Chapter 14

THE CHRONOLOGY AND CERAMIC ASSEMBLAGES OF ALALAKH*

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PART I: EVIDENCE FOR THE ABSOLUTE CHRONOLOGY OF ALALAKH

INTRODUCTION

Alalakh is one of those rare sites where historical, textual, archaeological, and art historical data converge to provide opportunities for formulating integrated hypotheses about absolute chronology that have consequences for northern Syria as well as Mesopotamia and Anatolia. In addition to the tablets found in levels VII and IV which provide genealogies of the local dynasts of Yamhad and Alalakh itself, the information contained on the tablets also provides historical evidence relating to monarchs of Hatti, Babylonia, Mari, Mitanni, and Egypt. Archaeologically, Bichrome ware, Habur ware, Nuzi ware, Gray ware, Amuq-Cilician Painted ware, and the Cypriote, Mycenaean, and Minoan wares, almost all the distinctive pottery wares in the second millennium B.C. Levant, glyptics and other small objects, have been marshaled to support premises about the dating of strata at Alalakh.

These discussions cover the entire second millennium B.C. and in terms of chronology they affect our understanding of its beginning (with Amuq-Cilician pottery at issue) and its end (the significance of Mycenaean IIIB pottery found at Alalakh). But it is the question of the dates of levels VII and IV that has generated the most intense investigations since they are related to the problem of high, middle, and low chronologies of Mesopotamia. New information is emerging from different quarters that threaten (or perhaps one should say promise) to make the Alalakh material obsolete, but at the moment Alalakh still plays an important role in our understanding of chronology.

Alalakh has long been a key element in the widely used middle chronology which in a sense was canonized by its adoption in the prestigious *Cambridge Ancient History*.[1] In recent years re-examination of the

* Helene Kantor's analysis of Alalakh chronology (H. J. Kantor, "Syro-Palestinian Ivories," *JNES* 15 [1956]: 158–60) is still basic to any new consideration. In her honor I am pleased to submit a few more words about Alalakh.

1. I. E. S. Edwards, C. J. Gadd, and N. G. L. Hammond, eds., *CAH*^{3} vol. I:1 (Cambridge, 1970), pp. xix–xx.

archaeological data from Alalakh has seriously challenged that prevailing view in favor, in some quarters, of the low chronology. How valid is this reinterpretation and does the archaeological data independently favor one chronological scheme over another? To put it another way, what is the evidence for the dates of levels VII through IV and how precisely can the archaeological material in them be dated, either as evidence used to date the levels or to be firmly dated by their presence in those presumably chronologically fixed levels?

HISTORY OF MODERN SCHOLARSHIP (Fig. 26)

Destruction of Level VII

In reviewing the extensive literature for the dates of the end of level VII and the beginning of level IV there have been several turning points in the discussions on the fixing of these dates. Originally in 1940 Smith, followed by Woolley in the 1950s, fixed the date for the destruction of level VII to ca. 1750 B.C., Smith based his assessment on ceramic and glyptic evidence and on a synchronism of Yarim-Lim of level VII with Hammurapi of Babylon.[2] Habur ware, Smith believed, could be dated 1800-1600 B.C., assuming its beginning was fixed at Chagar Bazar, and its end by its stratigraphic relationship with Nuzi ware at Tell Billa, a ware whose date was fixed at Nuzi where it occurs in a context dated to Sauštatar. The glyptics of level VII showed Egyptian influences dating to the 12th Dynasty. Smith attributed the destruction of level VII to general unrest related to the Kassite invasion of Babylonia, and he suggested level VI was destroyed by Muršili I.[3]

After the publication of the Alalakh tablets in 1953 it was quickly demonstrated by Landsberger that five generations of rulers were mentioned in the tablets, and that Hammurapi I of Yamhad, a contemporary of Hammurapi of Babylon, lived considerably earlier than the destruction of level VII.[4] In 1956 Kantor and Albright lowered the date for the destruction of level VII by 100 to 150 years.[5] In addition to adopting this new understanding of the historical synchronisms they both correlated the pottery of level VII with the Middle Bronze IIB period in Palestine and specifically with Megiddo strata XII-X, and discussed the seals. For many years these were the most detailed ceramic analyses of level VII apart from Woolley's final report; of the two, Kantor provided the fuller comparisons and also discussed the seals mentioned by Smith:

> To sum up, the glyptic from Alalakh VII can now be added to the other evidence which supports the view that Canaanite art, as a clearly recognizable and coherent school of craftsmanship, came into being in the final stage of the Middle Bronze period, the phase contemporary with the late First Dynasty of Babylon and the Second Intermediate Period of Egypt.[6]

The basis for dating level VII by Albright and Kantor remained the ceramics and glyptics, though Kantor attributed its destruction to Muršili I, following Landsberger. Albright saw Alalakh level VII as

2. S. Smith, *Alalakh and Chronology* (London, 1940); C. L. Woolley, *A Forgotten Kingdom* (Baltimore, 1953); idem *Alalakh* (London, 1955).
3. Smith, *Alalakh and Chronology*, pp. 3–4, 13–16, 35–36.
4. D. J. Wiseman, *The Alalakh Tablets* (London, 1953); B. Landsberger, "Assyrische Königsliste und 'Dunkles Zeitalter,'" *JCS* 8 (1954): 31–73, 106–133.
5. Kantor, "Syro-Palestinian Ivories"; W. F. Albright, "Stratigraphic Confirmation of the Low Mesopotamian Chronology," *BASOR* 144 (1956): 26–30.
6. Ibid., p. 160; for a recent study of level VII see A. Kempinski, *Syrien und Palästina (Kanaan) in der letzten Phase der Mittelbronze IIB-Zeit (1650–1570 v. Chr.)* AAT 4 (Wiesbaden, 1983).

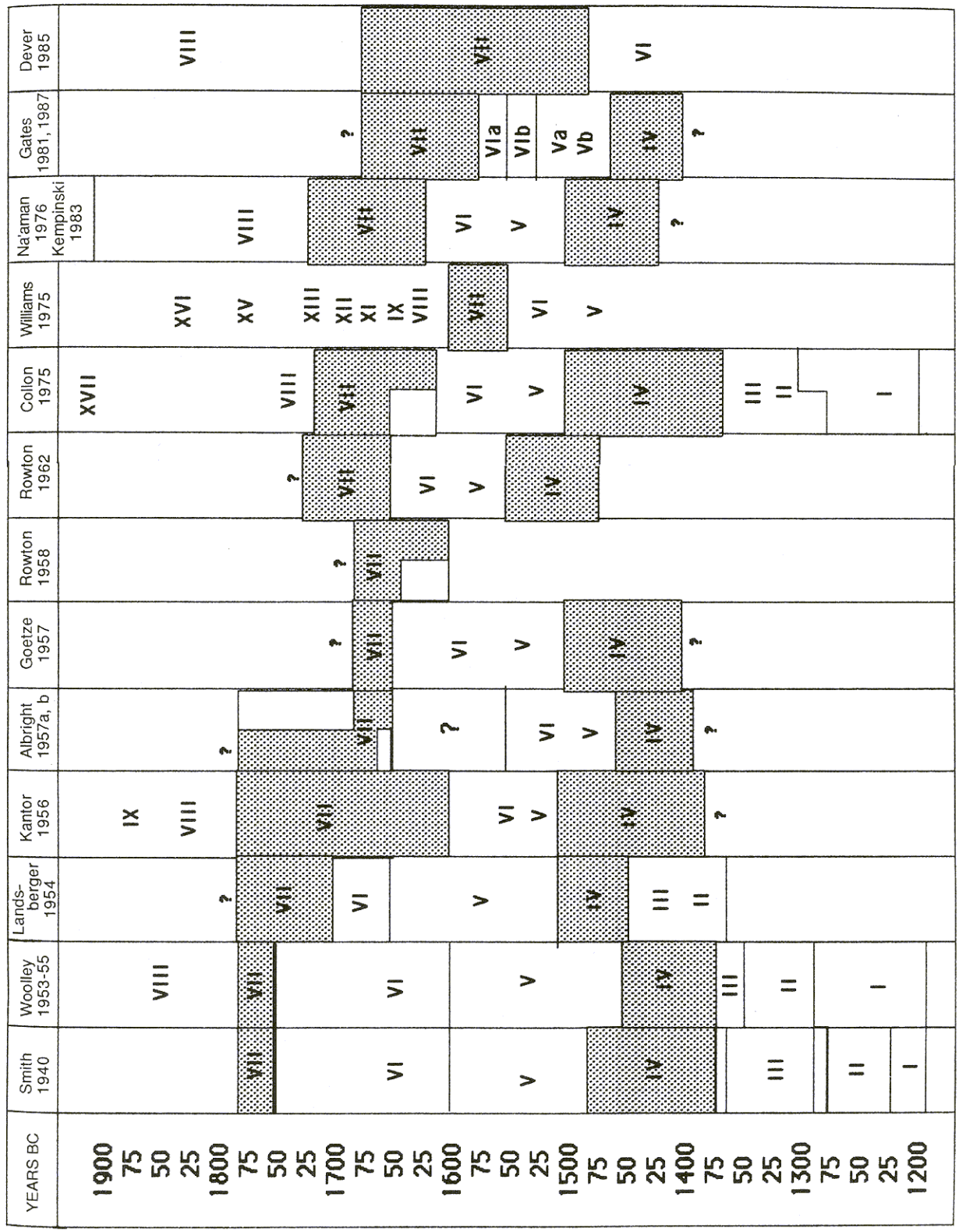


Fig. 26. Alalakh: Proposed Dates for Levels.

"Stratigraphic Confirmation of the Low Mesopotamian Chronology" as the title of his 1956 article stated, but he was vague about the time between the end of level VII and the beginning of VI. Goetze, who dated the destruction of level VII to 1650 B.C., or within twenty years of Albright, thought "that the two dates proposed, reduced to their real meaning, actually coincide," and found that the Alalakh data fit well with the middle chronology.[7] In his discussion of the dating of level VII, the destruction of which he attributed to Muršili I, Goetze appealed to an argument that links its date with the duration between it and level IV; this argument was later taken up by Rowton (see below).

In 1957 the discussion about the destruction of level VII took a new turn with the discovery of a tablet at Boğazköy which states that Hattusili destroyed Alalakh. The correlation of a general Zukraši in the level VII tablets with the same who was mentioned in a Hittite document independently dated to the reign of Hattušili I has led most scholars to conclude it was level VII that Hattušili I destroyed.[8] However this synchronism did not provide a firm absolute date for the stratum's destruction or Hattušili I's campaign.

The end of this first phase of scholarship was marked by two chronological studies of Rowton that linked the date for the destruction of Alalakh level VII with Mesopotamian middle chronology.[9] In the first instance he simply adopted Albright's date of 1640 B.C. and Kantor's 1600 B.C., based on their pottery studies. He noted, however, that since the pottery cannot provide a more precise date than ca. 1640-1600 B.C. for the destruction of level VII, it is "compatible with the [Mesopotamian] low chronology, as well as with the higher chronologies"; thus it was not Alalakh VII that persuaded him to favor the middle chronology.[10]

A few years later he modified his views; Alalakh VII could not have been destroyed later than 1650 B.C. because it would unduly compress the duration of the following strata. Using the low chronology, level VII would have been destroyed around 1575 B.C., but that is too low because ". . . we have seen that the end of level IV is to be dated not later than 1473 B.C. A total of only one hundred years for the three levels, VI, V, and IV, is very improbable."[11] This is one of three arguments he presented against the low chronology, but figure 26 illustrates that Rowton's seemingly fixed date for the destruction of level IV is much higher than the consensus of opinion; we will review this dating of level IV below.

On the other hand Rowton argued that the Mesopotamian ultra-high chronology of 1750 B.C. for the destruction of Babylon by Muršili I is ruled out because that would mean Hattušili I, who destroyed Alalakh VII, did it fifty years earlier, or 1800 B.C. But that would mean the ceramics and glyptics of VII would then be contemporary with Egypt's 12th Dynasty, which Kantor and Albright showed to be impossible.[12] He

7. A. Goetze, "Alalaḫ and Hittite Chronology," *BASOR* 146 (1957): p. 25; idem, "On the Chronology of the Second Millennium B.C," *JCS* 11 (1957): pp. 63–73; also see W. F. Albright, "Further Observations on the Chronology of Alalakh," *BASOR* 146 (1957): pp. 26–34.

8. J. D. Muhly, "Near Eastern Chronology and the Date of the Late Cypriote I period," in N. Robertson, ed., *The Archaeology of Cyprus: Recent Developments* (Park Ridge, New Jersey, 1975), pp. 76–89; N. Na'aman, "Syria at the Transition from the Old Babylonian Period to the Middle Babylonian Period," *UF* 6 (1974): p. 273; Landsberger, "Assyrische Königsliste," p. 52.

9. M. B. Rowton, "The Date of Hammurabi," *JNES* 17 (1958): pp. 97–111; Idem, "Chronology: Ancient Western Asia" in Edwards, Gadd and Hammond, eds., *CAH*^{3} vol. I:1, pp. 193–239, [published in fascicle form in 1962].

10. Rowton, "The Date of Hammurabi," p. 100.

11. Rowton, "Chronology: Ancient Western Asia," p. 232.

12. Ibid., p. 61.

marked the interval between Hattušili I and Muršili I at fifty years, but this is an estimate which he said was supported in part by the dynastic genealogy of the rulers of Yamhad and Alalakh.[13]

Over a decade passed before the stratification of Alalakh was again discussed in detail, but in the space of two years, 1975-76, studies about Alalakh appeared on glyptics, genealogy, the pottery and artifacts of levels VI-V, and, in part of a much larger work, pottery from the earliest levels XVII-VIII.[14]

Both Collon and Na'aman presented new evidence and interpretations for genealogies found in the tablets and sealings of level VII. In particular Na'aman proposed the existence of two new figures in the ruling line at Alalakh, using the principle of papponomy. This thesis, he believed, best fits the internal evidence for the tablets and sealings, but also is necessary to span the long time duration of level VII that is known to have existed through correlations with the 1st dynasty of Babylon.

