

The Urbanisation Process in the South Jordan Valley: Renewed Excavations at Tulaylāt al- Ghassūl 1994/1995

Preamble

The southern Levant, and the Jordan Valley in particular, has long been identified as a region crucial to urbanisation/state formation studies.¹ Chalcolithic urbanisation research began with the first excavations at Tulaylāt al-Ghassūl (1929-38), as it was here that the first pre-Bronze Age archaeological horizons were isolated by Mallon, and the first round of a long running debate over the degree of relatedness of Chalcolithic and EBA assemblages occurred.² Whilst most parties came to accept the essentially separate existences of Late Chalcolithic and EBA assemblages,³ accounting for the apparent disjunction between sequential assemblages has been a constant issue since the 1930's, and many senior commentators still claim a significant alien component for the Ghassulian.⁴

Extensive multiperiod tall excavations during the interwar period at Bayt Shān (1921-32), Megiddo (1923-38) and Jericho (1932-36) began the exploration of Neolithic occupational horizons, and by dint of revealing discrete Neolithic, Chalcolithic and Early Bronze Age strata, facilitated the first tentative diachronic comparative analyses. However, as Neolithic and Chalcolithic period exposures at these large sites were not extensive, and generally excavated in difficult circumstances, results tended to cloud the picture rather than illuminate it, especially as recovery methods were unavoidably crude.⁵

In the postwar period, research based on restricted or single-phase Neolithic and Chalcolithic occupation in the Beersheba region (1952-58) and at Munhata (1960-66) dominated over multi-phase tall research at Tall al-Fār'ah (1948-60), Jericho (1952-58), Shechem (1954-68) and Gezer (1964-74), as large exposures could be readily achieved in the single period sites, allowing for a more satisfactory documentation of the material cultural assemblage. The much improved excavation methodology employed on the large tall sites resulted in an even more restricted exposure of early deposits than in pre-war excavations.⁶ This skewing of the database led to the domi-

nance of ever more detailed typological descriptions over diachronic analysis.⁷

Over the last twenty years the tendency to excavate short duration or single period exposures has become more marked, and when coupled with the results of greatly increased small-scale soundings and rescue projects swamping results from the increasingly rare multi-period tall excavations carried on today, particularly as ever intensifying sampling strategies and rising costs, result in ever smaller areas excavated in the more complex tall excavations.⁸

Consequently, debate over state formation processes is dominated by evidence from short-lived discontinuous archaeological 'snapshots' of what still seems likely to be a long-term progression from one mosaic of adaptations to another. The nature of this evidence encourages the over-periodisation of the archaeological record, which in turn lends unavoidable weight to studies that seek to characterise processes such as urbanisation and state formation as progressing through discrete developmental stages. It is only through the detailed consideration of comprehensive, quantitative data sets taken from long unbroken developmental sequences that we can overcome the staccato testimony of much recent evidence. Analysis of data drawn from the long essentially unbroken sequence at Tulaylāt al-Ghassūl provides such an opportunity. Sydney University teams have been involved in the excavation and analysis of material from the site for over twenty years. By concentrating on data from a long-lived continuously-occupied site, we aim to evaluate the main factors held to be important in urbanisation/state formation from the unmatched spatial and chronological perspective afforded by the unique circumstances present at al-Ghassūl.

The Tulaylāt al-Ghassūl Sequence: Summary of Excavations (1929-95)

The PBI Mission (1929-38, 1959-60)

The first PBI expedition, under A. Mallon and R.

¹ Stager 1992; Garfinkel 1993, *passim*; Joffe 1993: 23-37.

² Lee 1973: 19-26.

³ Engberg and Shipton 1934; Fitzgerald 1935; Wright 1937; Shipton 1939.

⁴ Perrot 1984 for the strongest statement of these views, Lee 1973 and Elliot 1978 for literature surveys.

⁵ Moorey 1991: 50-78.

⁶ Moorey 1991: 94-111.

⁷ For an elaborate typology divorced from any diachronic concerns see, *par excellence*, Lee 1973 on Ghassūl, and Commenge-Pellerin 1987 and 1990 on Beersheban sites.

⁸ Moorey 1991: 174; Dever 1989: 146-150; Shiqmim might seem to be the exception to this (Levy *et al.* 1990), but Gilead's recent analyses 1994 have raised significant questions as to the overall length of occupation at the site.

Koeppel, excavated two large fields over seven seasons at the site (1929-1938).⁹ The south field (Tulayl I) was excavated between 1929-31, and the north field (Tulayl III) between 1932-38. The four phase delineation of Ghassul (IV-I) pertains only to the south field excavations, which were taken down to sterile in one small area. In the more extensively explored north field, only the upper two phases (IV-III) were excavated.¹⁰ A short continuance under R. North (1959-60) opened a series of small probes (Fields A-E) between the main northern and southern exposures, seeking to establish stratigraphic equivalences between the two original fields, whilst further exploring the lower levels in the north field.¹¹

Mallon and Koeppel's work documented an extensive architecturally impressive horizon of occupation across the site, later characterised as the Classic Ghassulian phase (Ghassul IV). As well, their work suggested that significant deposits of earlier material existed below the upper phases (Ghassul IV-III) in the region of Tulayl I. North established a similar depth of deposit within (Area A) and beside (Area B) the area of Tulayl III, and noted a significant depth of deposit between the two PBI exposures (Areas C-D), whilst recovering further impressive architecture and wall paintings along the north-west slopes of Tulayl I (Area E). However North was not able to establish convincing equivalences between the Tulayl I and III exposures, and as he concluded that there was no possibility of differentiating assemblages in the absence of direct stratigraphic connection, no comparative stratigraphic relationships for the various PBI exposures across the site could be proposed.

