superficial.<sup>140</sup>

For the early Middle Kingdom, Abu Ghalib<sup>141</sup> can be listed. But this is, again, a very dense settlement area with large and complex house ground-plans, within which no direct parallels can be isolated.

Also relevant is a domestic house ground-plan dated to the 12<sup>th</sup> Dynasty partially excavated at Memphis. The published preliminary plan shows a square unit with possible bipartite division. The measurements are 8.0 by 8.0 m (~15 1/3 cubits).<sup>142</sup>

The biggest obstacle in direct comparison with the later Middle Kingdom bipartite ground-plan is the difference in density of the settlement types (of state foundations) available for study to date, which does not really provide a common basis to start from. Although single units are very similar in proportion and measurement, they are embedded in larger houses as well as in densely built-up areas, thus, a direct line of development cannot be drawn. The difference between state run complex

housing reflecting complex tasks and management of a medium to large number of people in a restricted space and more rural loosely spaced, perhaps self-organised dwellings may also play a part.

## 8. Other Egyptian evidence for house architecture in the Middle Kingdom

Turning to other evidence for the bipartite house ground-plan, the layout of hieroglyphs has been used, for example the sign Gardiner O4 “reed shelter in the fields”, which underlies the same concept of indirect entrance as most of the ground-plans presented here (cf. Fig. 2.7).<sup>143</sup> Felix Arnold opposes the identification as a roofed house, but he thinks that O4 depicts a courtyard with a long house.<sup>144</sup> In essence, the underlying principle of indirect access is the crucial observation, rather than the presence of a courtyard or a roofed second room. Both need not exclude each other, but may depend on topographical or climatic factors and thus may constitute variation. The distinction of courtyards from closed halls in the archaeology of mud brick, where vertical preservation is almost always very low, complicates this division in the absence of columns/pillars or wider spaces than can easily be bridged.<sup>145</sup> Sign Gardiner O1 “house” on the other hand depicts a rectangular building with the entrance in the middle of the long wall – the simplest ‘broad room’ house.<sup>146</sup> For these there are no proven parallels in the material presented here: the preserved entrances to rectangular houses are in the long side close to a corner, providing the most indirect access possible in such a simple ground-plan (see Fig. 2). Whether there might be an early connection between this concept and Mesopotamian and northern Syrian house forms (“middle room” and “broad room” house) remains to be researched. Unfortunately, the poor preservation does not allow any firm observations.

Another source of information for the bipartite ground-plan may be seen in some of the wooden models of the early Middle Kingdom. Although the veracity and accuracy of these house “models”

<sup>137</sup> For convenience sake I use the plans in MOELLER 2016. See there for further references.

<sup>138</sup> MOELLER 2016, fig. 7.19.

<sup>139</sup> MOELLER 2016, fig. 7.21.

<sup>140</sup> MOELLER 2016, fig. 7.23b.

<sup>141</sup> BAGH 2012, fig. 1.

<sup>142</sup> MAHMOUD MOHAMED 2017.

<sup>143</sup> BIETAK 1991b, 28.

<sup>144</sup> ARNOLD 1996, note 18; ARNOLD 1989, 90.

<sup>145</sup> Cf. VON PILGRIM 1996, 201–203.

<sup>146</sup> Interestingly this type is missing from the endorsed house typology in MÜLLER 2012, fig. 3, where a square house plan and a ‘long house’ plan are represented. Cf. RICKE 1932, 6–7.



has been challenged because they represent only a *pars pro toto* view of the *concept* of a house for representation in the netherworld, and cannot be usefully compared to complex houses found in archaeology,<sup>147</sup> this may actually serve as an argument in favour of a comparison for our purposes, precisely because the bipartite house ground-plan is the most basic plan existing. Only the one-room house is simpler. As examples, the models found in the tomb of Meketre at Thebes may be mentioned.<sup>148</sup> Some models (granary, bakery/brewery, stable) show a similar concept of organisation of rooms, where various rectangular ground-plans are divided into sub-units by walls much in the same way as the bipartite house ground-plan.<sup>149</sup> This holds particularly true for the granary<sup>150</sup> and the brewery/bakery.<sup>151</sup> The doors shown in these models are frequently arranged in a way not to allow direct access but necessitate at least one 90° turn. Models with only one room (weaving shop and carpenter shop) were accessible by one door situated on one long side close to a corner (= “bent entry room”<sup>152</sup>). This holds true also for the other models with more than one room (except for the butchery).<sup>153</sup> Although the measurements given in the online databases of the Metropolitan Museum and the Global Egyptian Museum<sup>154</sup> and the initial publication are not congruent,<sup>155</sup> the proportional ratio is in any case 1:1.3. But for this reason, it is difficult to obtain accurate measurements for comparison with the cubit system. The series is only broken by the weaving shop which has a proportional ratio of the side lengths of 1:2.2, which is

not paralleled by any other building or model so far. As for the discussion whether one of the rooms (more likely the wider one) might represent a courtyard, it seems unlikely that the models may add any evidence, because the roofing arrangements may have been adjusted in order to see the interior of the model rather than reflecting real circumstances. Still, several models are at least partly roofed over (weaving shop, carpenter shop, bakery/brewery).