Collon, from her study of the sealings, concluded most of them date to the latter part of level VII, or about 1700-1650 B.C., but Na'aman strongly argued that they cover the entire span of level VII which he dated to 1720-1620 B.C.[15] In a later work Collon lowered her estimate for the destruction of VII to the "late 17th century."[16] Most significantly her decision not to use glyptics as a primary dating tool has effectively removed them from the chronological debate over Alalakh.

They both accepted the middle chronology, but whereas Collon referred to Rowton to confirm that view, Na'aman recited arguments against the low chronology. One argument stated that the names found in tablets from levels VII and IV differ greatly, and "thus it is difficult to assume that such a sharp change of personal names at Alalakh took place over a span of only a few decades, and it seems more likely to us that a much longer period was required."[17] His other two arguments cited archaeological data. First, the pottery of level VII is Middle Bronze Age II and not later than 1600 B.C., according to the expert opinions of Albright, Kantor, and Kempinski. Secondly, the low chronology would place the destruction of level VII only fifty years before the beginning of level IV and Idrimi, i.e. about 1500 B.C., but that is too short a time for levels VI and V according to the archaeological evidence.[18] In accepting the middle chronology, Na'aman assumed Muršili I destroyed Alalakh VII, but he reduced Rowton's estimate of fifty years between events and argued for a date of 1620 B.C. for the destruction of level VII.

In marked contrast is the position of Gates who dated the destruction of level VII much lower, to 1575 B.C. on the basis of archaeological data.[19] She attacked the problem indirectly by concentrating on the dates for levels VI and V rather than level VII (see below). Levels VI and V span a period from 1575 to 1460

13. Ibid., pp. 43–45.

14. D. Collon, *The Seal Impressions from Tell Atchana/Alalakh* AOAT 27 (Neukirchen-Vluyn, 1975); N. Na'aman, "A New Look at the Chronology of Alalakh Level VII," *AnSt* 26 (1976): pp. 129–43; M.-H. Gates, *Alalakh-Tell Atchana, Levels VI and V: A Re-examination of a Mid-Second Millennium B.C Syrian City*. Unpublished Ph. D. dissertation, Yale University, (Ann Arbor, 1976); B. Williams, *Archaeological and Historical Problems of the Second Intermediate Period*. Unpublished Ph. D. dissertation, University of Chicago (Chicago, 1975).

15. D. Collon, "A New Look at the Chronology of Alalakh Level VII: A Rejoinder," *AnSt* 27 (1977): pp. 127–31; N. Na'aman, "The Chronology of Alalakh Level VII Once Again," *AnSt* 29 (1979): pp. 103–113.

16. D. Collon, *The Alalakh Cylinder Seals*, BAR International Series 132 (Oxford, 1982), p. 3.

17. Na'aman, "A New Look," p. 142.

18. Na'aman, "Syria at the Transition," pp. 265–74; Idem, "A New Look," p. 141.

19. See now M.-H. Gates, "Alalakh Levels VI and V: A Chronological Reassessment," *Syro-Mesopotamian Studies* 4/2 (1981); idem, "Alalakh and Chronology Again," in P. Åstrom, ed., *High, Middle or Low?* (Gothenburg, 1987), pp. 60–86.

B.C., determined primarily on the basis of Cypriote and Palestinian synchronisms. These levels contain numerous Cypriote imports whose absolute dates have been established by Egyptian chronology determined in Palestinian contexts. Especially important to levels VI-V is Bichrome ware that dates from 1575/60 to 1475/60 B.C.[20] Furthermore, examination of levels VII and VI shows that there was no gap between them, so level VII was destroyed about 1575 B.C. Gates points out that we can no longer discuss Mesopotamian dates in terms of high, middle, and low chronologies since re-examination of the Venus tables of Ammişaduqa of Babylon show them to be unreliable for those purposes.[21]

Another recent study of the archaeological data from Alalakh is that of Kempinski from whom Na'aman found archaeological support for the middle chronology.[22] Although published in 1983, it is a modified version of his earlier doctoral dissertation and does not take into consideration the works of Collon and Gates or the new study of the Venus tablets.

Kempinski is concerned with a rather narrow time span in Palestine: 1650-1570 B.C., the chronology of which he fixes with reference to five points: 1) Alalakh VII was destroyed by Hattušili I around 1620/15 (middle) or 1555/50 (low), 2) Bichrome and Black-Impressed wares are found in Alalakh VI-V, 3) synchronism of Alalakh with Megiddo and Tell el-Ajjul may be established: Alalakh VI, Megiddo X and Ajjul II are coeval, as are Alalakh V, Megiddo IX and Ajjul I, 4) the time span of Ajjul II may be estimated, and 5) the time span of Megiddo IX helps determine the date of stratum X there.[23]

In terms of absolute dating, the middle chronology must be used because the low chronology, which places the destruction of Alalakh VII to ca. 1550 B.C., unduly compresses levels VI-V into a fifty year period delimited by the Idrimi inscription of level IV.[24] Furthermore it would place the destruction of VII one year after the fall of Dynasty 15 in Egypt, and the emergence of Bichrome ware, the floruit of Black-Impressed ware, and the "Hyksos" scarabs would fall in that late, short fifty year period 1550-1500 B.C., which he says is impossible. The discussion of the archaeological assemblages of Alalakh by Kempinski is detailed and needs careful consideration. Innovative aspects of it are his equation of Black-Impressed ware with Tell el-Yahudiyeh ware and his analysis of "Hyksos" design motifs on scarabs and pottery of levels VI-V.[25]

But it is the broad design of Kempinski's argument that is most surprising. In his effort to date the Palestinian Middle Bronze Age IIB period he turned to what he considered to be the well-dated strata at Alalakh, levels VI-V. In fact this is a reversal of the line of argument by Albright, Kantor, Rowton, and Gates who seek dating support for those Alalakh levels from synchronisms with the well-dated Palestinian sequence. In other words we have a classic tautology.[26]

20. Gates, *Alalakh Levels*, p. 22.

21. Ibid., p. 37; E. Reiner and D. Pingree, *The Venus Tablet of Ammişaduqa*, Bibliotheca Mesopotamica 2/1 (Malibu, 1975), p. 23.

22. Kempinski, *Syrien und Palästina.*

23. Ibid., pp. 79–80.

24. Ibid., pp. 220–21.

25. See Gates, "Alalakh and Chronology Again," pp. 79–80.

26. I have not considered the dating of levels XVII to VIII, but the extremely low dates suggested in Williams, *Archaeological and Historical Problems*, for the latest of these levels affect the date of level VII. It was previously shown that the earliest stratum, level XVII, could not predate the end of Amuq J, i.e. circa 2000 B.C. due to the presence of Amuq-Cilician Painted ware through these earliest Alalakh levels, and the absence of earlier Amuq material; see M. J. Mellink, Review of *Alalakh*, by C. L. Woolley, *AJA* 61 (1957): pp. 395–400. It is generally

DATING OF LEVELS VI AND V

Until the studies by Gates the dating of Levels VI and V was usually an afterthought to the issues of levels VII and IV. Once those crucial levels were pinpointed, then VI and V were sandwiched in between them. The early exception was Kantor's detailed list of ceramic similarities between Alalakh VI-V and Megiddo IX.[27]

Gates argued that in fact VI-V provide better chronological evidence than does level VII:

> However, that date [the destruction of VII] cannot be given precisely by any archaeological features of Level VII, whose pottery is typically MB II B-C in Syro-Palestinian terms, without any eccentricities, or — more significantly — without any imported wares which might better define it. In contrast, Level VI . . . is the earliest level at Alalakh with imported wares which can be used as reliable dating indices.[28]

Specifically it is the imported Cypriote, "Syrian," and Palestinian pottery that is most useful for dating, while she found Aegean and Mesopotamian imports less so.[29] Among the Cypriote pottery at Alalakh it is the Bichrome ware that is the best evidence: ". . . the Bichrome Ware examples provide the most specific chronological reference: by themselves they date Alalakh VI-V."[30] The other Cypriote wares of chronological value are Monochrome, White Slip I and II, Red-on-Black, and Base Ring.[31] In addition Gates

> assumed that the small sample sizes of these strata and the lack of stratigraphic control of material recovered below the modern water level means it is not possible or at least not wise to search for/distinguish chronological or typological differences in the assemblages. Nevertheless, Williams classified the levels into different periods of the Middle Bronze Age and proposed dates for them:
>
Alalakh	Period	
		2000 B.C.
XVII XVI	MB I	
		1800
XV XIV	MB IIA	
		1725
XIII XII XI X		
		1650
IX VIII	MB IIIA	
		1600
VII	MB IIIB	
		1550/1540
>
> The rationale for Williams' dates is not entirely clear to me; at one point (Williams, *Archaeological and Historical Problems*, p. 1162) he stated that the dating of Alalakh VII is determined by correlations with Egyptian chronology, but he did not state what those correlations are. Elsewhere, he provided a fuller discussion of the pottery from strata XVII–VIII, B. Williams and R. Hassert, "Some Aspects of the Excavation at Tell Atchana, Part I: A Critical Review of the Pottery from Levels XVII–VII," *Serapis* 4 (1978): pp. 41–56.

27. Kantor, "Syro-Palestinian Ivories," p. 159.
28. Gates, *Alalakh-Tell Atchana*, p. 3.
29. Ibid., pp. 17–27.
30. Ibid., p. 19.
31. Ibid., pp. 18, 22.

found glyptics, mold-made figurines, glass vessels, and glazed earthen ware to be useful for dating; yet it is clear they are secondary next to the Cypriote wares and Bichrome ware.[32] How can the date of Bichrome ware be so precisely established? In the main, by its presence in Megiddo Stratum IX, whose date is chronologically fixed by its destruction at the hands of Tuthmose III in 1468/1467 B.C..[33]

DATE OF LEVEL IV

Construction of the palace in stratum IV was attributed to Niqmepa by Woolley because it was originally believed that the earliest and greatest number of tablets found in the palace were from his reign,[34] but that is at issue, and it depends on his relationship to Idrimi.

In turn the dating of Idrimi presents its own set of problems. Line 43 of the inscription on the statue of Idrimi provides a synchronism with a Mitannian king. Originally Smith read the name as Bara *Sutarna, which has subsequently been read as Barrattarna. A further problem is whether Idrimi was the grandson of Niqmepa or his father. Again, following Landsberger, the consensus today is that Idrimi was the father of Niqmepa.[35]

The date of Idrimi has been linked to the campaign of Thutmose III to the Euphrates. Rowton pointed out that there should be reference to the Egyptian presence in the Idrimi inscription if he reigned during or after the raid. Therefore Idrimi must have reigned before Thutmose III's campaign, which Rowton dated to 1473 B.C.[36] On the other hand, Oller, whose assessment of the dating of Idrimi and of level IV is the most detailed study of the past decade, suggests that the campaign of Thutmose III could have occurred after the Idrimi inscription was composed.[37] In any event the impact of the Egyptians at Alalakh and in northern Syria may not have been as great as has been suggested.[38]

While most scholars would date Idrimi to about 1500 (± 50) B.C., Oller believed the evidence allowed for a more precise date in the lower part of that range — i.e. *ca.* 1475 B.C., on the basis of four points: Alalakh texts, Hittite evidence, Nuzi evidence, and archaeological evidence from level IV.

In the Alalakh texts the genealogical data shows the line of descent to be Ilimilimma, Idrimi, Niqmepa, and Ilimilimma. Furthermore, there are from three to six tablets from the level IV archives which belong to Idrimi, contrary to the original assessments of Smith and Woolley.[39] From these tablets Oller

32. Ibid., pp. 27–28.

33. Ibid., p. 21, but see below.

34. Woolley, *A Forgotten Kingdom*, p. 101; idem, *Alalakh*, pp. 110–111, 392.

35. S. Smith, *The Statue of Idri-Mi* (London, 1949); Woolley, *Alalakh*, p. 392; Landsberger, "Assyrische Königsliste," pp. 53–55.

36. Rowton, "Chronology: Ancient Western Asia," pp. 229–30.

37. G. H. Oller, *The Autobiography of Idrimi: A New Text Edition with Philological and Historical Commentary*, Unpublished Ph. D. Dissertation, University of Pennsylvania (Ann Arbor, 1977), p. 169. He dated the campaign of Thutmose III to 1457 B.C., following the accession date of 1490 for Thutmose III instead of 1504 B.C. An ingenious suggestion has been made that the statue and inscription were actually crafted much later by nationalists tired of Hittite control. Thus the historical value of the inscription would be diminished, J. M. Sasson, "On Idrimi and Šarruwa, the Scribe," in M. A. Morrison and D. I. Owen, *Studies on the Civilization and Culture of Nuzi and the Hurrians* (Winona Lake, Indiana, 1981), pp. 309–24.

38. Ibid., pp. 169–73.

39. Ibid., pp. 150–52; Collon, *The Seal Impressions*, pp. 160–70.

concluded that Idrimi reigned in level V and possibly for a short period in level IV, which means that the palace of level IV might have been constructed by Idrimi, not Niqmepa.[40]

Using Hittite and Nuzi data, Oller adduced two other arguments for the dating of Idrimi to ca. 1475 B.C. Through the treaty between Idrimi and Pilliya, known from an Alalakh tablet, and through a Hittite treaty with a Pilliya, king of Kizzuwatna, and the Hittite monarch Zidanta, Idrimi may be synchronized with the Hittite ruler and given a date of ca. 1475 B.C. That is only one of several possible dates for the Hittite ruler, but it is most acceptable, it is argued, because Kizzuwatna did not exist before ca. 1500 B.C.[41]

Idrimi was contemporary with Barrattarna and Niqmepa with Sauštatar. At Nuzi Barrattarna may be synchronized with Teḫip-tilla, and Sauštatar with Winnerke, Teḫip-tilla's mother. Winnerke and Teḫip-tilla belong to the first and second generation of a family that ended in its fifth generation with the destruction of Nuzi, which may be dated to ca. 1350 B.C. Assuming a generation spanning twenty-five to thirty years, then Winnerke, and consequently Barrattarna and Idrimi, date to about 1500-1475 B.C.[42] Unfortunately there is some uncertainty over the date for the destruction of Nuzi.