The BSAJ/University of Sydney Mission (1967, 1975-77)

The BSAJ/University of Sydney excavations under J.B. Hennessy (1967-77), were of crucial importance to a full recognition of the significance of the site for urbanism studies. The first season in 1967 concentrated on that small part of the central area of the site between Tulayl I and II not excavated by the PBI or contaminated by their extensive dumps (Area A). The initial aim was to explore the significant depth of deposit noted in both PBI exposures. Results documented the long essentially unbroken sequence of at least ten major building phases in Area A, and demonstrated significant continuity from Late Neolithic origins, apparently settling any issue surrounding the origin of the Ghassulian culture in favour of *in situ* development.¹²

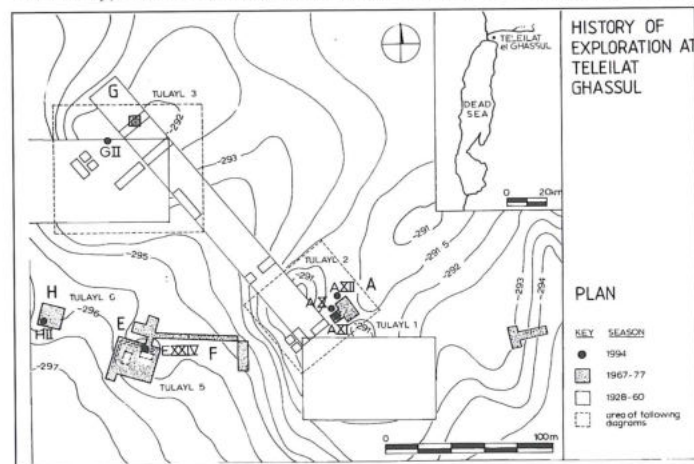
In the return to the site in 1975 Hennessy further explored the lowest levels in two of the original Area A probes, and opened a number of new areas across the site (Areas E-H), seeking to explore horizontal variation and identify special function zones. Work resulted in the identification of the

main sanctuary area of the site (Area E), an industrial complex (Area F) and a flint knapping floor (Area A).

Two further seasons in 1977 expanded Area F to the west, linking it and the sanctuary area and isolating another (painter's?) workshop in the process. As well, work within sanctuary Area E was intensified and expanded to north and west, identifying what are likely to be storage facilities to the north of the temenos wall. Work in Area A concentrated on further exploration of the lowest (Neolithic) levels and the conservation of a unique cultic wall painting. By the end of the field program, Hennessy's excavations had revolutionised understanding of both the vertical and horizontal occupation at the site.¹³ The site is now generally acknowledged as uniquely important for our understanding of the Late Neolithic /Chalcolithic period in the southern Levant.¹⁴

Current University of Sydney Excavations (1994-95)

Changing research priorities and refined sampling strategies (and increasing emphasis on intensively sampled palaeoenvironmental data not attempted by Hennessy) prompted renewed excavations at Tulaylāt al-Ghassul. The Sydney University excavations were resumed in 1994 (FIG. 1), mainly concentrating on the excavation of detailed palaeobotanical and palaeozoological samples from each of Hennessy's main areas of excavation (A and E), whilst beginning a number of new probes in the western (H), and northwestern (G) reaches of the site. In the first season excavation units were mainly small (2 x 1 m) soundings, designed to maximise vertical stratigraphic sampling. Two (A X and A XI) were placed within (A XI) and immediately to the north (A X) of Hennessy Area AI (FIG. 2), another two (E XXIII locus 50 and E XXIV) were placed to the north of Hennessy Area E Sanctuary B (FIGS. 3 and 4), one in the southwestern corner of Hennessy Area



1. Tulaylāt al-Ghassul. Excavated areas mentioned in text.

⁹ Mallon *et al.* 1934; Koeppel 1940; Lee 1973: 19-26 for a convenient summary.

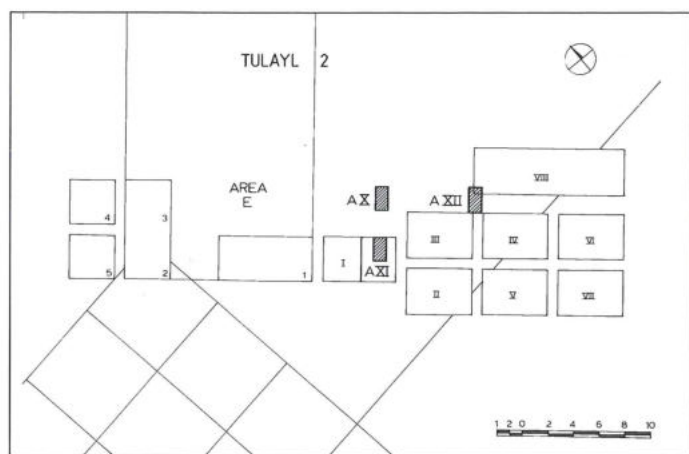
¹⁰ Lee 1973: 25-26.