Consideration of the pottery model houses, many of them found at Deir el-Rifeh, is much more difficult because detailed ground-plans are currently not available<sup>156</sup> and the interior organisation is, if at all indicated, by one narrow room and/or several doors. Despite disputes as to whether these houses depict domestic dwellings or tomb chapels, there are several features that hint at domestic architecture.<sup>157</sup> At least one example from Rifeh indicates a representation of a simple one-room ground-plan, given type M. Notably, the two doors are on the viewer’s right and left side.<sup>158</sup> If in this instance the courtyard is considered as the “wider room”, one might even find a bipartite ground-plan. The two round elements in the courtyards were identified by PETRIE as corn grinders,<sup>159</sup> while ROIK<sup>160</sup> sees them as column bases and thus, she reconstructs a roof. Although this does not provide unequivocal evidence, a tendency seems to further corroborate that some traits of some models and some ‘soul houses’ are very well derived from actual architecture. As so often, no single rule fits them all.<sup>161</sup>

<sup>147</sup> VON PILGRIM 1996, 204–205; ARNOLD 2005a sees some features of real architecture occurring in some of the wooden models. ROIK 1988, 32, 208 distinguishes between wooden and clay models. Whilst both contain architectural details from real architectural prototypes, only some of the wooden models represent parts of real buildings.

<sup>148</sup> WINLOCK 1955, figs 59, 62, 64, 65, 68; ROIK 1988, figs 40–46 does not provide new measurements for the Meketre models.

<sup>149</sup> There seems to be no reason to assume that workshop buildings need to have a different underlying planning concept than housing. Moreover, in some of the housing units described, finds indicate also some activities which would have taken place in workshops.

<sup>150</sup> Metropolitan Museum 20.3.11 also drawn by Kemp. KEMP 1986, fig. 1.

<sup>151</sup> Metropolitan Museum 20.3.12.

<sup>152</sup> WRIGHT 1985, vol. 2, ill. 22.

<sup>153</sup> Cf. ROIK 1988, fig. 47–52 for further model scenes with the door on one long side and close to the corner, but other examples do also exist.

<sup>154</sup> [http://www.metmuseum.org/art/collection: search term Meketre](http://www.metmuseum.org/art/collection:search_term/Meketre) [accessed on 15. 11. 2016]; [http://www.globalegyptianmuseum.org: search term Meketre](http://www.globalegyptianmuseum.org:search_term/Meketre) [accessed on 15. 11. 2016].

<sup>155</sup> WINLOCK 1955, figs 59–60, 62, 64, 65, 68.

<sup>156</sup> A master’s thesis in Egyptology at the University of Leiden by FILIPPO MI is devoted to this topic and will hopefully appear soon in print. MI 2018.

<sup>157</sup> PETRIE 1907, esp. 14–16, pls XV–XXII; ROIK 1988, 208; SPENCE 2011, with bibliography.

<sup>158</sup> PETRIE 1907, pl. XIX.43. This model is now housed in Edinburgh’s National Museum of Scotland, but unfortunately no photo of this specimen is present in their database.

<sup>159</sup> PETRIE 1907, 18–19.

<sup>160</sup> ROIK 1988, vol. 1, 44, vol. 2, fig. 72.

<sup>161</sup> SPENCE 2011, 899–906, 909–910. Cf. the Syro-Palestinian models, which follow a different tradition, MULLER 1997.

## 9. Survey of settlement architecture in Syria/Palestine up to the Middle Bronze Age IIA/B

Only a few rural contemporary settlement excavations of the Middle Bronze IIA in the Levant are available for direct comparative purposes. Small areas were uncovered at Tel Nami,<sup>162</sup> Ifshar<sup>163</sup> and Tell Beit Mirsim (Strata G and F),<sup>164</sup> none of which, among the limited exposure and usually incomplete house plans, provide similar ground-plans to those discussed above. At Ifshar the preserved size of mud bricks is on average 0.60 by 0.40 by 0.11 m and the thicknesses of the walls are accordingly 0.40, 0.60, 1.00 and 1.20 m wide.<sup>165</sup> The brick sizes recovered from Tell Beit Mirsim are 0.34 by 0.16–0.17 m and the wall thickness is about 0.80 m.<sup>166</sup> These latter measurements are very similar to Egyptian cubits. The ‘room’ widths that could be measured (G1, G3, G5) tally well with Egyptian cubits.<sup>167</sup> A comprehensive survey of mud bricks themselves of the Middle Bronze Age is lacking, thus any systematics in brick sizes remains unknown between the different regions of Syria/Palestine.<sup>168</sup>

A survey of contemporary urban sites such as Megiddo, Gezer and Tel Aphek in the Middle Bronze Age, but also before, makes clear that they are much more densely built up and that the house plans follow a much more complex structure. No single recurring unit resembling the bipartite ground-plan and its indirect access route could be identified.<sup>169</sup> Although rural villages are not very well published, they exist in the southern Levant,

but also do not exhibit similar house or settlement layouts. The basic ground-plans are either courtyard houses or broad room houses<sup>170</sup> arranged in a row or two. Some of these houses contain a considerable number of rooms.<sup>171</sup> Further north no comparable loosely arranged settlement is available (e.g. the various phases at Arqa<sup>172</sup> or Hama<sup>173</sup>). Furthermore, in the densely built up urban sites no matching units could be identified.<sup>174</sup> The so-called ‘front room house’ type from Halawa has a superficial similarity and already existed in the Middle Bronze Age, but the access was organised in a different manner: each of the two smaller rooms seem to open onto the wider one.<sup>175</sup>