According to Oller, archaeological evidence from level IV provides a chronological range for that stratum and in turn for Idrimi whose reign partially overlaps with it. The absolute dates for level IV may be bracketed by a *terminus post quem* and a *terminus ante quem*. A Late Helladic IIIA sherd and Base Ring II sherds found in level IV provide a *terminus post quem* of no earlier than 1400 B.C., following the assessment of Merrillees and Collon.[43] The *terminus ante quem* is derived from Gates' dating of level V, which ends around 1475/1460 B.C.

It may be observed at this point that in accepting the possibility that Idrimi was the builder of the level IV palace we are faced with yet another point of ambiguity in the dating of that level. A more serious aspect is that while Oller's arguments are quite acceptable within the context of his discussion, his arguments are not acceptable to us because they border on tautologies from the archaeological point of view. A *terminus ante quem* for level IV based on presumed fixed dates for levels VI and V cannot be used by those who would be concerned about the floating levels VI and V being compressed against the presumably fixed date of level IV. Finally we cannot use the archaeological data to support the date of Idrimi because in most of the discussions Alalakh IV is dated by the presumably fixed chronology of Idrimi.

SUMMARY AND DISCUSSION

Throughout the discussions three main archaeological arguments have been used to date Alalakh level VII: 1) lowering the date of level VII too much will unduly compress levels VI and V against level IV, the date of which has been established, 2) level VII is contemporary with Megiddo strata XII-X on the basis of ceramic parallels (and therefore is fully Middle Bronze Age II in characteristics and date), 3) the imported Palestinian and Cypriote pottery in Alalakh VI and V and consequently those strata themselves can be dated from the mid sixteenth to the mid fifteenth centuries B.C. (1550-1450 B.C. — Albright, 1575/60-1475/60 B.C. — Gates).

40. Oller, *The Autobiography*, pp. 152, 158–59.

41. Ibid., pp. 162–65.

42. Ibid., pp. 165–66.

43. Collon, *The Seal Impressions*, 169.

1. Compression of Levels VI and V against Level IV

This argument is based on two assumptions: a) the date of level IV may be fixed, and b) the layers between VII and IV, i.e. levels VIa, VIb, Va, and Vb, are too numerous and too substantial to have existed in a very short period of time.

Neither argument is compelling. First, we do not have precise absolute dates for the reign of Idrimi or level IV (see above). Second, one of the most difficult and dangerous procedures is to estimate the absolute duration of an archaeological deposit by the number or thickness of its layers or by the grandeur or flimsiness of architectural elements. Thick debris layers can accumulate in a very short period, as can substantial rebuildings. By the same token, the reverse is true; thin layers and flimsy architectural remains may span long time periods. In short, archaeological strata in themselves are not reliable indicators of chronological duration.

2. Synchronisms of Alalakh with Megiddo (fig. 27)

The comparison of the Alalakh and Megiddo assemblages is the foundation for the archaeological dating of Alalakh, but the foundation is shaky for three reasons: 1) the problem of distance, 2) the problem with the stratigraphy of Megiddo, and 3) uncertainty of the absolute date for Megiddo stratum IX. To be sure the general procedures follow accepted archaeological assumptions — the greater the similarities, the closer the assemblages are in date. But the distance between the two sites is so great that geo-cultural differences are substantial. Gates attempted to overcome this problem by concentrating on comparison of imports that come from Cyprus, a third source common to both sites. Despite the geo-cultural differences, there has been general agreement about the synchronisms of strata at Alalakh and Megiddo, at least until recently (fig. 27).

But how valuable are these correlations? As long ago as 1969 Kenyon pointed out major problems with the Megiddo sequence, especially in the correlation of Areas AA and BB within Megiddo.[44] Most recently this has been reinforced by Gonen who suggests stratum IX in Area AA should be equated with stratum X in area BB.[45] In her effort to sort out the stratigraphy Kenyon discussed the Middle Bronze Age and Late Bronze Age sequence in terms of selected loci called phases H to S and AA to AH, and pottery groups A to H. In other words, the Megiddo strata no longer have the value and meaning we once thought they possessed. If we are to relate Alalakh to Megiddo, it should be correlated with specific pottery groups and/or phases established by Kenyon, Müller, or Gonen.[46] More than ever this is necessary since the previous consensus of Kantor and Albright for the Megiddo-Alalakh correlation (fig. 27) has broken down. Now Gates and Kempinski correlate Alalakh level VI to Megiddo stratum X, while Dever compares level VII to Megiddo X.

44. K. M. Kenyon, "The Middle and Late Bronze Age Strata at Megiddo," *Levant* 1 (1969): pp. 25–60; also see U. Müller, "Kritische Bemerkungen zu den Straten XIII bis IX in Megiddo," *ZDPV* 86 (1970): pp. 50–86; H. E. Kassis, "The Beginning of the Late Bronze Age at Megiddo: A Re-examination of Stratum X," *Berytus* 22 (1973): pp. 5–22.

45. R. Gonen, "Megiddo in the Late Bronze Age-Another Reassessment," *Levant* 19 (1987): pp. 83–100.

46. As, for example, is done in the chart by W. G. Dever, "Relations between Syria-Palestine and Egypt in the 'Hyksos' Period," in J. N. Tubb, ed., *Palestine in the Bronze and Iron Ages* (London, 1985): fig. 1. However Gonen, "Megiddo," p. 84, notes serious problems with Kenyon's study; Gonen's analysis should be more reliable.

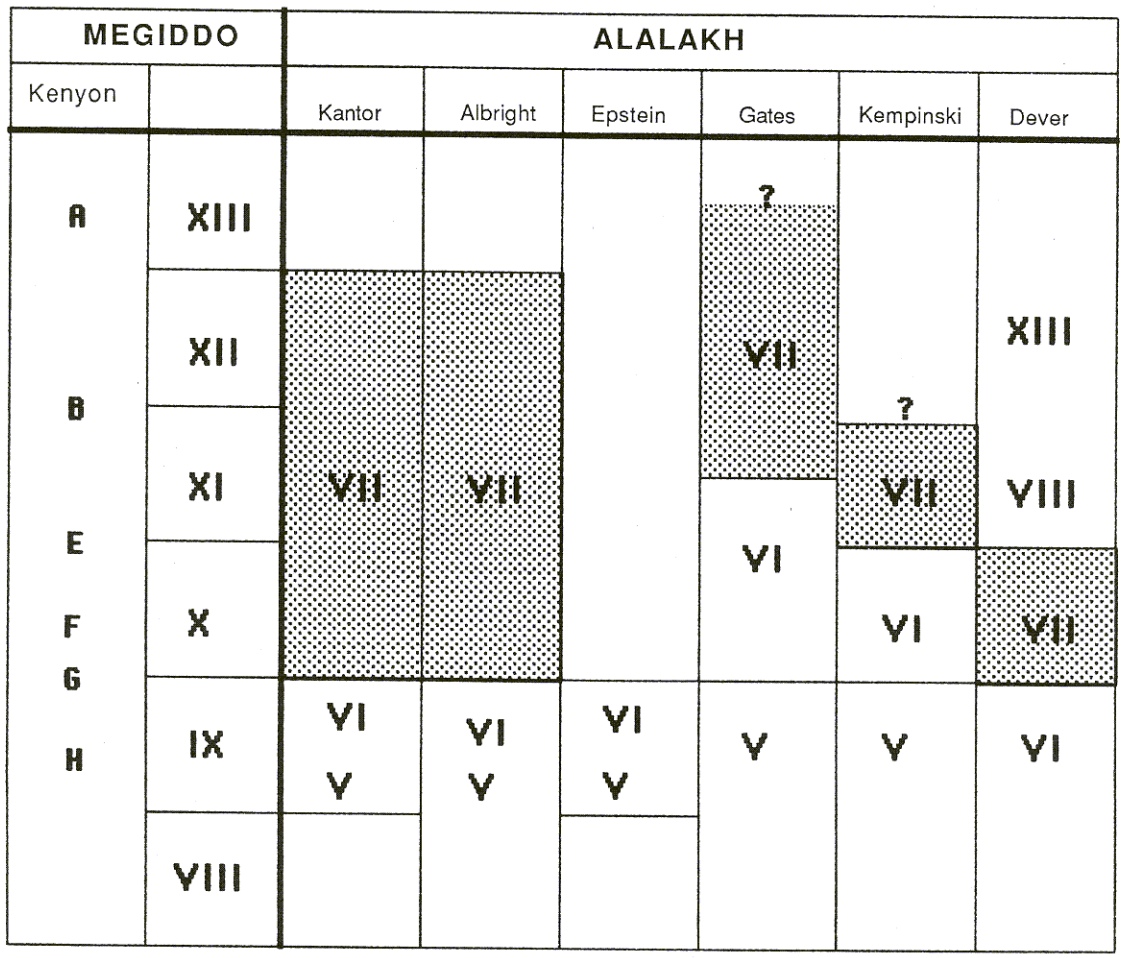


Fig. 27. Megiddo and Alalakh: Proposed Synchronisms Between Levels.

Closely related is the question of absolute dates for Megiddo and for the Palestinian sequence in general. It is often assumed that stratum IX at Megiddo was destroyed in the famous campaign of Tuthmose III (1468/67 B.C.).[47] This assumption is crucial to Gates' argument[48] but it is doubtful, according to Gonen:

> However, now that it has been convincingly pointed out that the Egyptian king never boasted of destroying Megiddo (Shea 1979, 4-5), the siege need not be tied to a destruction level. It could well have taken place during the lifetime of layer VIII. [49]

But not only the absolute dates for Megiddo are questioned; the chronology for the entire Palestinian Middle Bronze Age II sequence is currently in dispute. Dever provides a chronological scheme that is in the

47. Gates, "Alalakh and Chronology," p. 65; but see now W. Helck, "Was kann die Ägyptologie wirklisch zum Problem der absoluten Chronologie in der Bronzezeit beitragen?" in P. Åstrom, ed., *High, Middle or Low?* (Gothenburg, 1987), p. 26; K. A. Kitchen, "The Basics of Egyptian Chronology in Relation to the Bronze Age," in P. Åstrom, ed., *High, Middle or Low?* (Gothenburg, 1987), pp. 40–41.

48. Gates, *Alalakh Levels*, p. 21; idem, "Alalakh and Chronology," p. 65. Gates is now aware of this serious challenge to the date of stratum IX — personal communications.

49. Gonen, "Megiddo," p. 97.

mainstream of Palestinian archaeology, for example see Kenyon's absolute dates and Cole's relative chronology.[50] But this scheme has been challenged by Bitak who wishes to lower the absolute dates for the Palestinian sequence on the basis of his interpretation of the Tell Da'ba stratification in the eastern Delta, and other Egyptian data.[51] One important dating criterion is the scarab, and here too there is strong disagreement as to absolute dates.[52] While these new debates do not necessarily mean dates used in the past in comparing Alalakh with Middle Bronze Age Palestine are incorrect, they must be used with increased caution.

3. Cypriote Pottery

It is assumed that the distribution of imported Cypriote ware at Alalakh will manifest the same chronological range as at other sites. Of these the best dated is thought to be Bichrome ware, and it is Megiddo, especially stratum IX, that provides its date.

We have already seen that the absolute date for Megiddo IX has broken away from its fixed mooring. The occurrence of Bichrome ware at Megiddo has been subject to several studies that locate it primarily in stratum IX.[53] At Alalakh Bichrome ware is found in levels VI and V, but at most there are no more than twelve sherds.[54] In contrast, larger quantities of other Cypriote wares were found. I suggest it may be better to evaluate the whole range of Cypriote wares and their general pattern of distribution, rather than relying heavily on Bichrome ware which, because of its scarcity, may provide a misleading sense of its date. The chronological distribution in northern Syria may differ somewhat from that of Palestine; such is the case for Nuzi ware at Alalakh when compared to northern Mesopotamia.

50. Dever, "Relations between Syria-Palestine," fig. 1; cf. idem, "The Beginning of the Middle Bronze Age in Syria-Palestine," in F. M. Cross, W. E. Lemke, and P. D. Miller, Jr., eds., *Magnalia Dei: The Mighty Acts of God* (Garden City, New York, 1976); K. M. Kenyon, "Palestine in the Middle Bronze Age," in I. E. S. Edwards, et al., *CAH*[3] vol. II:1 (Cambridge, 1973), p. 94; D. P. Cole, *Shechem I: The Middle Bronze IIB Pottery* (Winona Lake, Indiana, 1984), p. 84.

51. M. Bietak, "Problems of Middle Bronze Age Chronology: New Evidence from Egypt," *AJA* 88 (1984): pp. 471–85.

52. D. O'Connor, "The Chronology of Scarabs of the Middle Kingdom and the Second Intermediate Period," *JSSEA* 15 (1987): pp. 1–41; W. Ward, "Scarab Typology and Archaeological Context," *AJA* 91 (1987): pp. 507–32.

53. C. M. Epstein, *Palestinian Bichrome Ware* (Leiden, 1966); M. Artzy, I. Perlman, and F. Asaro, "Imported and Local Bichrome Ware in Megiddo," *Levant* 10 (1978): pp. 99–111; B. Wood, "The Stratigraphic Relationship of Local and Imported Bichrome Ware at Megiddo," *Levant* 14 (1982): pp. 73–79.

54. Epstein, *Palestinian Bichrome Ware*, pp. 134–37; Gates, *Alalakh Levels*, p. 19.

PART II: ANALYSIS OF ALALAKH POTTERY ASSEMBLAGES

THE PROBLEM

The comparison of the strata from Alalakh with other Near Eastern sites continues to be hindered by our incomplete understanding of the Alalakh material itself, a problem that arises from the way it was originally published. Its pottery is illustrated in a series of 168 types for seventeen levels, which makes it difficult to recognize differences in assemblages from one level to the next. To understand the characteristics of the assemblages one consults distribution tables, but the meaning of the tables' figures are obscured by the unequal size of the assemblages; for example, there are 617 pots from level IV and only two from level XI and four from level XV.[55] Drawing inferences from the raw numbers without standardizing the assemblages is misleading. Compounding the issue is the fact that the Cypriote and Mycenaean pottery are not listed in the tables.

The classification system is also problematic. Often three or four variants of a type are illustrated, for example type 23a-e, but the shapes of the variants may be significantly different, as in the case of types 4a and 4b, which may lead to a sense of unease about the reliability of Woolley's typology.[56] Sometimes a single drawing represents scores of specimens; eighty-two specimens for type 3b were found in level IV alone, but there is only one illustration. Thus our understanding is vague of how representative the illustration is of the constituted type and of the range of variation within the type.