¹¹ North 1961: 3-4.

¹² Hennessy 1969: 1-24, for the detailed report on the first season of excavations.

¹³ Hennessy 1977, 1978, 1982 and 1989 for description of Sydney seasons and evaluation of results.

¹⁴ Stager 1992: 27; Levy 1993: 511.



2. Area A trenches in relation to Hennessy's trenches.



3. Area E. Sanctuary B. Looking south. Note two-phase construction and EXXIII locus 50 sondage.

H (H II) and two more (G II locus 1-3, and G II locus 20 (FIGS. 5 and 6) slightly southwest of Hennessy Area G, in the northern face of PBI Field III.¹⁵

In 1995 the small sondages were continued in Area A, although where feasible (AXI) the excavation unit was expanded. Two complete stratigraphic profiles were obtained from Area A (A X (FIG. 7) and A XI (FIGS. 8 and 9), one from Area E (EXXIII locus 50 (FIGS. 10 and 11), one from Area H (HII locus 2-3 (FIGS. 12 and 13)) and another from newly opened northeastern Area P (PI locus 2). Investigations in Area G sampled over 3.5 m of the PBI Field III sequence (GII locus 1-3, 20, 58-64 (FIG. 14), but are still over a metre off sterile. Two seven metre deep pits (GII locus 51 and 55 [FIG. 15]) were excavated in Area G. Ceramic material from these pits would seem to be the latest excavated from the area, and possibly the site. A further new area (Area N) was opened approximately one hundred metres north-east of Area A. A 2.5



4. EXXIII and EXXIV. sondages between Sanctuary B and Temenos Wall 1994/95. Looking west.

metre square probe (NI locus 4-5) sampled some three metres of deposit. As well, excavations in the sanctuary (E), western (H) and northern (G) areas were expanded to better investigate architectural and functional variation.¹⁶

Renewed excavations have only served to underline previous judgements on the importance of the site to any understanding of the urbanisation and state formation process in the southern Levant.¹⁷

Research Concerns

Analysis centres on the high quality archaeological (ceramics and lithics) and palaeoenvironmental data (botanical, faunal and C14 samples), with the former providing the chronological and cultural keys necessary for appropriate cross-cultural analysis, and the latter providing an environmental perspective against which we may view anticipated chrono-cultural alterations. Our major aim is to determine if observed/anticipated change is best characterised as episodic or gradual. As well, we hope to examine any significant alterations against factors commonly held to be prime movers (i.e. inter-regional interaction, craft specialisation, specialised modes of production and distribution, centralisation of authority, social stratification, variant environmental zoning, to name but a few). Finally, a number of specific issues relating to the sequences al-Ghassul will be examined over the course of the next few years, as successful characterisation of the al-Ghassul assemblages is a necessary preliminary to a more wide-ranging enquiry. These are:

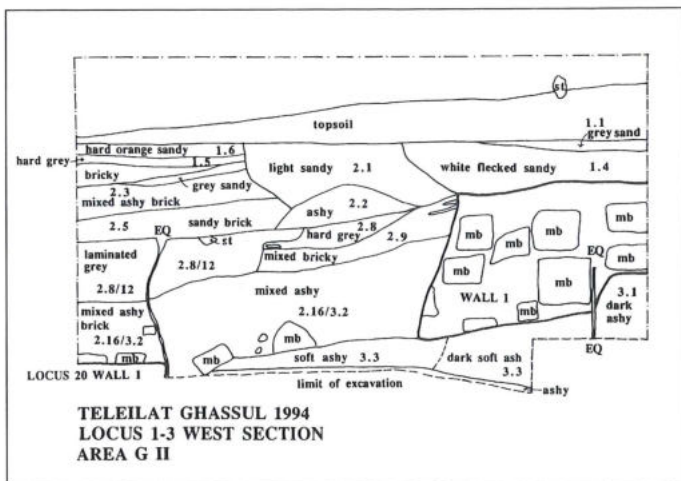
1. The status of the 'pre-Ghassulian' levels at al-Ghassul, and the degree of continuity between Hennessy's 'Neolithic' and 'Chalcolithic' phases. It has been suggested that the Neolithic levels be considered 'Qatifian', and part of a larger Negevite Neolithic entity.¹⁸ Such a

¹⁵ Bourke 1995; Bourke *et al.*, the 1994 field season. *ADAJ* 39: passim.

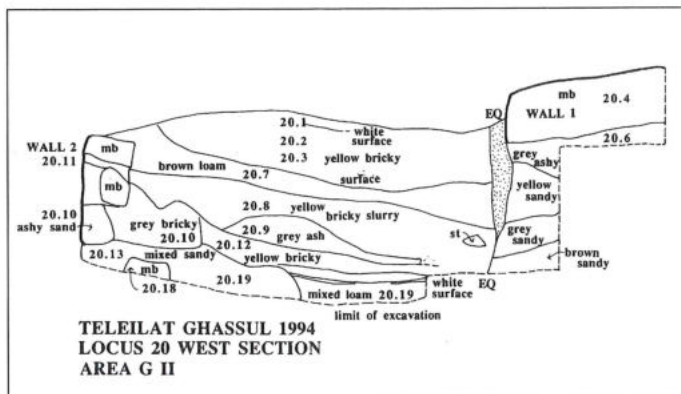
¹⁶ Bourke in press, Bourke *et al.* forthcoming, for the 1995 field season.