Noteworthy is perhaps that in Anatolia at Kültepe in phase Karum II<sup>176</sup> simple bipartite houses were found, but the two spaces are rather of the same size than one being narrower than the other and moreover, one may have been a courtyard.<sup>177</sup> A similar plan was recorded for a temple from the Early Bronze Age in Byblos.<sup>178</sup>

Surveys of much earlier architectural features in the southern Levant and elsewhere for example do not yield particularly similar house units<sup>179</sup> and if they are superficially, the access route is organised differently as well as the facilities e.g. benches. Arad provides one such example constituting a rough rectangle with the proportional ratio of the side lengths of 1:1.1.<sup>180</sup> Interestingly, for this building the Egyptian cubit could be used rather well.

Insufficient publication of smaller settlement sites remains an issue, with the notable exception

<sup>162</sup> MARCUS 1991. I would like to thank E. Marcus especially for putting his unpublished work at my disposal.

<sup>163</sup> MARCUS *et al.* 2008, fig. 2. Interestingly, the Egyptian royal cubit measurement system fits the room widths as far as they are preserved of the large building equally well as the mud brick buildings in Egypt.

<sup>164</sup> ALBRIGHT 1936–1937, pl. 49.

<sup>165</sup> MARCUS *et al.* 2008, 226. This measurement does not allow for the alternating header/stretcher system of laying bricks, because the width of the bricks is not half of their lengths. Some other type of bonding system might have been used.

<sup>166</sup> ALBRIGHT 1936–1937, 22.

<sup>167</sup> But only in the plan in ALBRIGHT 1936–1937, pl. 49. The conversion into metres of the same building on pl. 56 with a larger scale is not congruent. Moreover, the plan of this house is originally incomplete, but is generally treated as if preserved intact. Cf. BEN-DOV 1992, fig. 7.

<sup>168</sup> REICH 1992, 5–7.

<sup>169</sup> Cf. HERZOG 1997, MB IIA: 102–115, MB IIB: 115–163; BEN-DOV 1992; KEMPINSKI 1992; WRIGHT 1985, vol. 1, 126–127; vol. 2, figs. 22–33.

<sup>170</sup> WRIGHT 1985, vol. 1, 130–131, vol. 2, ill. 26, 170, 213.

<sup>171</sup> FAUST 2005, esp. 111.

<sup>172</sup> THALMANN 2006, pl. 1–4.

<sup>173</sup> FUGMANN 1958; AL-MAQDISSI 1997.

<sup>174</sup> CASTEL 2000; FOUCAULT-Forest 1997, but mainly Late Bronze Age plans; McCLELLAN 1997; MATTHIAE 1997; VALLET 1997.

<sup>175</sup> McCLELLAN 1997, 37 and fig. 17a–h.

<sup>176</sup> KULAKOĞLU 2011, 1019: c. 1950–1836 BC.

<sup>177</sup> KULL 1988, 81, fig. 82.

<sup>178</sup> WRIGHT 1985, vol. 2, ill. 24. For a short presentation of Near Eastern house architecture and its development, see MÜLLER 2012, 98–102.

<sup>179</sup> BANNING 2010, 86–87, 100–101; SEBAG 2005; BEN-TOR 1992a; BEN-TOR 1992b; REINHOLD/STEINHOF 1995, fig. 1.8; PORAT 1992, fig. 1; WRIGHT 1985, vol. 2, ill. 213–217.

<sup>180</sup> SEBAG 2005, fig. 9.

of Tell el-Hayat that also did not yield similar ground-plans.<sup>181</sup>

## 10. Conclusions

First, it must be made clear that any conclusions drawn below are only valid for the settlement of the late Middle Kingdom in Area A/II at Tell el-Dab<sup>a</sup> and, thus, must not be extrapolated without discussion to other areas or Phases of Tell el-Dab<sup>a</sup> or to other sites. At the start, recent research demonstrated that there are differences in configuration and architectural layout and in other respects in the late Middle Kingdom within Tell el-Dab<sup>a</sup> itself, which is of importance considering the intensity of variation.

### Summary

To summarise the main traits of the settlement of Phase G/3–1, it can be said that to date only domestic housing areas (plus a variable number of tombs) are known for this phase.<sup>182</sup> While in Area A/II only few tombs were found, there are many more in Area F/I.<sup>183</sup> There may have been tombs in Area A/IV dating to the equivalent Phase, but only burials from Phase F and later were preserved.<sup>184</sup> The size of the bipartite houses lies between 60 and 80 m<sup>2</sup>, while the one room houses are from c. 10 to 17 m<sup>2</sup>. The houses in Area A/II were rather loosely spaced and set within irregularly shaped precincts or compounds of various sizes.<sup>185</sup> Usually the entrances into these compounds were not preserved. The communication network shows a minimum amount of planning (three parallel north-south alleyways, irregular east-west ones) but a remarkably long tradition for Alley 2 (Fig. 3) that lasts in part into the later Second Intermediate Period (Phase E/2–1). The late Middle Kingdom settlement in Area A/II shows a predominantly domestic nature. Almost every compound also contains a number of silos (Fig. 4). Whilst the silos