Gates' study of levels V and VI, in which she illustrates many new drawings of pots and sherds, goes far in helping clarify the nature of those assemblages and their relevant types.[57] In the following section I wish to present another approach which is to analyze the type distributions through frequency curves, and the assemblages of various levels by frequency curves and multivariate statistics.[58]

DATA PREPARATION

Using Woolley's distribution tables quantitatively is something of a risk, as was noted above, for the published types may be so poorly defined as to render them unreliable, and the counts of specimens may present problems.[59] Nevertheless it is worth the effort to experiment with them and, as we will see, meaningful patterns are produced. However, it must be kept in mind that there are likely to be unavoidable distortions in the results that can only be recognized and rectified by fresh fieldwork. Throughout it is assumed here that Woolley's distribution tables record only whole, restorable, and partially complete vessels.

Except for level VI, Woolley divided levels I to X into a and b sublevels, but usually the bulk of the pottery from a level is from only one sublevel. To establish data sets of pottery for the levels, the choice was faced either to omit the smaller sublevel or group it with the larger sample. Unfortunately, the Cypriote and

55. Woolley, *Alalakh*, pp. 332–40.

56. Ibid., pls. 109–10.

57. Gates, *Alalakh-Tell Atchana*, idem, *Alalakh Levels*.

58. For another example see T. L. McClellan, "Chronology of the 'Philistine' Burials at Tell el-Far'ah (South)," *JFA* 6 (1979): 57–73.

59. Cf. Williams and Hassert, *Some Aspects*.

Mycenaean pottery is listed only by level, not by sublevel.[60] Consequently, the decision was made to group sublevels, and some levels, together to constitute the data sets used. In our figures levels are labeled with roman numerals except for the level 10 assemblage which represents grouped Alalakh levels XI to XVII that separately have very small assemblages: XI-(2 pots), XII-(31), XIII-(11), XIV-(27), XV-(4), XVI-(0), XVII-(8). Alalakh level X was omitted.

Woolley's 168 pottery types were reduced to eighty types, which will be referred to as variables, by eliminating some infrequent types and by grouping many of the types on the basis of shape similarities (see the variable-pottery type conversion lists, fig. 28a, b).[61] This was done for ease of handling on the computer, but it also may be more realistic to use broader types when there is such uncertainty about Woolley's typology. Variable v81 is a miscellaneous category that lumps all the unused types (a total of eighty-seven types and sub-types); despite this large number of omitted types, together they generally represent less than ten percent of the vessels Woolley listed in each assemblage, except for levels 2 (10.06%) and 10 (13.25%). In the multivariate analyses the miscellaneous vessels (v81) were omitted and percentages recalculated (not illustrated). The other eighty variables are based on shape except for Red Lustrous ware and the imported Cypriote and Mycenaean wares (i.e., variables v24-v30).[62]

Figure 29 lists the percentage presence of each variable in the assemblages. Except for the total number of vessels in each assemblage (end of fig. 29), the count of vessels in each assemblage is not listed since they are found in Woolley's tables.

DATA ANALYSIS

Multivariate statistics were used to search for patterns in the relationship of the levels (cases) and the pottery (variables) from Alalakh. The distribution of variables (pottery types) in the levels is used to establish measures of similarity and correlation between the levels, and by inverting the data matrix the similarity or correlation of variables (pottery types) is determined by their patterns of distribution in find spots (levels). Two measures of association were used: the Pearson correlation coefficient and Euclidean distance. In the program with the Pearson correlation coefficient the data is standardized so that variables with large numbers of vessels or large percentages of vessels and those with small numbers and percentages have equal weight or influence in determining the strength of the correlations. When the Euclidean distance is used on a matrix of percentages of types, it gives more weight, in determining measures of similarity, to those pottery types (variables) that constitute high percentages of individual assemblages.

60. Woolley, *Alalakh*, pp. 354–76.

61. Hereafter the term types associated with numbers refers to Woolley's typology; variables with numbers have the prefix v. The term variable is widely used to describe the elements or attributes that something (a city, a flower, a pot, a stratum) possesses that makes it similar to or different from another thing; the degree to which these variables are present or absent in something are used to measure the similarity between one thing and another. In computer programs, variables are usually organized in columns and the thing being measured, cities or flowers, are listed in the rows, and are usually called the cases. A matrix is the listing of rows and columns (cases and variables); to invert a matrix is to to make the rows the columns and the columns the rows, or to make the cases variables, and the variables the cases.

62. The Alalakh data sets were analyzed on a Macintosh Plus with a 20 megabyte hard disk and the software package Systat: L. Wilkinson, *SYSTAT: The System for Statistics* (Evanston, Illinois, 1988).

ALALAKH

Variable	Type
01	002a
01	002b
01	003a
01	005
01	006a
01	006b
02	003b
02	004b
03	021a
04	023a
04	023b
04	023c
04	023d
04	119
05	043
05	044a
05	044b
05	044c
06	048a
06	048b
06	048c
07	055a
07	055b
08	060a
08	060b
08	061a
08	062a
08	062b
09	068a
09	068b
09	068c
09	069a
09	069b
10	070
11	082
12	083
12	084a

ALALAKH

Variable	Type
12	084b
12	084c
12	085
13	091a
13	091b
13	093b
13	093c
13	094a
13	094b
14	103a
14	103b
14	104a
14	104b
15	106b
16	113a
16	113b
16	113c
17	115a
18	118a
18	118b
19	137
20	153
21	158
22	163b
23	167a
24	Monochrome
25	Base Ring I
26	Base Ring II
27	Red Lustrous
28	White Slip I
29	White Slip II
30	Mycenaean
31	007a
31	007b
32	011
33	015
34	022

ALALAKH

Variable	Type
35	026a
36	032
37	042a
37	042b
38	063
38	064a
38	064b
39	067a
39	067b
40	095a
40	095b
41	097a
41	097b
42	099a
42	099b
42	099c
43	100
44	102a
44	102b
45	120
46	152a
47	008
48	009a
49	009b
49	009c
50	013
51	021c
52	024
53	029
54	040
54	041a
54	041b
54	041c
55	045
55	046
55	047
56	049

ALALAKH

Variable	Type
56	050
56	051
56	052
56	053
56	054a
56	054b
57	056
57	057a
57	057b
57	058
58	072b
59	073a
59	073b
60	075
61	086
61	087
61	088
61	089
62	098
63	107a
63	107b
64	108a
64	108b
64	108c
65	110
66	111
67	117a
68	121
68	122
68	123a
68	123b
68	124
68	125
68	126
69	127
70	128
71	129a

ALALAKH

Variable	Type
72	129b
72	129c
72	130a
72	130b
72	130c
73	131a
74	132a
75	136
76	139
77	146
77	147
78	149
79	159
79	160
80	165

a

ALALAKH

Type	Variable
002a	01
002b	01
003a	01
003b	02
004b	02
005	01
006a	01
006b	01
007a	31
007b	31
008	47
009a	48
009b	49
009c	49
011	32
013	50
015	33
021a	03
021c	51
022	34
023a	04
023b	04
023c	04
023d	04
024	52
026a	35
029	53
032	36
040	54
041a	54
041b	54
041c	54
042a	37
042b	37
043	05
044a	05
044b	05

ALALAKH

Type	Variable
044c	05
045	55
046	55
047	55
048a	06
048b	06
048c	06
049	56
050	56
051	56
052	56
053	56
054a	56
054b	56
055a	07
055b	07
056	57
057a	57
057b	57
058	57
060a	08
060b	08
061a	08
062a	08
062b	08
063	38
064a	38
064b	38
067a	39
067b	39
068a	09
068b	09
068c	09
069a	09
069b	09
070	10
072b	58

ALALAKH

Type	Variable
073a	59
073b	59
075	60
082	11
083	12
084a	12
084b	12
084c	12
085	12
086	61
087	61
088	61
089	61
091a	13
091b	13
093b	13
093c	13
094a	13
094b	13
095a	40
095b	40
097a	41
097b	41
098	62
099a	42
099b	42
099c	42
100	43
102a	44
102b	44
103a	14
103b	14
104a	14
104b	14
106b	15
107a	63
107b	63

ALALAKH

Type	Variable
108a	64
108b	64
108c	64
110	65
111	66
113a	16
113b	16
113c	16
115a	17
117a	67
118a	18
118b	18
119	04
120	45
121	68
122	68
123a	68
123b	68
124	68
125	68
126	68
127	69
128	70
129a	71
129b	72
129c	72
130a	72
130b	72
130c	72
131a	73
132a	74
136	75
137	19
139	76
146	77
147	77
149	78

ALALAKH

Type	Variable
152a	46
153	20
158	21
159	79
160	79
163b	22
165	80
167a	23
Base Ring I	25
Base Ring II	26
Monochrome	24
Mycenaean	30
Red Lustrous	27
White Slip I	28
White Slip II	29

b

Fig. 28. Alalakh: Conversion Lists (*a*) Sorted by Variables and (*b*) Sorted by Type.

THE ALALAKH LEVELS

Two cluster analyses and a factor analysis were run on the data. For the cluster analyses two dendrograms (fig. 30a, b) represent two runs to produce hierarchial clusters using single linkage method. In the first dendrogram (fig. 30a) the distance measure was Euclidean. It shows that levels VI and VII are most closely clustered, then levels V, VI, and VII, then levels IV, V, VI, and VII, and another cluster of levels I and II. Level III does not cluster closely with levels I to VII and levels VIII, IX, and 10 are increasingly farther away, in terms of Euclidean distance, from other levels.

In the second dendrogram (fig. 30b) the Pearson correlation coefficient was used. Levels VIII and IX are the most closely clustered, then levels V and VII, etc. Overall there are two large clusters: 1) levels I-III and 2) levels IV-10. But in that second cluster, level IV joins it at some distance from the main group.

These differences between the two clustering schemes can be explained in part by their different measures of distance. In the dendrogram on figure 30a levels IX and 10 stand in isolation because they have a few variables (types) that represent very high percentages of their assemblages, and the Euclidean distance measure reflects this aspect. In the dendrogram on figure 30b the clustering reflects the standardized weight of types regardless of the percentage of an assemblage they represent.

Factor analysis (fig. 30c) was run on the same data set using the Pearson correlation coefficient.[63] Levels V, VI, and VII load highly on factor 1; VIII, IX and 10 on factor 2; and I, II, and III on factor 3. Level IV loads only moderately on factors 1 and 3. The results of the factor analysis correspond more closely to the dendrogram on figure 30b which not surprisingly uses the same Pearson correlation coefficient.

The analyses using the Pearson correlation coefficient indicate three distinct groups: one — levels VIII, IX, and 10; two — levels V, VI and VII; and three — levels I, II and III. Conversely there is a break between levels VII and VIII and another between levels III and V. Recognition of three groups in these analyses confirms a tripartite division made earlier by the author through visual inspection of selected frequency curves (see below and fig. 38) in which breaks between levels VII and VIII and levels III and IV were observed. What was not recognized in the visual inspection was the intermediate position of level IV which in the multivariate analyses does not group closely with either the levels before or after it.

It is assumed that time is the main influence causing the levels to cluster or to load as they do. Thus we can speak of the following periods: Period 1: levels 10 (=XVII-XI), IX, and VIII; Period 2: levels VII, VI, and V; Transitional Period 3: level IV; and Period 4: levels III, II, and I.

63. Rotation was by varimax method; loadings on the factors were sorted. A loading of less than ±0.5 is the rule of thumb cutoff point for assigning a variable to a factor. For discussions of factor analysis see R. J. Rummel, *Applied Factor Analysis* (Evanston, Illinois, 1970); J. Kim and C. W. Mueller, *Factor Analysis: Statistical Methods and Practical Issues* (Beverly Hills, 1978); and M. Norusis, *SPSS/PC+: Advanced Statistics* (Chicago, 1986), pp. B40–B69.

THE ALALAKH POTTERY TYPES

The pottery from Alalakh may be analyzed using factor analysis, cluster analysis, and frequency curves. Factor and cluster analyses, utilizing the Pearson correlation coefficient, produce similar results. In factor analysis 9 factors were extracted (fig. 31).[64]

To determine whether the factor loadings were caused by chronological differences, and if so what those distinctions are, the percentages of pottery variables assigned to the factors were calculated and graphed as frequency curves (fig. 37a); the factors are arranged to read from left to right, earliest to latest. Also included on the graph are three of the six variables (see bottom of fig. 31) that did not load highly on any of the nine factors. Pottery drawings (figs. 33–36) illustrate what kinds of pottery load highly on the different factors.

The pottery was also subjected to cluster analysis (fig. 32) using the Pearson correlation coefficient and the single linkage method of clustering. A number of clusters correspond closely to specific factors of the factor analysis, and at one point of dissimilarity most of the eighty variables (pottery types) fall into eight clusters, labeled A to H. Cluster A contains most of the variables that load on factors 2 and 4; cluster B contains mostly variables of factor 5; large cluster C contains elements from factors 1, 6, and 7; cluster G has two variables from factor 9 and one from factor 4; cluster H mainly contains variables from factor 8. Again, frequency curves (fig. 37b) illustrate the distribution of pottery belonging to the eight clusters, plus four individual pottery types still unclustered in the point selected on the dissimilarity scale (cluster E was omitted from fig. 37b).

Finally, frequency curves (fig. 38) of selected individual pottery types are presented, as well as frequency curves of painted and decorated wares (fig. 37c). In the latter figure some of the calculations are based on incomplete and impressionistic data. In the Alalakh report there is no accurate statistic for the distribution of the Amuq-Cilician painted ware, though it usually occurs on two vessel types: bowls (types 23a-c and 119) and pitchers (type 70). The frequency curve is based on the assumption that all of those vessels were decorated in the Amuq-Cilician style, but in fact how many were undecorated is not known. In the case of the local painted ware and Habur ware there are no figures, nor is there for Nuzi ware in level III, although its presence in levels IV and II should be accurately reflected. The frequency curve for Gray ware should also be reasonably accurate. No attempt was made in figure 37c to subdivide Mycenaean and Cypriote wares, but see figure 38 for a breakdown of Cypriote wares. In both figures the mainland Red Lustrous ware was grouped with Cypriote wares, since I used Åstrom's classification for it too.[65]

64. The rotation was by varimax and the factors were sorted. Choice for the number of factors to be extracted was by using the rule of thumb of eigenvalues greater than 1.