¹⁷ Garfinkel 1993: 812-813; Joffe 1993: 31-32.

¹⁸ Goren 1990: 110-113, for the Early Ghassul-Qatifian equation, Gopher 1995, for a more cautious approach to interregional equations.



5. Area G II. Sondage Locus 1-3 West Section 1994.



6. Area G II. Sondage Locus 20 West Section 1994.

suggestion bears heavily on the origin of the Ghassulian culture, a crucial starting point for any diachronic analysis.

2. The relationship of the four to five stratigraphic phases al-Ghassul I-IVB) of the PBI investigations to Hennessy's ten phase Area A sequence (A⁺-I), and the relationship of 'pre-Classic' Ghassulian levels (D-G) to contemporary assemblages in the Jordan Valley and adjacent regions.¹⁹
3. The full description of Classic Ghassulian levels (PBI al-Ghassul IV, Hennessy Phase A-C), and an evaluation of the significance of observed change from pre-existing (PBI al-Ghassul II-III and Hennessy Phase D-G) norms.
4. The nature and date of the terminal occupation horizons al-Ghassul. Most explanatory scenarios currently employed propose cumulative environmental degradation,²⁰ as the primary cause for the collapse of Chalcolithic settlement, although one notes the failure

to provide anything like adequate archaeological support for such notions. Through detailed microfaunal and palaeobotanical sampling the current expedition hopes to address this issue in particular, as it bears heavily on the question of the nature of the transition between the Chalcolithic and the EBA.

Observations

1. Subsistence

- (a) Archaeozoological analysis has been divided by area of excavation (A, E, G, H, N and P) to consider variation across the site, and into five phased assemblages (Neolithic, Early, Middle, Late and Terminal Chalcolithic), to consider change through time.

The Neolithic sample is small (239 large mammal NISP), but comparable in size to other published material.²¹ Ovicaprine dominates the large mammal assemblage (76%), followed by gazelle (10%), cattle (7%) and pig (4%). Ovicaprine remains important (72%) in the Early Chalcolithic, with the only major change a drop in the importance of gazelle (to 3%), and an increase in cattle (13%) and pig (10%) utilisation. These relative percentages stay much the same throughout the Middle and Late Chalcolithic phases, with the noteworthy fact that equids appear (1%) for the first time in the Middle Chalcolithic.

The very last phase of occupation, recovered from deposits in deep pits (wells?) in Area G, is probably contemporary with the Terminal Chalcolithic²² of the Negev and would appear to suggest a major alteration in subsistence regime. Although ovicaprine is still most important (68%), gazelle reappear in the assemblage in considerable numbers (19%), and are three times as numerous as either pig (6%) or cattle (6%). It is tempting to associate the shift away from cattle and pig towards a greater reliance on gazelle with a major deterioration in the climatic regime. The scarce and scrappy nature of much of the latest Chalcolithic occupation at al-Ghassul might suggest a semi-permanent or much reduced permanent occupation in latest Chalcolithic levels, perhaps with an increasing specialist pastoral element.

- (b) Archaeobotanical analysis is considered by area of excavation and relative chronological period. General comments only are offered here, with no detailed quantitative analysis at this time.²³

All samples from Early, Middle and Late Chalcolithic levels record the preponderance of hulled barley, and

¹⁹ Comparison will be limited to Jordan Valley sites initially, beginning with Ghrubba (Mellart 1956), Tell Tsaf (Gophna and Sadeh 1988/89), Katerat es Samra (Leonard 1989), Abu Hamid (Dollfus and Kafafi 1993) and Pella (Bourke *et al.* 1994).

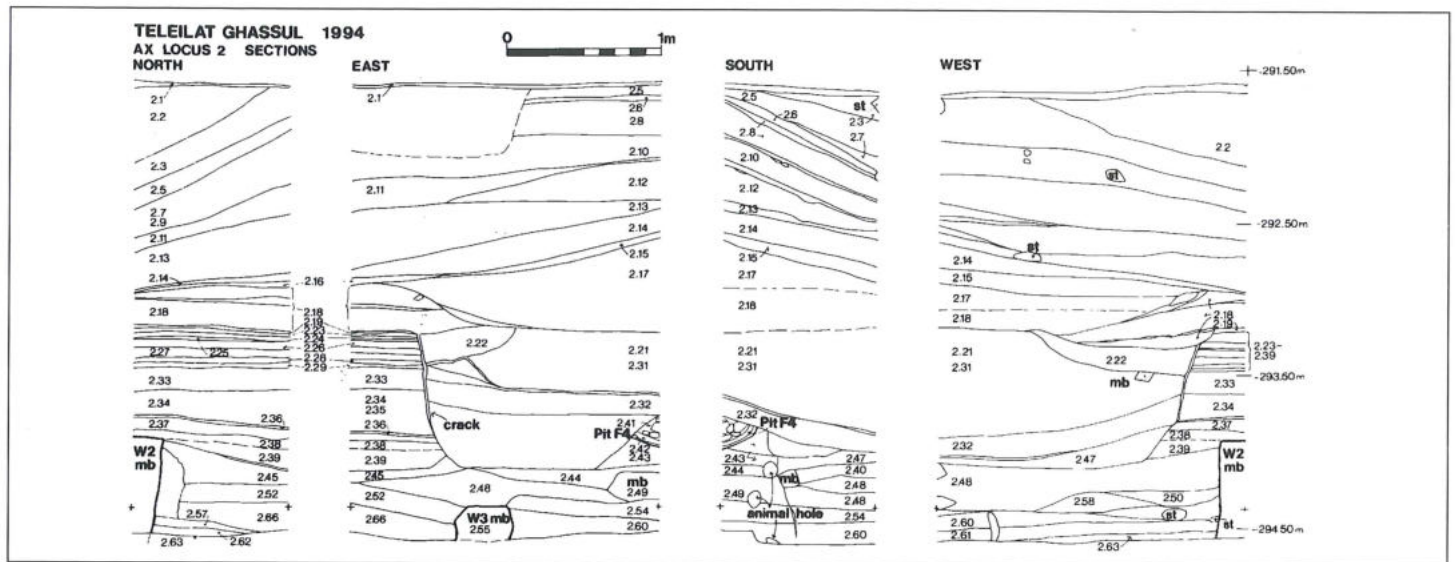
²⁰ Joffe 1993: 36-37.