hint at self-organisation and self-support in terms of (grain) storage, the considerable presence of Egyptian storage jars (Marl C, most likely from the Memphis-Fayoum region<sup>186</sup>) suggests the receipt of external supplies as well. The large amount of imported transport containers in this phase in almost every context also indicates a major *raison d'être* of this settlement, although its layout as a whole (as we know it) is not at all impressive. A limited number of chipped stone sickle blades that were used on the other hand demonstrates some agricultural activities at the site, which cannot be easily quantified. The remains of two oven installations and the find of two moulds for tools and weapons are derived from – again limited – industrial activities.<sup>187</sup> What has *not* been found in this phase is any building that could be unequivocally identified as a temple or shrine and a boundary wall for the settlement. Whilst this does not prove that they did not exist, it complicates the interpretation of the exact nature of the archaeological remains of this phase.

### House architecture

The bipartite house layout seems to first appear in its isolated form as single houses in Phase G/3 at Tell el-Dab<sup>a</sup>, although as a unit it can already be observed within the large mansion of Phase G/4 with possible precursors in the early to mid-12<sup>th</sup> Dynasty, although the covered area is smaller. After its first appearance the ground-plan is attested until the early 18<sup>th</sup> Dynasty,<sup>188</sup> although as single units the plan is more prone to be used in loosely settled areas with medium to small dwellings (A/V rather than in R/III, see above). The size of the core units (apart from the large mansion) develops from 10 to 12 cubits by 11 cubits to 15 to 17 by 14 to 15 cubits until they reach 14 1/3 to 20 by 12 1/3 to 18 cubits in the late Second Intermediate Period. Interestingly, the proportional ratio of the side lengths frequently amounts to 1:1.1.<sup>189</sup>

<sup>181</sup> FALCONER/FALL 2006.

<sup>182</sup> A detailed comparative study of the late Middle Kingdom settlements in Areas A/II and F/I is in preparation by BADER and MÜLLER.

<sup>183</sup> Cf. as overview with more references BADER 2011a.

<sup>184</sup> HEIN, [http://www.auaris.at/html/areal\\_a4.html](http://www.auaris.at/html/areal_a4.html) [accessed on 21 November 2016].

<sup>185</sup> Their size is difficult to estimate because the surrounding walls are not preserved in every instance.

<sup>186</sup> BADER 2001, 155–194; BADER 2009, esp. 646–562, the quantitative comparison of Marl C between Tell el-Dab<sup>a</sup> and Kom Rabi'a.

<sup>187</sup> Cf. BADER, in press. In Area F/I the traces of these activities are much more numerous. Cf. MÜLLER 2012, 26–27.

<sup>188</sup> For the period afterwards, no settlement areas have been excavated at Tell el-Dab<sup>a</sup>.

<sup>189</sup> It should be noted that some of the Amarna houses show the same proportion (always without the protruding entrance room): e. g. RICKE 1932, 25, fig. 25; fig. 35, house Q44.1; fig. 38, house of Nakht; fig. 40. This does not work out for all of these houses e. g. Q47.13 on pl. 7 and P.49.11 on pl. 8.

The survey of contemporary settlements in Egypt<sup>190</sup> showed that similar units have been used to make up more complex ground-plans of larger dwellings. Whilst it was possible to compare the 'core unit' consisting of a wider and a narrower space, often with a proportional ratio of 1:1.1,<sup>191</sup> to ground-plans at Lisht and Elephantine, it is not possible to know whether the core unit always consisted of two roofed rooms or if the larger space might sometimes have been a courtyard. It's interpretation as a second room is only certain if traces of a support system for a roof such as column bases were found or if the space was too wide to be roofed without a support system. It is particularly unfortunate that the small houses at Lahun cannot be used more comprehensively to conduct detailed comparative studies of measurements and layouts. In terms of size the 'core units' found at Lisht were very similar in general, with sizes from almost 15 to 20 by 12 to almost 17 cubits.

Going back in time, the clearest possible antecedent for the bipartite house ground-plan is found in 1<sup>st</sup> Dynasty Abydos, where a cult building of such a plan was uncovered, whose side lengths have the same proportional ratio as many of these ground-plans. This may form a bridge to the earlier Mortuary Temple I of the early Second Intermediate Period of a very similar layout, further indicating a close connection of Egyptian domestic architecture and Egyptian temple architecture,<sup>192</sup> although with current evidence it remains ultimately unclear which of the two existed first.<sup>193</sup> Between those two there is an unfortunate gap, so that this is a hint rather than hard evidence.