65. For classification of Cypriote pottery I followed P. Åstrom, "Relative and Absolute Chronology, Foreign Relations, Historical Conclusions," in P. Åstrom, ed., *The Swedish Cyprus Expedition* vol. 4:1D: *The Late Cypriote Bronze Age* (Lund, 1972).

TABLE OF LEVEL (ROWS) BY TYPE (COLUMNS)

ROW PERCENTS

	1	2	3	4	5	6
1	1.14	2.27	.00	.00	3.41	1.14
2	.00	2.52	.00	.00	3.77	.63
3	4.07	1.63	.81	.00	.00	6.50
4	6.32	19.45	.16	.00	.81	.97
5	34.67	.73	.00	.73	.36	.00
6	14.29	.00	.00	3.17	.00	1.59
7	19.35	6.45	7.26	.00	.00	.00
8	18.82	.00	14.12	21.18	.00	.00
9	7.04	.00	39.44	36.62	.00	.00
10	.00	1.20	1.20	43.37	.00	.00
TOTAL	11.50	8.24	3.08	4.98	.89	1.01

	25	26	27	28	29	30
1	.00	.00	.00	.00	.00	22.73
2	.00	.00	1.89	.00	.00	4.40
3	.00	.00	.00	.00	.00	.00
4	1.62	2.59	2.76	1.94	1.94	.16
5	1.09	1.09	1.46	.00	.00	.00
6	3.17	.00	.00	.00	.00	.00
7	.00	.00	1.61	.00	.00	.00
8	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00
TOTAL	.89	1.13	1.54	.71	.71	1.66

	7	8	9	10	11	12
1	.00	.00	12.50	.00	2.27	4.55
2	.00	2.52	8.18	.00	1.89	13.21
3	1.63	4.88	3.25	.00	.81	8.13
4	1.94	2.43	3.24	.00	1.13	2.92
5	1.82	.73	2.19	.36	.36	.36
6	.00	3.17	.00	.00	.00	4.76
7	.00	.81	.00	.81	.00	.00
8	.00	.00	.00	2.35	.00	.00
9	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	7.23	.00	.00
TOTAL	1.13	1.78	3.20	.59	.83	3.38

	31	32	33	34	35	36
1	3.41	2.27	.00	.00	.00	.00
2	.63	1.26	3.14	1.26	.00	1.89
3	.00	1.63	.00	.81	.81	23.58
4	1.13	.49	.81	.81	.97	.00
5	.73	.36	4.01	.73	1.46	.00
6	.00	1.59	1.59	.00	.00	1.59
7	.00	.00	.00	.00	.00	.00
8	.00	.00	1.18	.00	8.24	.00
9	.00	.00	.00	.00	.00	.00
10	1.20	.00	.00	.00	4.82	1.20
TOTAL	.83	.65	1.36	.59	1.30	2.02

	13	14	15	16	17	18
1	4.55	2.27	.00	.00	.00	.00
2	4.40	1.26	.00	.63	.00	5.03
3	4.88	3.25	.00	.00	.00	4.88
4	7.94	1.94	.00	.00	.00	2.11
5	4.01	4.74	1.82	.36	.00	.73
6	4.76	9.52	4.76	.00	.00	1.59
7	.81	4.84	8.87	6.45	.00	.81
8	1.18	.00	.00	5.88	3.53	.00
9	.00	.00	.00	.00	4.23	.00
10	1.20	.00	.00	3.61	8.43	.00
TOTAL	4.92	2.67	1.13	1.07	.77	1.84

	37	38	39	40	41	42
1	4.55	3.41	1.14	3.41	.00	1.14
2	.63	1.26	.00	.00	.00	.63
3	1.63	.81	.00	3.25	.00	.00
4	.65	.81	.32	.00	.00	1.30
5	.00	.00	3.65	.00	.36	.73
6	.00	1.59	.00	.00	1.59	.00
7	.00	.00	1.61	.00	.00	.00
8	.00	.00	.00	.00	1.18	.00
9	.00	.00	.00	.00	1.41	.00
10	.00	.00	.00	.00	.00	.00
TOTAL	.65	.71	.89	.41	.24	.71

	19	20	21	22	23	24
1	.00	1.14	1.14	.00	1.14	.00
2	.00	.63	12.58	.00	3.77	.00
3	.00	1.63	.81	.00	1.63	.00
4	.16	1.94	.65	5.19	1.13	.49
5	1.46	.36	.00	.36	.00	.36
6	3.17	1.59	.00	3.17	1.59	1.59
7	4.03	1.61	.00	.81	.00	.00
8	7.06	.00	.00	.00	.00	.00
9	1.41	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00
TOTAL	1.13	1.19	1.54	2.13	1.01	.30

	43	44	45	46	47	48
1	.00	.00	.00	1.14	.00	.00
2	.00	.00	.00	.63	.00	.00
3	.00	1.63	.00	.00	.00	.00
4	.00	.65	.00	.16	.16	.00
5	.73	.00	1.82	.73	.36	.00
6	.00	4.76	.00	.00	3.17	.00
7	.81	.00	.00	.81	.00	.00
8	7.06	.00	.00	.00	.00	1.18
9	4.23	.00	.00	.00	.00	4.23
10	.00	.00	.00	.00	.00	.00
TOTAL	.71	.53	.30	.36	.24	.24

Fig. 29. Alalakh: Matrix of Percentages of Eighty-One Variables in Ten Levels.

	49	50	51	52	53	54
1	.00	.00	.00	.00	.00	2.27
2	.00	.00	.00	.00	.00	.63
3	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.81
5	3.65	.00	.36	1.09	.00	.00
6	1.59	.00	.00	1.59	.00	.00
7	.00	.00	5.65	.00	.00	.00
8	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00
10	.00	6.02	.00	1.20	3.61	.00
TOTAL	.65	.30	.47	.30	.18	.47

	73	74	75	76	77	78
1	.00	.00	.00	.00	1.14	.00
2	.00	.00	.00	.00	2.52	1.26
3	.00	.00	.00	.00	.00	.81
4	.00	.00	.16	.00	.49	.16
5	.00	.00	1.46	.36	1.09	.00
6	1.59	.00	.00	.00	.00	.00
7	1.61	1.61	.00	2.42	.00	.00
8	.00	.00	.00	.00	1.18	.00
9	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00
TOTAL	.18	.12	.30	.24	.71	.24

	55	56	57	58	59	60
1	.00	.00	.00	.00	1.14	.00
2	.00	1.26	.00	.00	.00	.00
3	.00	.00	.00	.00	.81	.00
4	.00	.81	.65	.65	.32	.00
5	.73	1.46	.00	.00	.00	.73
6	1.59	.00	.00	1.59	.00	3.17
7	.00	.00	.81	.81	.00	.00
8	1.18	.00	2.35	.00	.00	.00
9	.00	.00	.00	.00	.00	.00
10	.00	.00	1.20	.00	.00	.00
TOTAL	.24	.65	.47	.36	.24	.24

	79	80	81	TOTAL
1	1.14	.00	6.82	100.00
2	.00	.00	10.06	100.00
3	.81	1.63	8.13	100.00
4	.65	.32	9.40	100.00
5	.00	.00	6.57	100.00
6	.00	.00	3.17	100.00
7	.00	.00	9.68	100.00
8	.00	.00	2.35	100.00
9	.00	.00	1.41	100.00
10	.00	.00	13.25	100.00
TOTAL	.36	.24	8.06	100.00

	61	62	63	64	65	66
1	.00	1.14	.00	.00	.00	1.14
2	.00	1.89	.63	.00	.00	.63
3	.81	.00	.00	.00	2.44	.00
4	1.62	.32	.16	.81	.49	.49
5	.73	.00	1.46	.00	.00	.00
6	4.76	.00	.00	.00	.00	1.59
7	.00	.00	.00	.00	.00	.81
8	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	1.20	.00
TOTAL	.95	.36	.36	.30	.41	.41

	67	68	69	70	71	72
1	.00	.00	.00	3.41	1.14	.00
2	.00	.63	.00	.00	.63	1.26
3	.00	.00	.81	.00	.81	.00
4	.00	.81	.00	.00	.00	.65
5	.73	1.09	2.55	.00	.00	.00
6	.00	.00	.00	.00	.00	1.59
7	.00	.81	.00	.00	.00	8.06
8	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00
TOTAL	.12	.59	.47	.18	.18	1.01

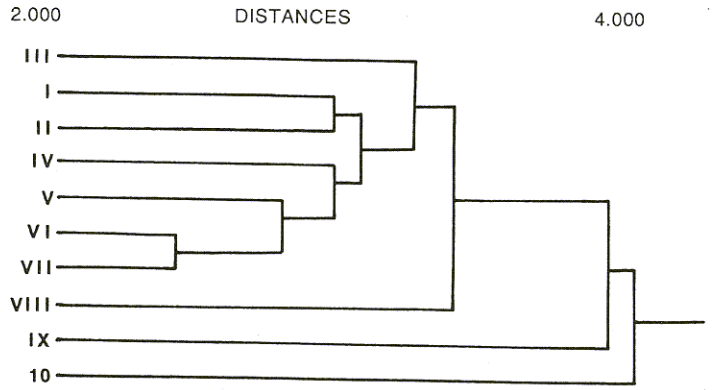
NUMBER OF VESSELS IN EACH ASSEMBLAGE

1 = 88
2 = 159
3 = 123
4 = 617
5 = 274
6 = 63
7 = 124
8 = 85
9 = 71
10 = 83

Fig. 29. Alalakh: Matrix of Percentages of Eighty-One Variables in Ten Levels. *(cont.)*

DISTANCE METRIC IS EUCLIDEAN DISTANCE
SINGLE LINKAGE METHOD (NEAREST NEIGHBOR)

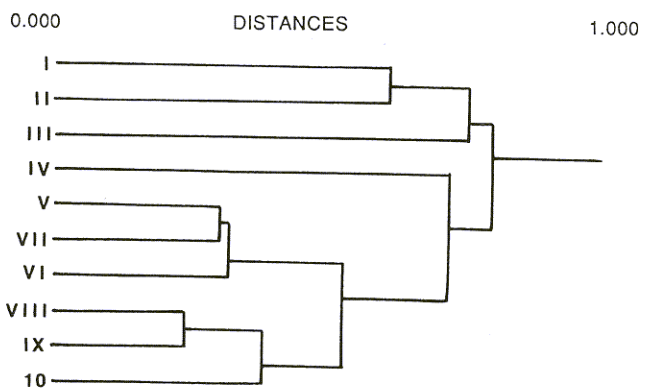
TREE DIAGRAM



a

DISTANCE METRIC IS 1-PEARSON CORRECTION COEFFICIENT
SINGLE LINKAGE METHOD (NEIGHBOR)

TREE DIAGRAM



b

ROTATED LOADINGS

	1	2	3
L5	0.901	0.075	-0.002
L7	0.867	0.128	-0.088
L6	0.823	0.083	0.113
L9	0.077	0.911	-0.058
L10	-0.115	0.880	-0.020
L8	0.457	0.837	-0.098
L2	-0.048	-0.054	0.850
L1	-0.092	-0.016	0.701
L3	0.180	-0.031	0.528
L4	0.446	-0.104	0.382

c

Fig. 30. Alalakh: (*a*) Dendrogram for Cluster Analysis of Levels Using Euclidean Distance, (*b*) Dendrogram for Cluster Analysis of Levels Using Pearson Correlation Coefficient, and (*c*) Factor Loadings of Levels on Three Factors (High Loadings are Bracketed).