²¹ Grigson 1995: for a superb synthesis, but note the figures on al-Ghassul, derived from Lee 1973, are selective, and totally superseded by current analyses; Mairs, in: Bourke *et al.* in press; Bourke *et al.* forthcoming, for a more detailed (and accurate) analysis of al-Ghassul fauna. I thank L.D.

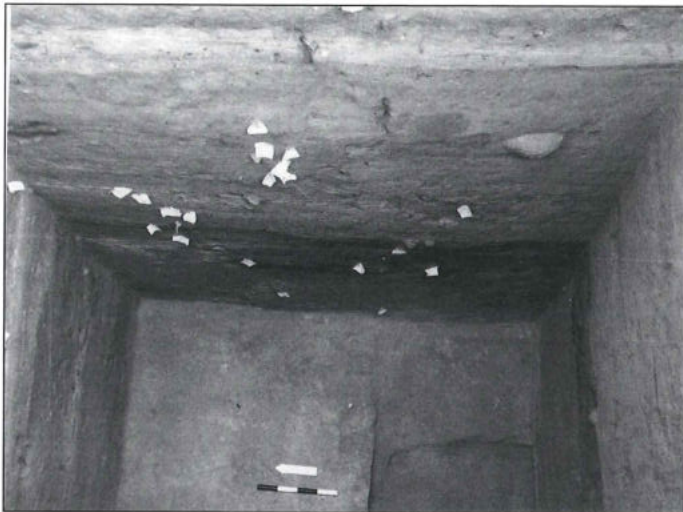
Mairs (Australian Museum, Sydney), for discussing the al-Ghassul faunal material with me.

²² Joffe and Dessel 1995: for the terminology and radiometric rationale for a 'Terminal Chalcolithic' phase.

²³ Kislev, in T. Levy ed. 1987 for Chalcolithic archaeobotanical survey, although her species listing for al-Ghassul (272, Table 9.3) is woefully inadequate, and wholly superseded by present work, for which see Hoppé, in Bourke *et al.* forthcoming. I thank C. Hoppé for discussing the al-Ghassul archaeobotanical material with me.



7. AX. All sections 1994.



8. A XI. 1994/95. Sterile below Neolithic.



9. A XI. Extension 1995. Neolithic plaster floor.

the restricted presence of waste products from wheat processing. Legumes and olive are important supplementary presences from early in the Chalcolithic. There is a gradual increase (but overall small incidence) in more productive forms of wheat (Durum) and barley (six-row hulled) over time. The consistent presence of a restricted range of weeds, glume bases and the low incidence of basal nodes suggests considerable crop processing off-site, and the large quantity of culm nodes and grasses suggests collection of fodder crops (although use as bedding is another possibility). A noticeable increase in legume diversity (particularly vetches) in the later Chalcolithic samples may suggest widespread fodder crop production, although the use of vetch as 'famine food' may suggest a grimmer alternative. Overall, the botanical evidence suggests a diversified crop production from

earliest Chalcolithic times, with barley, wheat, legumes and olive the most important food crops. Over time, olive is of increasing importance,²⁴ along with a growing emphasis on fodder-crop production.

2. Architecture

One aim of renewed excavation is the exploration of architectural diversity, with particular focus on the identification of specific-function architecture. A second is to recover further evidence for overall settlement plans, to supplement the original PBI findings, and to further investigate urban design through time.

The main area deemed suitable for large scale architectural analysis was the relatively undisturbed western area of the site, Hennessy Area H, where exceptionally well preserved architectural remains were discovered immediately below the surface, during initial cleaning in

²⁴ Neef, in Dollfus *et al.* 1988: 597-598 for early Jordan Valley; Galili and Sharvit 1994/95 for early olive oil production in the Carmel region, Carmi

and Segal 1994/95, for the Neo/Chalco date; Kislev 1994/95, for the suggestion that the olives employed were harvested wild.