A thorough search for similar house ground-plans for the bipartite unit or even only similar units in Syria-Palestine did not yield a positive result, although at Arad in the 3<sup>rd</sup> millennium one dwelling at least shows superficial similarities. A difference in building method may be mentioned here. In Syria-Palestine the foundations were usually laid of unworked kurkar stones, on which walls of sundried bricks of various formats were built. This method could not have been used in the eastern Delta due to the scarcity of stone.<sup>194</sup>

A distinct problem in any interpretation of the settlement areas of the late Middle Kingdom is represented by the lack of parallels in Egypt as well as in Syria/Palestine. The basis of comparison for house ground-plans, namely the study of single houses in smallish loosely spaced settlements, is unfortunately very uneven, particularly for the Middle Bronze Age IIA in Syria-Palestine and respective periods further north. Although some evidence can be utilised, a wider range of settlement types and wider exposure would be necessary to be able to conduct a better-founded comparison. However, the courtyard house seems to be in wide use in Syria-Palestine.<sup>195</sup> Whilst in Egypt orthogonal settlements were much more frequently excavated, parallels for loose and more irregular layouts remain scarce. There are virtually none, with all the finds published locus by locus. For this reason, it remains unclear how much variation we might expect in one single site, in different quarters or even within the same quarter.

#### *Reconstruction of the houses of Phase G/3–1 in Area A/II*

In contrast to the older Mortuary Temple I at Tell el-Dab<sup>a</sup> (see above), which includes a corner for the stairwell on the exterior of the building, the houses of the settlement layers in all phases do not show this feature. Therefore, either the dwellings did not have a roof terrace, or the stairwell was built within the rectangle of the hall/courtyard as seen in some of the clay house models, or a simple ladder was used to reach the roof. Although some pivot stones were preserved at the doorways, it was not a common feature. The other doorways may have been closed by mats, which could be rolled up during the day.<sup>196</sup> So far, no floors with a mud brick plaster have been found, nor bed niches. Once a wide bench was found inside the wider room, and once one was built against the exterior wall (both Compound I). Small (square) hearths were noted as well as re-used bases of large storage jars for fire pans. Built-in querns are another feature. About the use of light, windows and the

<sup>190</sup> The living quarters of the contemporary Nubian fortresses have been only reluctantly used due to the realisation that the plans generally used are not always very accurate, e. g. at Uronarti, C. KNOBLAUCH personal communication.

<sup>191</sup> ROSSI 2004, 85 states that rectangles close to the square are not rare in Egyptian architecture in general.

<sup>192</sup> BIETAK 1994.

<sup>193</sup> I would like to thank an anonymous reviewer for a critical question on this point.

<sup>194</sup> See below, xx

<sup>195</sup> FAUST 2005.

<sup>196</sup> RICKE 1932, 19.



air flow nothing much can be said without speculation and using parallels to other later or earlier settlements,<sup>197</sup> because the vertical preservation very rarely exceeds five to six mud brick courses.

### *Rural settlements*

Rural settlements or villages (which also include a connotation of size) have been defined for Egypt<sup>198</sup> and for the southern Levant in the Middle Bronze Age.<sup>199</sup> Both definitions, which are based on differences in settlement patterns between ancient sites, cite an absence of fortified boundary walls and fortifications as a criterion, as well as an absence or very limited evidence for social stratification (in house types and sizes) and primarily activities related to agricultural production. Whilst for MOELLER the size and density of the settlement is not a factor, FAUST argues that these settlements are small and/or with low density and only a small number of inhabitants (“dozens or a few hundred or so”). Decisive for FAUST is that (craft) specialisation and “trade” are very limited, whilst MOELLER stresses self-sufficiency and surplus production for being traded with other communities or being collected as taxes. She also cites the total lack of a formal sanctuary or temple in a rural settlement, whilst FAUST allows shrines but not larger, obviously public buildings. Now the question arises: “was Tell el-Dab’a Phase G/3–1 a rural settlement?”

Considering the criteria cited above the answer must be no, because there is plenty of evidence for commodity exchange but not so much for agricultural self-sufficiency because the involvement in

agricultural activities seems not very strong at this time. Moreover, no proof for surplus production can be presented that might have been traded or collected as taxes by larger urban centres. It is also unclear, whether the exchange activities with the non-Egyptian transport amphorae were conducted on someone’s command (and if yes on whose exactly<sup>200</sup>) or if they were part of some sort of “grey market”. The frequency of the commodity exchange containers for Phase G/3–1 found at Tell el-Dab’a is about 23% of the overall ceramic repertoire of this phase.<sup>201</sup> What remains unknown beside the actual exchange partners is the commodity exchanged from the Egyptian side (the facilities to produce metal weapons and tools seem too limited to be of real consequence, although more evidence is available for Area F/I<sup>202</sup>). The same holds true for the few finds of contemporary Egyptian pottery in the Levant to date.<sup>203</sup> About the other criteria for the definition of rural settlements, too little information is available to make a statement: it cannot be proven that neither temple nor boundary wall existed, they may simply not have been found. To estimate the number of inhabitants and the overall size is very difficult because the number of square metres of the dwellings and housing units and the number of silos is not necessarily congruent.<sup>204</sup> Especially the destroyed eastern part of the settlement in Area A/II impedes this task. Also, the expanse of courtyard space may mean more inhabitants than suggested by the area of housing. The factors conforming to the definition of rural above are the loose structure of the settlement compared to planned ones such as Lahun, Abydos and Elephantine and the limited

<sup>197</sup> ENDRUWEIT 1994.

<sup>198</sup> MOELLER 2016, 26.

<sup>199</sup> FAUST 2005, 106.