	1	2	3	4	5	6	7	8	9
(70)	-0.965	0.071	0.075	0.042	0.123	0.136	0.145	0.042	0.032
(30)	-0.962	0.098	0.086	0.048	0.135	0.173	-0.041	0.045	0.050
(37)	-0.957	0.124	0.116	0.086	0.042	-0.188	0.002	0.083	0.066
(54)	-0.936	0.102	0.120	0.083	-0.199	0.182	-0.112	0.058	0.061
(31)	-0.900	0.144	-0.046	0.141	-0.145	0.209	0.051	-0.273	0.066
(38)	-0.895	-0.307	0.186	0.103	0.021	-0.005	-0.203	0.091	0.096
(9)	-0.864	0.170	-0.023	0.105	-0.028	0.014	-0.439	0.081	0.108
(59)	-0.832	0.121	0.124	0.105	-0.054	-0.486	0.109	0.104	0.065
(79)	-0.791	0.112	0.140	0.123	-0.289	-0.464	0.109	0.107	0.066
(11)	-0.774	0.179	0.023	0.123	-0.198	-0.040	-0.539	0.089	0.118
(71)	-0.752	0.186	0.122	0.091	0.228	-0.408	-0.372	0.099	0.104
(32)	-0.734	-0.394	0.082	0.134	0.137	-0.352	-0.325	0.125	0.131
(40)	-0.733	0.128	0.101	0.085	0.191	-0.609	0.085	0.101	0.065
(46)	-0.677	0.191	-0.381	-0.480	0.063	0.270	-0.195	0.086	0.085
(5)	-0.675	0.160	0.036	0.073	-0.001	0.255	-0.659	0.049	0.102
(42)	-0.619	0.091	-0.292	0.142	-0.641	0.189	-0.211	0.067	0.084
(62)	-0.505	0.161	0.103	0.061	0.004	0.246	-0.795	0.042	0.103
(47)	0.093	-0.987	0.019	0.041	0.097	0.056	0.027	0.035	0.040
(60)	0.100	-0.973	-0.101	0.042	0.150	0.063	0.035	0.034	0.043
(24)	0.100	-0.973	-0.069	0.072	-0.155	0.060	0.041	0.044	0.047
(61)	0.098	-0.967	0.016	0.083	-0.168	-0.110	0.030	0.061	0.055
(44)	0.087	-0.934	0.157	0.066	0.052	-0.284	0.006	0.068	0.055
(25)	0.102	-0.915	-0.156	0.092	-0.329	0.063	0.052	0.050	0.051
(14)	-0.042	-0.855	-0.265	-0.380	0.057	-0.165	0.024	0.119	0.092
(58)	0.136	-0.849	0.188	-0.392	-0.228	0.073	0.083	0.070	0.034
(55)	0.214	-0.716	-0.192	0.186	0.221	0.157	0.122	0.194	-0.494
(66)	-0.468	-0.716	0.236	-0.347	-0.019	0.221	-0.166	0.095	0.082
(52)	0.193	-0.684	-0.349	0.135	0.192	0.113	0.156	-0.527	0.055
(73)	0.154	-0.638	0.154	-0.710	0.127	0.085	0.110	0.068	0.020
(22)	0.073	-0.544	0.103	-0.030	-0.824	0.036	0.052	0.060	0.034
(67)	0.068	0.004	-0.989	0.060	0.029	0.064	0.086	0.010	0.038
(45)	0.068	0.004	-0.989	0.060	0.029	0.064	0.086	0.010	0.038
(75)	0.069	0.002	-0.985	0.071	-0.080	0.064	0.089	0.014	0.040
(69)	0.071	0.035	-0.956	0.082	0.070	-0.242	0.073	0.039	0.055
(63)	0.079	0.059	-0.926	0.079	-0.036	0.140	-0.316	0.019	0.076
(49)	0.100	-0.403	-0.893	0.070	0.088	0.081	0.088	0.023	0.051
(39)	-0.173	0.074	-0.893	-0.334	-0.007	0.130	0.184	0.051	0.044
(1)	0.300	-0.177	-0.733	-0.257	0.057	0.140	0.294	0.290	-0.284
(33)	0.157	-0.202	-0.733	0.154	0.005	0.238	-0.541	0.103	-0.111
(56)	0.075	0.089	-0.699	0.107	-0.341	0.175	-0.573	0.033	0.098
(68)	0.138	0.123	-0.645	-0.444	-0.487	0.168	-0.277	0.069	0.074
(7)	0.054	0.052	-0.554	0.151	-0.600	-0.538	0.050	0.087	0.068
(72)	0.146	-0.056	0.122	-0.972	-0.009	0.106	-0.016	0.072	0.015
(51)	0.127	0.118	0.016	-0.970	0.029	0.069	0.136	0.060	-0.005
(74)	0.122	0.117	0.079	-0.969	0.027	0.065	0.130	0.059	-0.008
(76)	0.133	0.118	-0.069	-0.966	0.032	0.075	0.144	0.061	-0.002
(15)	0.169	-0.379	-0.053	-0.882	0.103	0.097	0.146	0.073	0.017
(16)	0.301	0.280	0.181	-0.537	0.180	0.203	0.191	-0.175	-0.608
(29)	0.004	-0.014	0.092	0.097	-0.990	-0.005	0.021	0.036	0.014
(28)	0.004	-0.014	0.092	0.097	-0.990	-0.005	0.021	0.036	0.014
(64)	0.004	-0.014	0.092	0.097	-0.990	-0.005	0.021	0.036	0.014
(2)	-0.053	0.070	0.114	-0.206	-0.966	-0.019	-0.034	0.013	0.035
(26)	0.032	-0.012	-0.312	0.118	-0.939	0.021	0.055	0.039	0.029
(27)	0.109	0.124	-0.290	-0.348	-0.740	0.162	-0.428	0.071	0.077
(13)	-0.383	-0.366	-0.177	0.184	-0.651	-0.326	-0.346	0.054	0.030
(80)	0.011	0.098	0.077	0.091	-0.063	-0.979	-0.032	0.101	0.059
(36)	0.027	0.054	0.080	0.084	0.157	-0.970	-0.105	0.050	0.067
(6)	-0.139	-0.118	0.125	0.106	0.052	-0.952	-0.100	0.119	0.083
(65)	0.081	0.159	0.141	0.150	-0.014	-0.896	0.046	-0.342	0.062
(8)	0.102	-0.407	0.071	-0.000	-0.189	-0.750	-0.432	0.136	0.124
(18)	0.079	-0.050	0.046	-0.002	-0.110	-0.590	-0.773	0.115	0.136
(21)	-0.059	0.151	0.068	0.039	0.068	0.140	-0.966	0.026	0.100
(23)	-0.217	-0.210	0.177	0.108	-0.043	-0.169	-0.899	0.089	0.141
(78)	0.032	0.178	0.091	0.075	0.051	-0.394	-0.881	0.071	0.116
(12)	-0.248	-0.124	0.144	0.110	0.052	-0.326	-0.866	0.099	0.144
(77)	-0.274	0.230	-0.248	0.184	0.039	0.328	-0.756	0.159	-0.265
(34)	0.064	0.158	-0.348	0.138	-0.357	-0.331	-0.754	0.084	0.130
(53)	0.150	0.141	0.144	0.135	0.107	0.068	0.163	-0.936	0.013
(50)	0.150	0.141	0.144	0.135	0.107	0.068	0.163	-0.936	0.013
(10)	0.228	0.207	0.147	0.101	0.158	0.127	0.222	-0.844	-0.267
(17)	0.354	0.312	0.291	0.343	0.241	0.242	0.343	-0.583	-0.047
(57)	0.292	0.257	0.246	-0.015	-0.063	0.193	0.243	-0.175	-0.811
(35)	0.274	0.240	0.056	0.312	0.102	0.097	0.220	-0.255	-0.796
(19)	0.350	-0.148	0.074	-0.233	0.231	0.257	0.269	0.369	-0.684
(43)	0.365	0.305	0.164	0.267	0.242	0.296	0.309	0.464	-0.467
(48)	0.359	0.300	0.264	0.346	0.225	0.302	0.345	0.457	0.349
(3)	0.402	0.342	0.296	0.193	0.244	0.309	0.384	0.463	0.282
(20)	-0.285	-0.430	0.148	-0.457	-0.497	-0.456	-0.078	0.174	0.109
(4)	0.413	0.297	0.320	0.396	0.280	0.298	0.398	-0.388	0.077
(41)	0.388	-0.473	0.155	0.349	0.319	0.307	0.306	0.432	-0.054

Fig. 31. Alalakh: Table of Factor Loadings of Eighty Variables (Pottery Types) on Nine Factors (High Loadings are Bracketed).

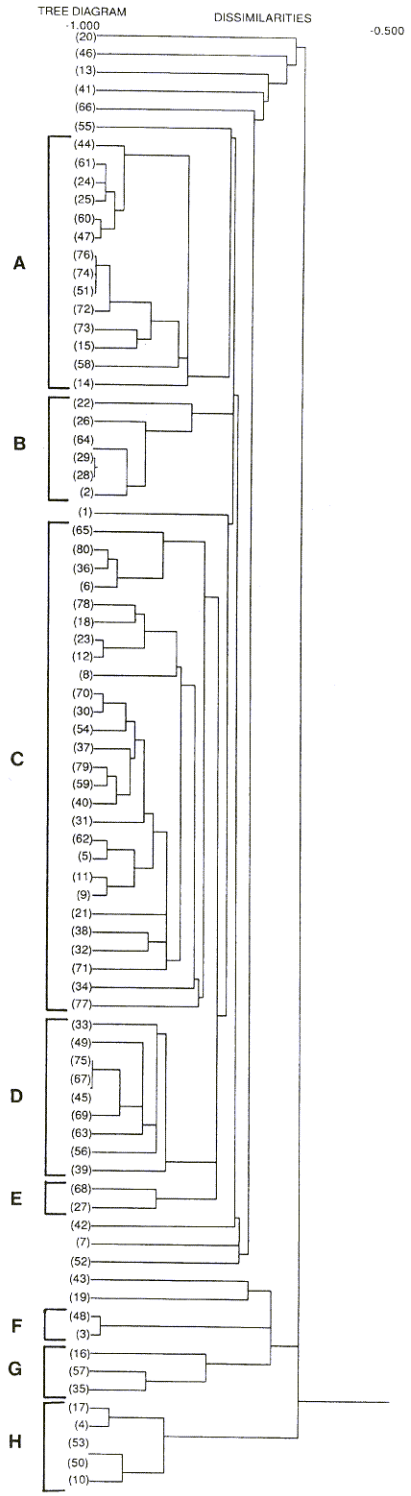


Fig. 32. Alalakh: Dendrogram for Cluster Analysis of Eighty Variables (Pottery Types). Clusters A to H are Bracketed.

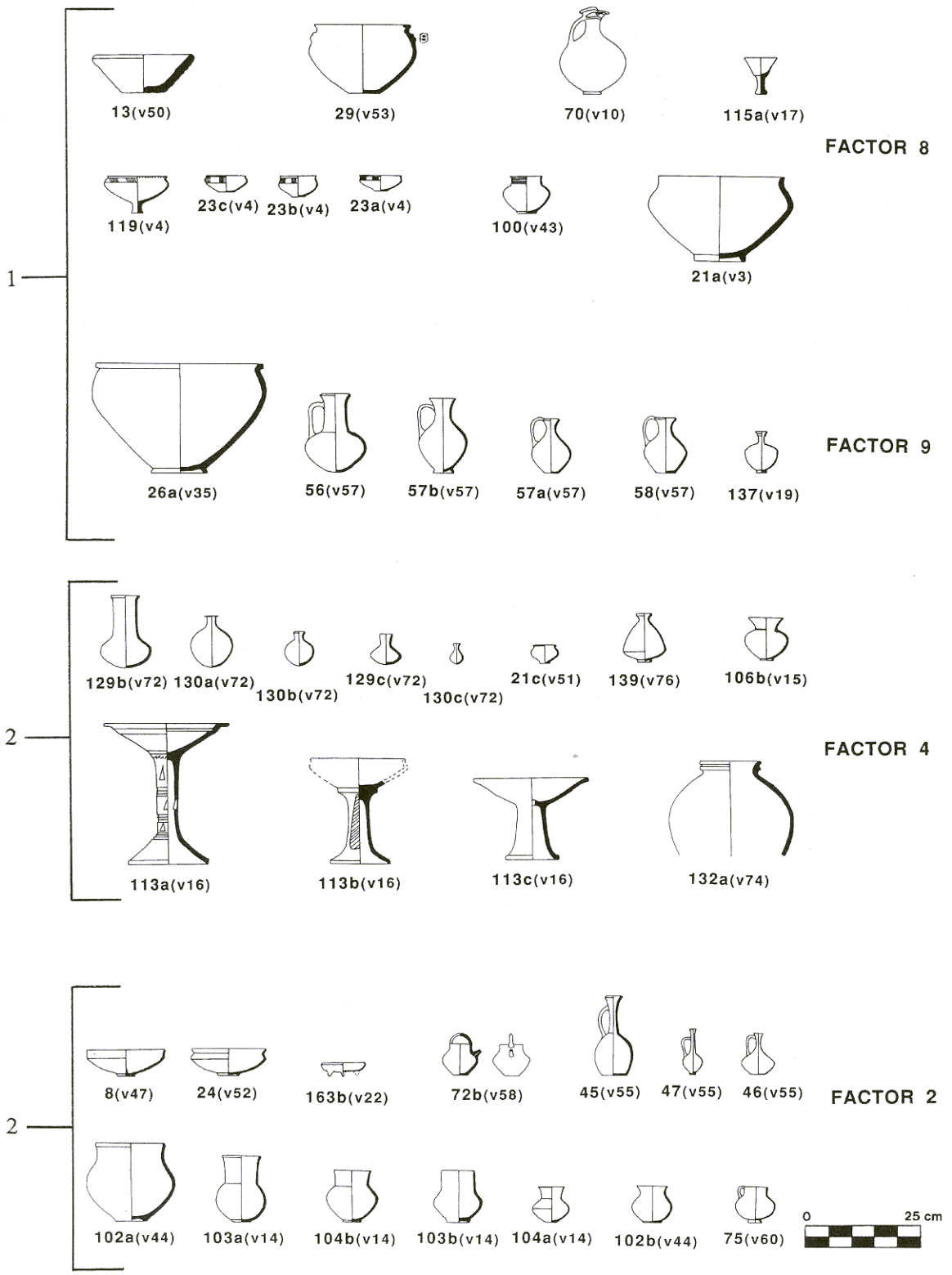


Fig. 33. Alalakh: Drawings of Variables (Pottery Types) That Load Highly on Factors 8, 9, 4, and 2.

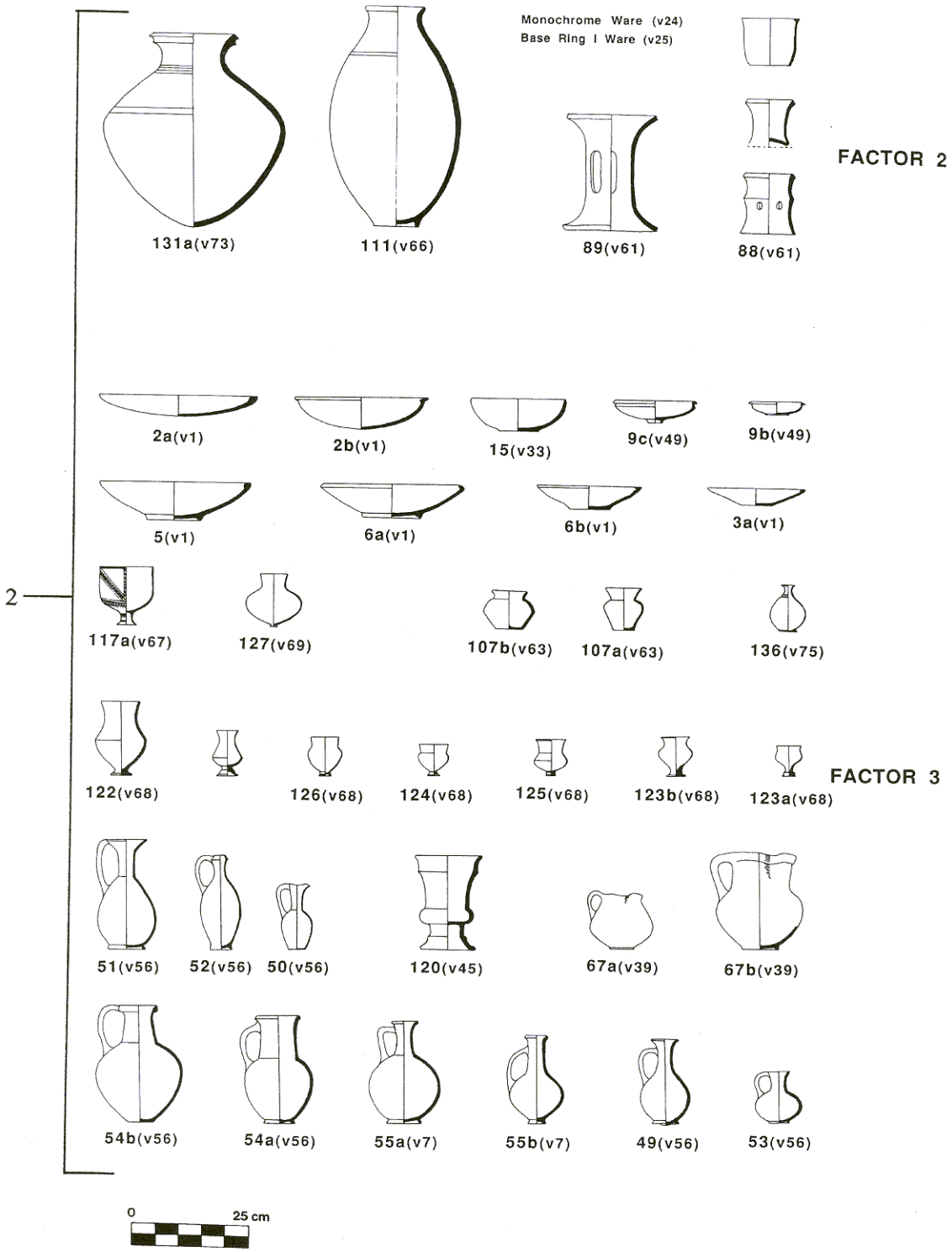


Fig. 34. Alalakh: Drawings of Variables (Pottery Types) That Load Highly on Factors 2 *(cont.)* and 3. (Note: Types 86 [v 61] and 87 [v 61] from Factor 2 and Type 121 [v 68] from Factor 3 were inadvertently omitted.)