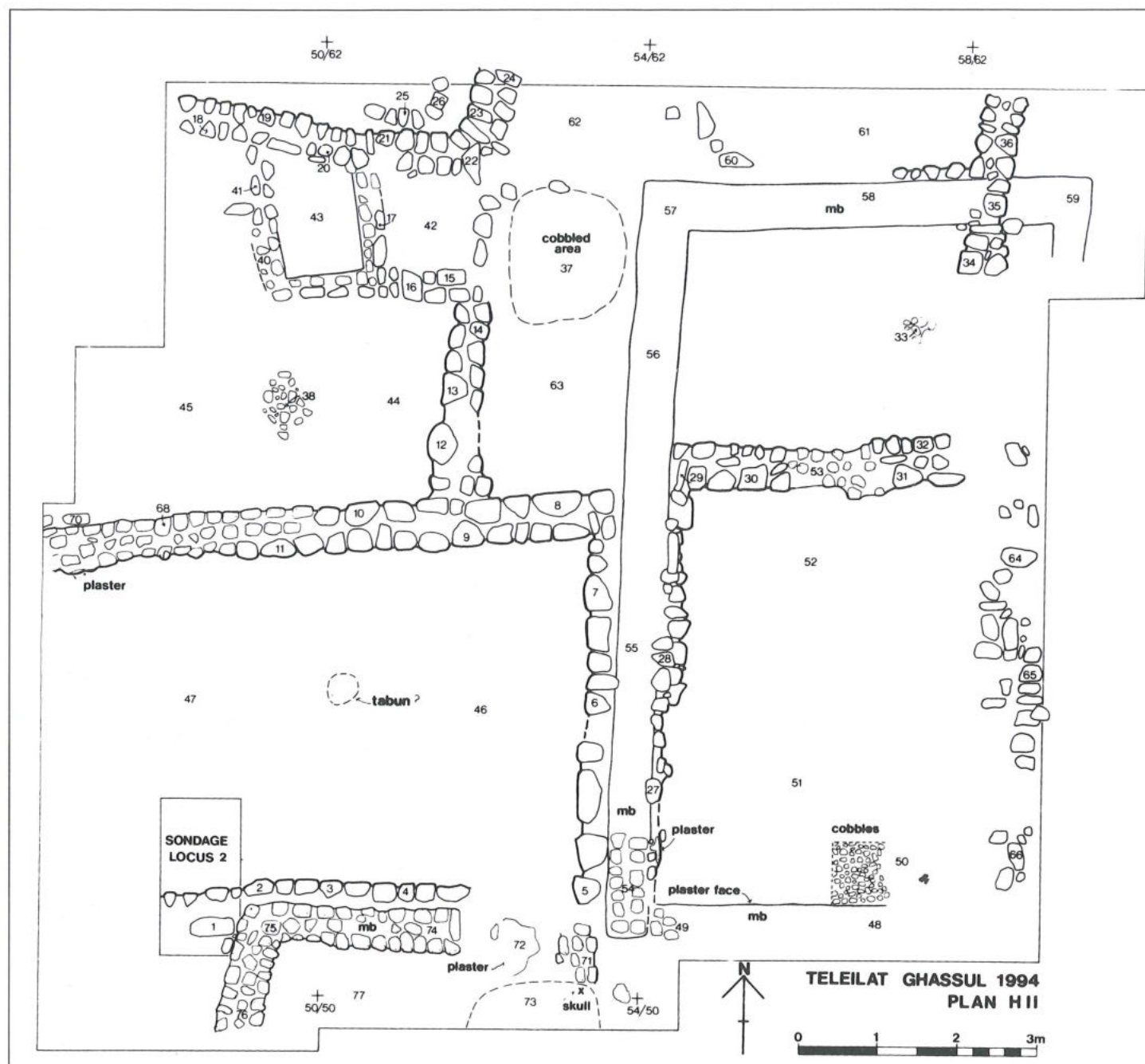
1994. After a deep probe (HII, locus 2-3 see FIG.12) had determined that at least four major phases of architecture (the earliest Middle Chalcolithic, the top three Late Chalcolithic) existed in the area, detailed planning commenced in an 11 x 11 m area after loose surface material had been removed (see FIG.11). Planning this area revealed two phases of architecture intermixed. The uppermost (Phase A) consisted of a number of contiguous multi-cellular structures, rectilinear rooms and groups of small roughly square stone-lined storage bins, built around a series of squarish courtyards, each with a centrally placed hearth or fire pit. This was built on top of and where possible against the remains of two splendidly constructed longhouses (Phase B), the northern one approximately 18 x 7m in extent.²⁵ Initial scraping in 1995 revealed that the multicellular phase stone architecture was more or less confined to the area of our initial clearance in 1994, and that further to the north an earlier longhouse phase (B) remained effectively undisturbed. The further north one advanced, the more complete became the preservation. With this in mind, the scraped area was expanded some 17m to the north in 1995, making the total coverage a 28 x 11m area.²⁶ Two 5 x 5m squares (HII locus 50 and H II locus 100) so placed to straddle the northeastern and southwestern regions of the northern longhouse, were excavated in 1995. H II locus 100 uncovered a beaten earth pathway along the north face of the north wall of this well-preserved longhouse, and a series of floors within the northern end of the building, recovering a collection of stone tools (large axes, scrapers, and a series of beauti-