<sup>200</sup> Was the central administration at this point in the early to mid-13<sup>th</sup> Dynasty still strong enough to control these activities? Unfortunately, there is no evidence for any administrative structure due to the absence of sealings and seal impressions in the archaeological record of Phase G/3–1. A scarab found in graves of the earlier Phase G/4 suggests the presence of administrative personnel in Phase G/4, cf. SCHIESTL 2009, 375. A seal impression of the same period suggests deliveries from royal installations, cf. BIETAK 1991a, 68. From Phase F the only name scarab is of a deputy treasurer by name of Aam, who either is an Asiatic in the services of the Egyptian administration or indicates already a certain independence of the area from the central administration. Cf. BIETAK 1996a, 41. The situation in Phase G/3–1 remains unclear.

<sup>201</sup> BADER 2009, fig. 368, achieved by random sampling; KOPETZKY 2010, fig. 52 with very similar 19.7% achieved by purposive sampling.

<sup>202</sup> MÜLLER 2012, 204–212 and fig. 78.

<sup>203</sup> BADER 2015a, 13, with references.

<sup>204</sup> F. ARNOLD and B. KEMP estimated a core family of 6 persons for smallish housing units at Lahun. Extrapolating from their considerations to the late Middle Kingdom settlement (Phase (G/3–1) in Area A/II, the number of inhabitants could amount to around 96 persons. Such a proposition needs to be tested and verified in more detailed studies with greater regard of the grain storage capacity which exceeds the scope of this paper. Cf. ARNOLD 1990; KEMP 1989, 149–157; KEMP 2006, 211–221, esp. 217 where he sees 6 persons per smallish house as a rough estimate.



variation of house sizes and types. Only Compound 11 is larger than the others and Compound 12 represents an agglomeration of rooms. A very similar pattern can be found in Areas A/IV and F/I (see above). However, an opposition of loose and dense settlements is also a defining argument for rural settlements according to FAUST.<sup>205</sup> A distinction into autonomous and communal village types as undertaken by FAUST<sup>206</sup> is not possible for Tell el-Dab<sup>a</sup> in Phase G/3–1.

*Foreign influence in the settlement in Area A/II in Phase G/3–1*

From the extended survey of settlements and house units conducted above no obvious foreign influences in the layout of the settlement of Area A/II in the late Middle Kingdom could be identified. Neither the architecture itself, as far as preserved, nor the building technology (*chaîne opératoire*) owes any inspiration to the Syro-Palestinian Middle Bronze Age, as far as we can tell from the very scarce comparable material uncovered to date. Building technology in the Levant used (unworked) stone foundations with dried mud bricks on top, which are sometimes but not always of a very different size.<sup>207</sup> That the lack of stone in the Delta prohibited this building method has already been mentioned above (reconstruction of houses). The hypothesis that special traits in housing habits or usage patterns of immigrants would be reflected and be recognisable in the archaeology of the private sphere of housing arrangements,<sup>208</sup> could not be applied successfully in this case, partly due to a lack of information. The spacing of compounds in area A/II with quite a few open spaces between them is different for example to the density found at the late Middle Kingdom settlement at Lisht-North. The mere fact that the house units are irregular and to some extent agglutinating (Compounds 1 and 12?) seems by far not

enough evidence to suspect Near Eastern influence for this particular area. By the same argument, one would have to assume that the settlement at Lisht-North, where numerous additions of rooms can be found, was influenced by Near Eastern traditions, which seems unreasonable. The domestic architecture in Phases G/3–1 does not indicate any foreign influences so far. Of course, this does not prove either way if Syro-Palestinian people or Egyptian people lived in them. Scholars attached to the culture historical paradigm of thinking, however, would have to assume that Egyptian people lived in these houses. The Egyptian cubit system seems to work out very well with the measurements taken within the settlement at Tell el-Dab<sup>a</sup> throughout. The division into thirds of cubits works well also with the brick sizes and the wall's thicknesses. Interestingly, the exterior measurements of the contemporary chamber tombs do not tally so well.<sup>209</sup>

The main sign of external influence or presence in the settlement is represented by a very small quantity of flat based Middle Bronze Age cooking pots<sup>210</sup> (~5.0% of all cooking pots of Phase G/3–1), which do not occur in other Egyptian settlements in the Nile valley, except for one isolated example from Abydos.<sup>211</sup> Eating habits still need to be examined more closely by means of the analysis of distribution of animal bones. But even after this has been achieved, no comparable data set from any contemporary Egyptian or Syro-Palestinian settlement is currently available. Other evidence may suggest a Syro-Palestinian presence in the form of a quite small number of local copies of previously imported ceramics (this feature only increases in the later Phase F). The phenomenon of appropriating certain ceramic vessel types belongs to a much more comprehensive process, which has been treated elsewhere in greater detail.<sup>212</sup> In this instance, the observation of the *chaîne opératoire* is of extreme importance to obtain a clearer idea

<sup>205</sup> FAUST 2005, 106.

<sup>206</sup> FAUST 2005, 114–119.

<sup>207</sup> MARCUS *et al.* 2008, 226.

<sup>208</sup> BURMEISTER 2000; RAPOPORT 1969, 52 and 86: in contrast is of the opinion that many migrants bring their architecture with them and use it even if it is unsuitable for climatic or topographical reasons. It is part of their habitus.