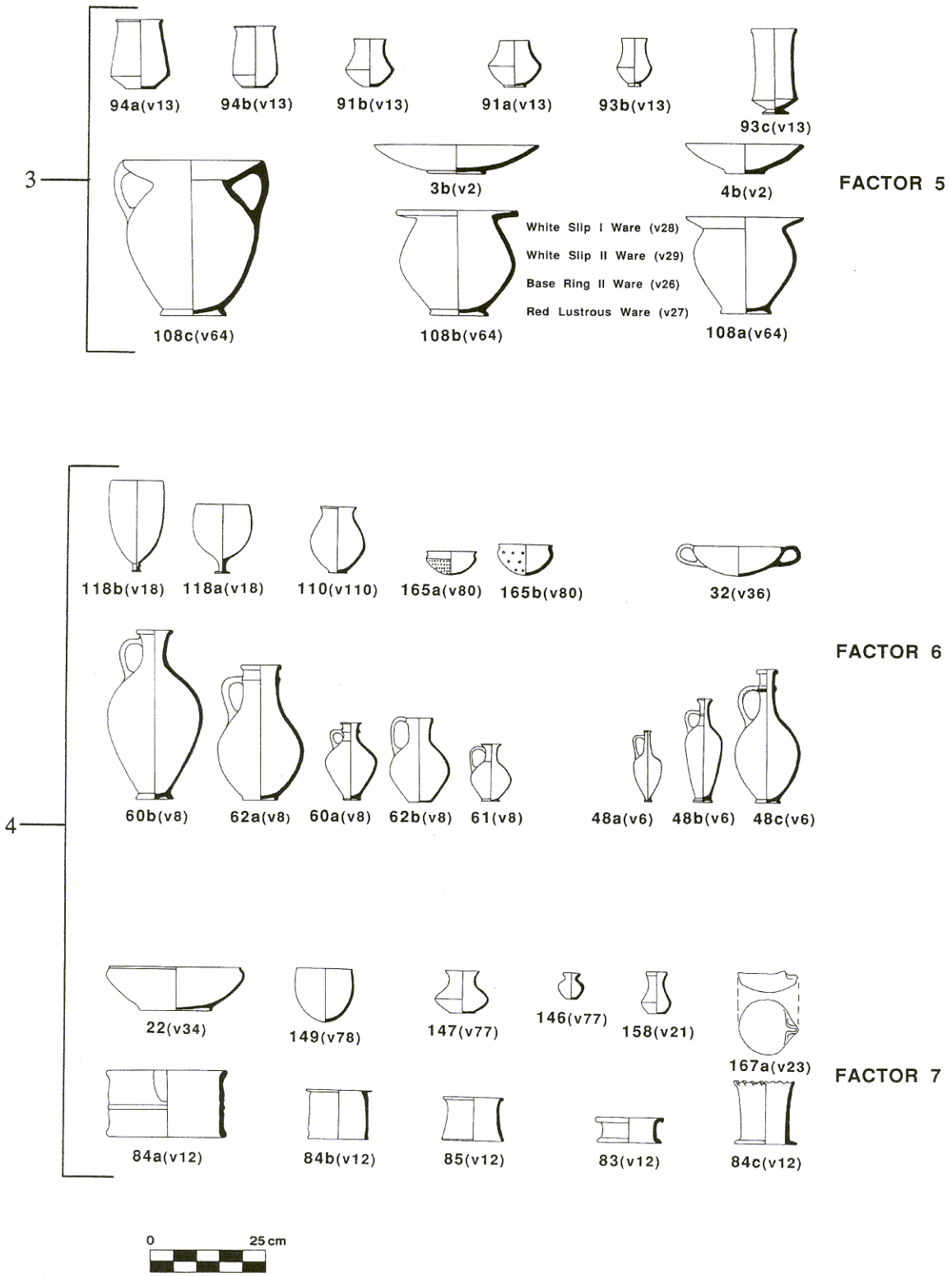


Fig. 35. Alalakh: Drawings of Variables (Pottery Types) That Load Highly on Factors 5, 6, and 7.

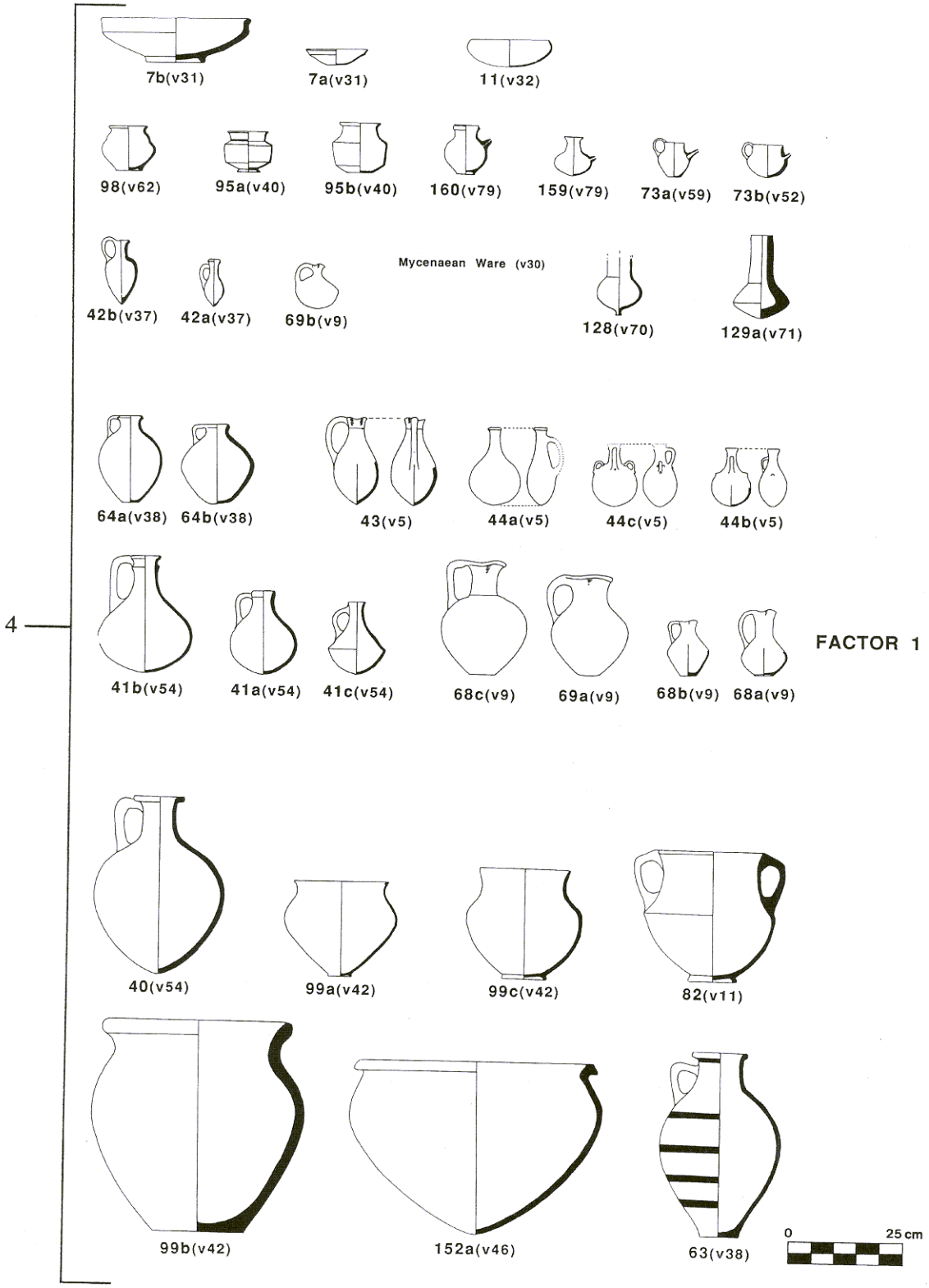


Fig. 36. Alalakh: Drawings of Variables (Pottery Types) That Load Highly on Factor 1.

DISCUSSION

Period 1: (levels 10[=XI-XVII], IX, and VIII)

Given these different analyses, we are now in a position to re-evaluate the strata and ceramics of Alalakh. Within Period 1 there are observable differences between the three assemblages. The earliest types are the painted bowl (types 23abc and 119), the eye pitcher (type 70), and the chalice (type 115). The eye pitcher is also found in levels VII and V, possibly an heirloom or an extrusive element, though it may have continued in production that late. Both it and the painted bowls (types 23abc and 119) are the main forms in Amuq-Cilician painted ware.[66] Certain examples of Painted Simple ware in Amuq I and J are similar to Amuq-Cilician ware, as for example bowl types 23abc and eye pitchers (type 70).[67]

Unfortunately it is uncertain how many of the specimens of bowls 23abc and 119 were decorated with paint. That group of bowls was a dominant type in levels 10(=levels XI-XVII), IX, and VIII (fig. 38); it declined suddenly in Period 2. Another very frequent group consists of bowls 21a (v3) and 26a (v35) (fig. 38).[68] Bowl type 100 (v43) ranges from levels IX through V, but its importance in the earlier periods is strengthened by the "+" notation in the earliest levels (levels XIII, XIV, XV, and XVII) in Woolley's tables. It sometimes occurs with painted bands.[69] Similarly shaped bowls found on the Euphrates are assigned to the EB IV period.[70] If bowl type 100 is related to the Euphrates vessels and Amuq-Cilician ware to Simple Painted ware, then there may be some overlap with the earliest Alalakh pottery and that of EB IV and Amuq I and J.[71]

Period 2 (levels VII, VI, and V)

Factor 4 which includes types 106b and 21c is strongly represented in level VII. Those pottery types plus juglet type 137, most common in level VIII, have similarities with typical Middle Bronze Age II pottery in Palestine. The juglet type 137 is similar in shape to Middle Bronze Age II piriform juglets.[72] With its rounded body walls and cyma-shaped rim and neck, bowl type 21c is similar to bowls of Period 1 and common Middle Bronze Age II vessels in Palestine.[73] The flaring rim and cordon neck of type 106b is also frequently found with a stemmed base in Middle Bronze II Palestine.[74] Gray ware is said to be characteristic of level VII but the frequency curve (fig. 37c) shows it to have a long range, which is present throughout the entire second millennium B.C., most common from levels IX through V, and at the peak of its frequency in

66. J. Tubb, "The MBIIA Period in Palestine: Its Relationship with Syria and its Origin," *Levant* 15 (1983): 49–62.

67. R. J. Braidwood and L. S. Braidwood, *Excavations in the Plain of Antioch, I: The Early Assemblages Phases A-J* OIP 61 (Chicago, 1960), figs. 317, 343–44.

68. These types are lumped in fig. 38 but kept separate elsewhere.

69. Woolley, *Alalakh*, pp. 310, 312.

70. E.g. R. H. Dornemann, "Tell Hadidi: A Millennium of Bronze Age City Occupation," in D. N. Freedman, ed., *Archaeological Reports from the Tabqa Dam Project — Euphrates Valley, Syria*, AASOR 44 (Cambridge, Mass., 1979), fig. 13.