Area H was initially seen as the main focus of our architectural analyses. At the beginning of the 1995 season, initial cleaning in the southernmost 5 x 5m plot (GII locus 50) of the original 15 x 5m trench GII revealed well preserved multicellular mudbrick architecture immediately below the present surface (see FIG. 15), which is at the limit of excavations reached in 1938 by the PBI mission.²⁷ Excavation in GII locus 50 revealed parts of six small (2 x 1 m) rooms, set in two lines. Each appears to have been entered from above, and in the one room fully excavated (see FIG. 14),²⁸ a collection of bone antlers and stone borers hinted at a special purpose work (?) or more likely storage room. As this architectural phase exists at least 2.5m below the present Tulayl III surface, it is certainly not of latest Chalcolithic date, and PBI determinations would favour al-Ghassul III or Middle Chalcolithic (Sydney) date for the complex.²⁹

Dollfus has noted that multicellular room arrangement becomes general in the latest Chalcolithic levels at Abū Hāmid,³⁰ which are sometimes suggested to be 'post-Ghassulian' in date. Until now, well stratified architecture at al-Ghassūl was dominated by stand-alone long-room units. However, our initial results suggest that multicellular and/or special purpose architectural units have a long history at al-Ghassūl, whatever the sequences at other sites.

Whether or not there are chronologically or culturally significant shifts in overall architectural patterning remains to be determined, but the evidence from al-Ghassūl does not support Dollfus' suggestion that the apparently sudden change from 'simple' longhouse to 'complex' multicellular town plans at 'Latest Chalcolithic Abū

³⁰ Dollfus and Kafafi 1993: 242-245; Dollfus and Kafafi 1988.



11. Area H, showing surface architecture and position of Sondage H II.

Ḥāmid' might be symptomatic of a more general tendency.³¹

3. Ceramics

Hennessy proposed three broad periods of development in the ceramic sequence from his Area A sequence. The first encompasses the Neolithic (Area A: Phases H-I) and earliest Chalcolithic (Phases F-G), the second the Middle Chalcolithic (Phases C-E), and the third the Late

Chalcolithic or 'Classic' Ghassulian levels (Phases A-B). Whilst Hennessy was able to isolate distinct characteristics for each phase, he concluded that all variation occurred within a single ceramic tradition, and came down firmly on the side of *in situ* development for the ceramic tradition and the Ghassulian culture in general.³² Most of our preliminary findings support Hennessy's general conclusion, although we prefer a five-fold division of ceramic assemblages, separating the Neolithic

³¹ Hennessy found a curvilinear multicellular structure in 1967, in a Late Chalcolithic phase of trench A I (Hennessy 1969:Pl. IVb). Current excavations uncovered a similar structure in the uppermost phase of Trench N I.

Here, the curvilinear structure was linked by a series of floors to a 'classic' longhouse, underlining the contemporaneity of the two architectural forms.

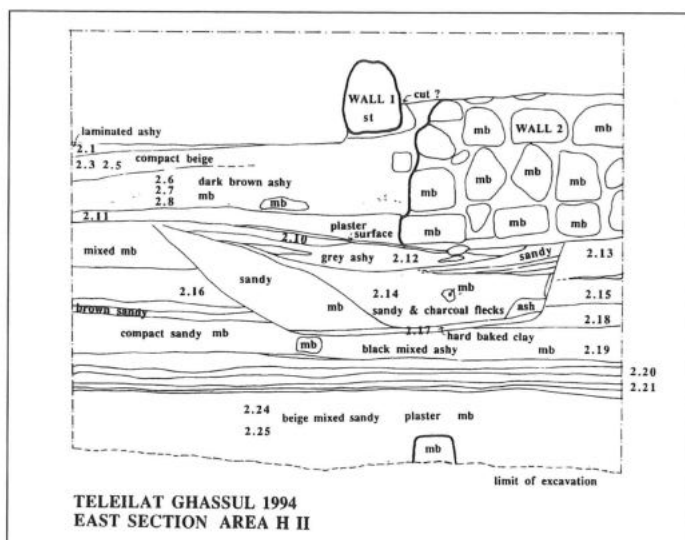
³² Hennessy 1969 and 1982; Elliot 1978.



12. H II. Sondage 1994. Looking north.



14. Area G II, 1995. Locus 58-64 sondage. Note extensive earthquake/subsidence splitting of plaster floor within small room.



13. H II. Sondage east section, showing relationship of multicellular [Wall 1] and Longhouse [Wall 2] phases.



15. Area G II, 1995. Multiple small room structure with very late pits (loci 51 and 55) cut through them. Looking south.

from Early Chalcolithic and Terminal Chalcolithic from Hennessy's Late Chalcolithic or Classic Ghassulian assemblage. Only a few preliminary remarks are warranted as much of the material still remains to be processed.³³

The pottery from the two very shallow 'Neolithic' pit phases display characteristics not shared with later material. Whilst the clay is a fine lacustrine type, the absence of any filler larger than silt suggests an unmixed fabric with little pre-treatment. Fabric types are coarse and 'biscuity', and generally fired from yellowish buff through to greenish buff, often quite crumbly. Shape range is very restricted, consisting overwhelmingly of simple rim bowls and squat narrow-necked jars. Surface decoration is very rare.

The pottery from the Early Chalcolithic levels differs from the Neolithic, in that small amounts of subangular calcite, limestone and shell filler are consistently added to the clay body, which is more commonly a marl, although the Neolithic silt fabric continues at a low incidence for a short time. Fabrics appear less 'biscuity', which, along with the calcite filler, might suggest some limited pre-treatment of the clay. Firing colour varies from the Neolithic norms consistently, with grey-cored pale brown through dark brown fabrics common, although a small amount of reduced sooty black-cored material occurs from this time. As well, a reduced coarse variant of the normal fabric with added quartzite filler occurs from this time, although too rarely to associate with a particular

³³ I thank J. Lovell, Ceramic Registrar for the al-Ghassul Project, for discussing the al-Ghassul corpora with me.

shape class. Shape repertoire is still restricted, dominated by holemouth jars, simple bowls and short-necked jars. Stump-based cornet cups appear during this phase, as do the first simple fenestrated stands.