<sup>209</sup> Measurements taken from the plans in FORSTNER-MÜLLER 2008 from the exterior of the back wall to the exterior of the front wall were used as a case study. For Phase G/3–1 (fig. 71a, 75) there are only two chamber tombs available.

From Phase F the measurements seem to fit better with the Egyptian cubit (Phase F: fig. 87b, 92b, 95c, 101b, 107b; Phase E/3: fig. 110, 113, 119, 128; Phase E/3–2: fig. 142; Phase E/2: fig. 155; Phase E/1: fig. 186, 197, 207a; Phase E/1 or D/3: fig. 215a; Phase D/3: fig. 222a, 230, 237, 242a; Phase D/2: fig. 260, 277a, 288, 306a).

<sup>210</sup> BADER 2009, fig. 234, type 105a; BADER 2011b, fig. 6.

<sup>211</sup> WEGNER *et al.* 2000, fig. 25, top row left, but without mention in the text. Thus, its meaning remains unclear.

<sup>212</sup> BADER 2011b; BADER 2011c; BADER in press.

whether external inspiration was taken over by local potters or first-hand knowledge needs to be at hand to produce such pottery.<sup>213</sup> The similarity of the products in our case suggests the latter in a very restricted quantity.

The clearest Syro-Palestinian influence notable in the archaeology of the late Middle Kingdom settlement concerns several of the burial customs, which are thought to be the most conservative area in human behaviour. It should not be forgotten, however, that some of the burials in this period – especially in Area A/II – do not show any Syro-Palestinian influences (e.g. A/II-l/12–4, A/II-n/12–4, A/II-n/12–5). Thus, it should not be taken for granted that *all* tombs and houses at Tell el-Dab<sup>a</sup> as early as the late 12<sup>th</sup> Dynasty are influenced by Syro-Palestinian customs.<sup>214</sup> This is a misrepresentation in some respects, exemplified by the work on the settlement in the last few years. Furthermore, the Egyptian heritage at the site is certainly not negligible even during the later Second Intermediate Period.<sup>215</sup>

To return to the distribution of the simple architecture of Phase G/3–1 in Area A/II, there may be the possibility that the arrangement of the Egyptian style housing laid out on Egyptian metrology was done according to ‘foreign’ habits, but the known contemporary rural settlement excavations in Syria/Palestine and Egypt do not support such a proposition. However, the evidence is currently in favour of an Egyptian root of the extremely simple bipartite house ground-plan and its distribution in the settlement, although excavations of rural loosely spaced and self-organised settlements are still scarce for both the late Middle Kingdom in Egypt and the Middle Bronze Age in Syria-Palestine. State planning appears unlikely due to the loose and self-organised arrangement of the elements. While it is well known that the dwelling often represents a cosmos for the inhabitants<sup>216</sup> and as perhaps the most important part of material culture impresses itself on the habitus of the inhabitant, who is moulded by and moulds the architecture surrounding him or her from the earliest moments of their lives,<sup>217</sup> it is impossible to guess what biological ethnical background these

inhabitants had in this case. Moreover, the house contains all other classes of material culture. However, taken together to how many Egyptian cultural affinities these inhabitants were exposed to during their lives, it casts some doubt on the overly generalising view of the “exclusiveness of Asiatic behaviour” we read so often about in the current scientific literature in all areas and phases of the archaeology of Tell el-Dab<sup>a</sup>, but especially in the late Middle Kingdom.

## 11. Theoretical Approaches

Moeller’s suggestion of a northern and southern tradition in domestic building with a dominance of the courtyard<sup>218</sup> in the southern house plans may very well be explained by different climatic circumstances: the heat in the south necessitating living around a court rather than in closed rooms, which are protective in the north for more shelter due to stronger winds and a harsher climate during the winter time.<sup>219</sup> This deterministic view has to remain hypothetical to a certain extent, because the bad preservation of mud brick architecture as well as the superposition of multiple layers of settlement phases provides no firm evidence which rooms are to be considered closed and which ones not.

However, in consideration of the beginning of house development at Tell el-Dab<sup>a</sup> there may have been courtyards in the planned settlement of stratum e of the early 12<sup>th</sup> Dynasty, suspected by the presence of silos.<sup>220</sup> If the later dwellings lacked such courtyards, this might be seen as a development due to experience of the colder climate in the north showing perhaps that no previous experience existed. Unfortunately, there is not enough evidence to support this – deterministic – hypothesis.

The question of who designed and built these simple dwellings is equally difficult to address by means of the available data. It must also be taken into consideration that the mud brick houses needed constant maintenance in order to last. The question whether a specialised group of people or kinship groups built their dwellings remains ambiguous. Both are possible.<sup>221</sup> Tipping the balance slightly in favour of specialised builders is

<sup>213</sup> ROUX 2016.

<sup>214</sup> Contra MOELLER 2016, 325–326.

<sup>215</sup> BADER 2013.

<sup>216</sup> RAPOPORT 1969, 50–58.

<sup>217</sup> BUCHLI 2002.

<sup>218</sup> Also stressed by ARNOLD 1989.

<sup>219</sup> MOELLER 2016, 356, 374. According to RAPOPORT 1969, climatic determinism usually does not provide comprehensive reasoning, it only limits the feasible possibilities.