71. See however the comment in Braidwood and Braidwood, *Excavations in the Plain of Antioch*, pp. 520-23.

72. K. M. Kenyon, *Excavations at Jericho*, Vol. I: *The Tombs Excavated in 1952–4* (London, 1960), p. 399.

73. K. M. Kenyon, *Excavations at Jericho*, Vol. 2: *The Tombs Excavated in 1955–8* (London, 1965), p. 393.

74. Cf. Gates, "Alalakh and Chronology," p. 67.

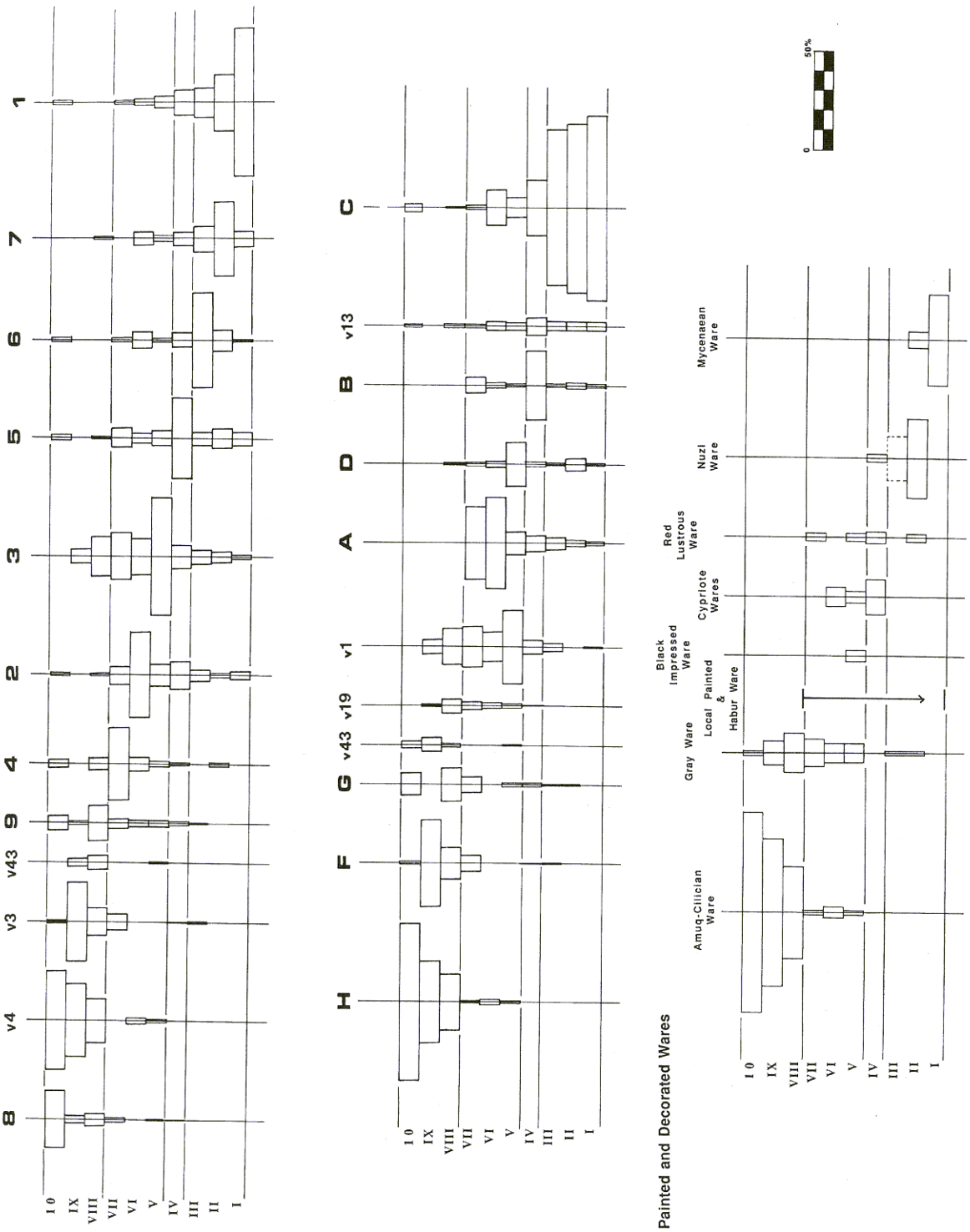


Fig. 37. Alalakh: (*a*) Frequency Curves for Variables (Pottery) Grouped by Nine Factors, (*b*) Frequency Curves for Variables (Pottery) Grouped by Clusters A to H, and (*c*) Frequency Curves for Painted and Decorated Wares.

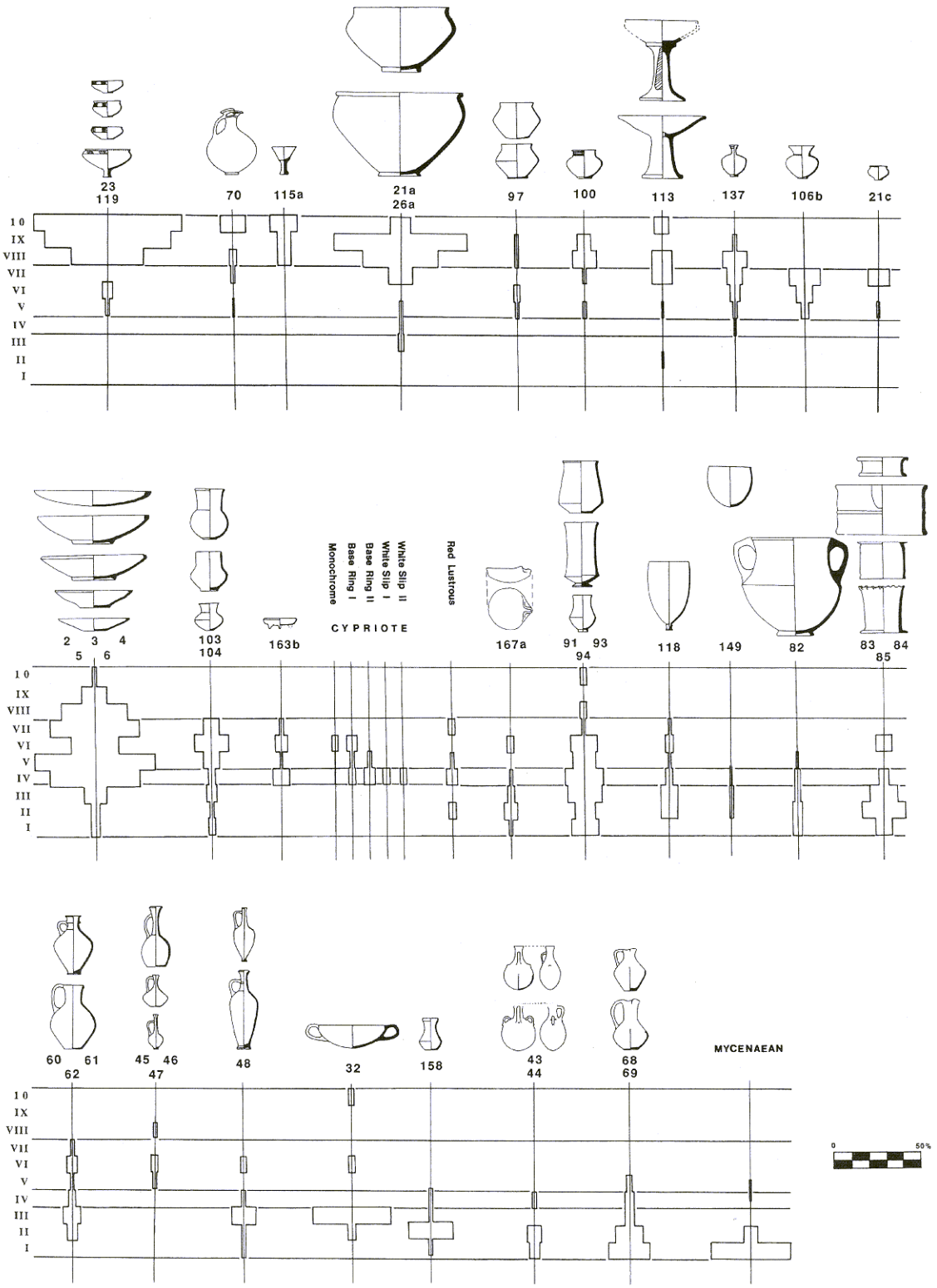


Fig. 38. Alalakh: Frequency Curves for Selected Pottery Types.

level VIII, not VII. Gray ware is not a good chronological indicator at Alalakh unless treated quantitatively.[75]

Factors 2 and 3 also predominate in period 2, as do clusters A and D. Open bowls with inverted rims (types 2ab, 3a, 4b, 5, 6ab [v1]) are the most common vessels of the period.

Imported Cypriote pottery first appears in level VI with the introduction of Monochrome ware (v24) and Base Ring I ware (v25) (fig. 38). A graceful tall necked jug (type 45), which I lumped with types 46 and 47 into v55 and which loads on factor 2, is identified, probably correctly, as a Black Lustrous juglet by Gates; only two specimens are recorded, one in level 8 and the other in Va.[76] Åstrom does not recognize any examples of this ware at Alalakh, and there is some question whether it is Cypriote.[77]

Transitional Period 3: (level IV)

Woolley correctly noted that the most common vessels in level IV are plates, Cypriote milk bowls (i.e. White Slip ware), beakers, and Base Ring jugs, but his comments that "With Level IV there comes a remarkable change in the pottery" and ". . . that the general character of Level IV pottery is quite different from that of earlier levels . . ." overlooks its transitional nature.[78] Many of the plates and open bowls common in level IV were equally common as a group in earlier levels (types 2ab, 3ab, 4b, 5, and 8ab [v1]); the same holds true for beakers (types 91ab, 93bc, and 94ab [v13]). Simultaneously some new types occur in level IV that become more common in Period 4 (e.g. types 48abc, type 158, types 43, 44abc, and types 68, 69). The overlapping of earlier and later types in Transitional Period 3 (level IV) partially accounts for the large number of types present (Woolley notes 120 types) while so few are distinctive to this period, i.e. Factor 5 (figs. 35 and 37a) and Cluster B (fig. 37b).

Cypriote ware stands out among the types distinctive to level IV; in fact the bulk of Cypriote ware is found in this level, especially Base Ring II (v26) and White Slip I (v28) and II (v29). These wares load on factor 5 (fig. 35) and belong to cluster B (fig. 32). There is a marked decline in the presence of Cypriote ware at Alalakh after the destruction of level IV.

Period 4 (levels III, II, and I)

The shared ceramic elements of the latest three levels at Alalakh are best illustrated by Cluster C (figs. 32 and 37b), but within the period each level has its own characteristics. Pottery of factor 6 (figs. 35 and 37a) is common in level III. Specific vessel types include goblets type 118ab (v18), a shape associated with Nuzi ware, and tall-necked jugs (types 48abc [v6]) which are very similar, if not identical, to spindle bottles of Red Lustrous ware. But the dominant component numerically is the round-base bowl with vertical loop handles (type 32 [v36]).

75. Woolley, *Alalakh*, p. 314; Gates, "Alalakh and Chronology," p. 67.

76. Ibid., fig. 1; idem, *Alalakh Levels*, p. 23, Illustration 6:e–h.

77. Åstrom, "Relative and Absolute Chronology," p. 744; E. Oren, *Opuscula Atheniensia* 9 (1969): 130.

78. Woolley, *Alalakh*, pp. 318–19.

Level II is distinguished by pottery of factor 7, which includes jar stands (types 83, 84 and 85 [v12]) and squat pots (types 146, 147 (v77), and type 158 [v 21]). The jar stands, which are found in all levels of Period 4, indicate the presence of large round and/or point-based storage jars.

The main ceramic element of level I is Mycenaean pottery (v30). Closely related is the pyxis (type 95ab [v40]) and the pilgrim flask (types 43, 44abc [v5]). These types are assigned to factor 1 (fig. 36) which, though most common in level I (fig. 37a), are also well represented in earlier levels.

CONCLUSION

However we measure it, three major groups of levels emerge: Period 1 (levels 10 [=XVII-XI], IX, and VIII), Period 2: (Levels VII, VI, and V), and Period 4 (Levels III, II, I). Transitional Period 3 (level IV) stands in an intermediary position between the last two groups. Variations and differences between the levels exist in each of the three main periods, but their shared group similarities stand out. Conversely, there are noticeable breaks between the three major periods.

Sorting out the Alalakh pottery by level and period is a first step to making more secure synchronisms. Correlations with Megiddo are critical, but until a similar quantitative analysis is performed on the Megiddo material my comments are tentative. Period 1 (levels 10, IX, and VIII) of Alalakh probably dates to stratum XIII and earlier; the ceramic traditions are so different as to make any comparison hazardous. Period 2 (levels VII, VI, and V) at Alalakh may range from Kenyon's group B (or even A?) to group H. The main problem is how early to begin level VII. Albright and Kantor's scheme may remain the best solution; in other words give level VII a long duration. If the pottery of a stratum tends to date to the latter part of an occupation, i.e. at the time of destruction/abandonment, then the sizeable difference between the pottery of level VII and earlier level VIII reflects either a very long occupation period or an actual gap in occupation; the archives of level VII may provide evidence for the former explanation. Dever's placement of Alalakh VIII to XIII so late in relation to Megiddo does not seem possible given the difference between the assemblages of VIII and VII and the lack of similarity between levels VIII-XIII and Kenyon's groups A-E at Megiddo. On the other hand the synchronism of Alalakh VI with Kenyon's groups E and F by Gates and Kempinski appears to be too high, since Cypriote pottery is found in level VI but it is absent in Kenyon's groups.

Like Gates I think Cypriote pottery is our best tool at the moment for synchronisms, but in contrast to her I would stress its general distribution pattern. In figure 38 we observe that Monochrome and Base Ring I occur in level VI while in level V there is Base Ring I, Base Ring II, and White Slip I. But it is in level IV that Cypriote Base Ring I, Base Ring II, White Slip I, and White Slip II is most plentiful at Alalakh. Such a distribution pattern is similar to evidence from Cyprus and Palestine. Åstrom showed that in Cyprus these wares reach a peak in LC IIA.[79] Alalakh level IV fits best at the transition of LC IB2 and LC IIA1.[80] Turning to the mainland, Gittlen has shown that ". . . LB IIA, the Amarna Age, was the period of greatest frequency for Base-Ring I, Base-Ring II, . . . and White Slip II pottery in Palestine."[81] At Megiddo stratum VIII is assigned

79. Åstrom, *The Swedish Cyprus Expedition*, p. 124.

80. Ibid., pp. 700–01.

81. B. Gittlen, "The Cultural and Chronological Implications of the Cypro-Palestinian Trade During the Late Bronze Age," *BASOR* 241 (1981): 49–59.

to the LB IIA period which is dated to the fourteenth century by Palestinian archaeologists.[82] A synchronism of Alalakh IV with Megiddo VIII would therefore place level IV's destruction in the fourteenth century, if the date for Palestinian LBIIA is secure. How much earlier Period 2 is than Transitional Period 3 (Alalakh IV), remains unclear. In any case level VII cannot date much earlier than VI and V on the evidence of its close relationship to them, as seen in factor and cluster analysis.

82. Idem, *Studies in the Late Cypriote Pottery Found in Palestine*. Unpublished Ph. D. dissertation, University of Pennsylvania, (Ann Arbor, 1977); Gonen, "Megiddo," p. 96.