In the Middle Chalcolithic levels the Early Chalcolithic traits outlined above continue, but at a gradually reducing level. However, many of the features of the succeeding Classic Ghassulian assemblage appear for the first time in Middle Chalcolithic phases.

In fabric, the marl type common in the Early Chalcolithic layers continues to dominate the Middle Chalcolithic assemblage, although a second ferruginous clay appears, and is increasingly employed on many of the smaller vessel forms. Firing colour varies greatly, as does the firing temperature. In these levels the later dominant 'hard red' fabrics become a significant (10-15%) part of the assemblage. These latter fabrics are fired brick red throughout, and are often (20%) over-fired to the point of vitrification. Firing temperature appears to be considerably higher on average, which, when coupled with the consistently high degree of firing variability, might suggest the development of kiln, or what has been termed 'proto-kiln' technology.³⁴ Shape classes are more varied and rim forms more elaborate, with the appearance of churn and miniature churn forms, a number of bevelled-edge fenestrated stand variants, and elongated or 'full' cornet cups a feature. However, the assemblage is still dominated by flat-based fine and coarse holemouth jars, simple bowls, and necked jars.

The Late Chalcolithic 'Classic Ghassulian' assemblage has been well documented in all previous studies.³⁵ Oxidised ('hard red') and reduced ('hard grey') variants of the iron-rich clay now dominate the fabric assemblage (75-85%), with perhaps 20-30% fired to the point of vitrification. Hard red fabrics are commonly employed in small shape manufacture, and hard grey fabrics in storage jar and bowl production, although some crossover does occur. Shape repertoire increases, with spouted bowls, fine cornets and rough-fluted goblets, elaborate rimmed holemouth and short-necked jars, large storage jars and bowls, and figurine attachments all featuring in a generally more varied assemblage. Self-slips or variants of Hennessy's 'Streaky Wash' (a thin white slip carelessly applied) dominate small vessel treatments, although a 'streaky red' wash occurs on larger vessels occasionally. Painted decoration is generally restricted to careless red painted bands or neatly executed chevrons and pendant

lattice-work triangles over a white slip, although rare 'freefield' red painted cornets occur in the latest levels. Overall, there is the impression of increased standardisation in fabric preparation and firing, and increasing variability in small shape repertoire, whilst storage shapes increase in overall size, and seem to be more commonly highly fired.

General Conclusions

The Tulaylāt al-Ghassul excavations, past and present, have produced a wealth of palaeoenvironmental and material cultural data of crucial significance to a more comprehensive understanding of this early phase in the urbanisation process. Other projects have produced high-quality data bearing on specific aspects or specific phases of Chalcolithic settlement history, but none can match the al-Ghassul assemblages for chronological range and typological variety.

Our architectural, material cultural, zoological and botanical analyses all suggest the same main point, that is while there is clear functional variability across the site in the later periods (the only ones thoroughly investigated to date), both environmental and subsistence data suggest only slow change through time. If there is any major environmental change, it occurs at the very end of the occupation sequence, probably contemporary with the Terminal Chalcolithic phase of the Beersheban culture.³⁶ Here there is some faunal evidence for changed husbandry patterns, an impression that may be accommodated to the archaeobotanical evidence.³⁷ Excavations are planned to continue for a number of years. Whilst many of the major issues at al-Ghassul itself will necessitate at least three further years of work, thereafter, we hope to expand our investigations into the Ghassulian countryside, to begin studying the interaction between this large and complex central settlement and its rural hinterland.

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³⁴ Edwards and Segnit 1984; Edwards 1993. I thank Edwards and Segnit (Deakin University, Melbourne) for discussing their ongoing work on Ghassul petrography with me, and Edwards for discussing the techno-social significance of kiln-firing. The adoption of the wheel, and the change from fire-pit to kiln production, need not have any socio-economic significance (Gilead 1988, Rosen 1993), although other manifestations of Ghassulian culture (cult practice, differential burial customs) may well suggest something more than egalitarian society (Levy, 1986, 1995).

³⁵ Hennessy 1969; Lee 1973 for al-Ghassul; Commenge-Pellerin 1987 and 1990 for Beersheba.

³⁶ See Gilead 1994; Joffe and Dessel 1995, for the radiometric parameters for

Late and Terminal Chalcolithic. Hennessy's published al-Ghassul dates are consistent with a Late Neolithic through Late Chalcolithic occupation (Hennessy 1982); none of our hypothetical Terminal Chalcolithic layers were sampled by Hennessy. Results from 1994/95 C-14 assays are not yet available.

³⁷ The archaeobotanical evidence, although rich, is equivocal at this point. Presence of fodder crops (vetches) and hay could imply deteriorating environment and the need to provide animal fodder in bulk, or simply reflect provisioning and stabling of beasts in a restricted foraging zone (i.e. a township). Analysis of another suite of samples concentrating on Terminal Chalcolithic loci is underway.

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