<sup>220</sup> CZERNY 1999, 21, esp. note 50 and fig. 3; BIETAK 2010, fig. 10 with a main hall instead of a courtyard.

<sup>221</sup> RAPOPORT 1976.

the fact that most of the bipartite dwellings are very similar in size and plan. It may suggest that it was necessary to know the chaîne opératoire including the Egyptian cubit system, which seems to have constituted the basic measurement. Calculation trials with the Mesopotamian kuš of 0.49 m, also a cubit,<sup>222</sup> in order to check if an older non-Egyptian measuring system might provide a reasonable systematic in regular house ground-plans led to the conclusion that this would result in uneven measurements with sevenths for the ‘left over’ fractions and not quarters as it is usual for the measurements of length there. Additional negative evidence comes from the fact that the walls were usually made from mud bricks of 1 kuš or its multiplications and that the mud bricks did not conform well to the kuš system. A similar experience was made with the Egyptian Nebi-cubit.<sup>223</sup>

Thinking about how such a simple house might have been used,<sup>224</sup> the arrangement of the rooms behind each other or beside each other (depending on the position of the doorway) when attested with an indirect access, suggests that the narrower room may have been the more “private” one; perhaps for sleeping of the kinship group (perhaps all of them or only a few of them). The size of the rooms would probably not allow for more than four to five adult persons, children would need less space. Felix ARNOLD’s suggestion that a bipartite housing unit may point to the fact that only ‘the master’ lived in such a house, because the ‘wife’s’ part is missing, is perhaps reasonable for priest’s housing, on which he based this hypothesis,<sup>225</sup> but considering the evidence from the late Middle Kingdom settlement in Area A/II at Tell el-Dab<sup>a</sup>, one would then have to assume that only ‘masters’ lived in the bipartite houses (except Compound 11) and the ‘wives’ in the single room huts. Another possibility is to assume there were no women at all. But because there were more female burials in total in this Area as well as child burials,<sup>226</sup> this notion is not supported.

Mats on the floor to sleep on, which can be tidied away during the day, may have been one of the few household items in terms of furniture. This would suggest quite cramped conditions (except in the larger Compound 11) unless the roof

was usable as a sleeping space e.g. in summer. The wider room, which was equipped in some instances with a hearth and some mud brick ‘shelves’, may have served for all aspects of life including food preparation. The spacious courtyards delimited by irregular precinct walls offered more space for domestic activities during the day. Some of the compounds encompass quite narrow passages or corners, where – if the walls were high enough – palm fronds could have been laid out in order to provide shade for domestic activities. Especially in the southern part of Compound 1 (southeast corner of the southernmost room and the enclosure wall) and in the northern part of Compound 1 (the core unit and the surrounding wall – in the area of the baulk between A/II-l-m/14–15) such a possibility exists. The narrow passages between some of the walls might have served as access control. The fact that the compounds were segregated by walls shows that some sort of delimitation was in action, whether this was for protection or to mark possession remains unclear.

In the single-room houses conditions of life would have been even more crowded as some of the rooms may have served to keep small animals (although no dung accumulations were noted during the excavation). Any differentiation between men, women and children in the use of space or age groups cannot be made on the basis of the available data. Compared to Lahun though, the people of Tell el-Dab<sup>a</sup> in the late Middle Kingdom seem to have been more ‘private’ in the sense that no-one could see into any neighbour’s house due to differential access routes, different orientations of the doorways and not least the presence of the precinct walls (although we do not really know how high they were originally). Also, the dwellings were spatially not as close to each other as in Lahun.<sup>227</sup>

The settlement of Phase G/3–1 in Area A/II contains 19 round (and perhaps a few square) silos associated with most compounds. Two different sizes seem to cluster around c. 2.3 m (~4 1/3 cubits) and 1.7 m (~3 1/3 cubits) in diameter. According to MOELLER,<sup>228</sup> the presence of silos exemplifies that the supply with food was not

<sup>222</sup> FRANK 1975.

<sup>223</sup> See above, note 19.

<sup>224</sup> Cf. RAPOPORT 1976.

<sup>225</sup> ARNOLD 1989, 78.

<sup>226</sup> BADER 2011a.

<sup>227</sup> RAPOPORT 1969, 60–69.

<sup>228</sup> MOELLER 2016, 258.

organised by a redistributive system but that the inhabitants of the settlement were self-sufficient. In our case this is only half the picture as the finding of a considerable percentage of Egyptian (non-local) Marl C storage jars implies supply from outside that may have been centrally distributed. But how can these two facets be reconciled? Is this a situation where local population practice agriculture in as far as they have the environmental opportunity there, and some additional commodities are delivered by an external supplier? It is difficult to obtain a clear idea of the subsistence pattern of the settlement in Phase G/3–1 anyway, because except for the high percentage of import-

ed transport pottery, the evidence for workshops and agricultural activities is rather scarce. Are the people dependent on the exchange of goods? (see above)

The article hopes to have shown the state of research on simple dwellings in settlement archaeology in the late Middle Kingdom/Middle Bronze Age in Egypt and Syria/Palestine and to have given an overview of the kind of information that could be collected from such sources relating to society, economy, spatial organisation and the use of space.

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