INTRODUCTION

When compared with Mediterranean surveys, most surveys conducted in the Near East seem extensive, inaccurate and idiosyncratic. Interestingly, however, some of the problems raised by these apparently coarse-grained surveys raise issues of wider relevance, especially to the development of early states and empires. Here we discuss how some recent surveys conducted in Upper Mesopotamia and the Levant contribute to an understanding of a major structural transformation of settlement that occurred in the Near East between the Early Bronze Age and the Roman period. This transition in settlement represents a shift from nucleated tell-based settlement in the Early Bronze Age to a more dispersed pattern of frequently small settlements in the Iron Age and Roman-Byzantine periods. Sometimes this shift took place progressively over the entire second millennium BC, while in some cases this phase of dispersal and settlement extension had not manifested itself fully until the Roman period.

At face value, this shift in settlement structure appears to represent a change from one very basic form of political organization – the ‘city-state’ or chiefdom (itself a contentious issue!) – toward a settlement pattern that developed in association with large territorial empires. If such a relationship can be demonstrated, it has significant implications for the understanding of historical trends in the Near East, as well as processes that took place further to the west in the Mediterranean region. In order to tackle this problem, it is necessary to compare evidence from archaeological surveys conducted over a large geographical area, as well as to make certain that there is some degree of comparability of evidence. These factors are essential because over the last few years it has become clear that the rather coarse techniques of traditional surveys in the Near East are, in fact, quite successful at recording the settlement of certain periods. Nevertheless they prove to be hopelessly inadequate for other periods.

First we compare Near Eastern surveys with those conducted in the Mediterranean basin; second, changes in settlement structure and density are described for several surveys conducted from northwest Iraq to the Mediterranean; and third, changes in settlement structure are related to changes in the social structure, potential landholding strategies and the political economy of the regions in question.

COMPARISONS WITH MEDITERRANEAN SURVEYS

In order to draw a comparison with surveys conducted in the Mediterranean, it is most appropriate to employ the ‘Cherry Chart’ (Cherry 1983), with modifications. Interestingly, this shows that surveys in, for example, the plains of upper Mesopotamia (including more recent surveys with off-site control) have a stubborn tendency to remain in a fairly ‘extensive’ category compared with Mediterranean surveys. When the number of sites is plotted according to the size of the survey area, Near Eastern surveys recover between 1 site per 10 sq. km and 1 site per sq. km (Figure 14.1). In other words, they show a higher rate of recovery than ‘earlier Greek surveys’ (i.e. those before the 1970s), but are well below those conducted between, say, 1970 and the early 1980s, and certainly much less than the surveys of the 1990s. Even when occupation periods (i.e. on multi-period sites) are plotted per survey area, the number of occupations per sq. km still does not attain that of most intensive Mediterranean surveys (Figure 14.1: 4a, 5a and 8a). This suggests immediately that Near Eastern surveys continue to be somewhat antiquated in terms of techniques of site recognition and recovery.

Alternatively, however, these statistics may represent a real difference between the pattern of settlement in the Near East and the Mediterranean, and surveys in the Upper Mesopotamian plains could imply that site densities were, in fact, significantly lower than in the Mediterranean. That this is the case is suggested by some surveys conducted in arid areas along the desert margins. These yield higher ‘site’ densities than occur in sub-humid regions. This unexpected disparity can be explained in the following ways:
• We are not comparing like with like, because very different settlement traces are being compared.
• Landscape ‘taphonomy’ results in very different levels of site preservation in sub-humid versus arid areas (as discussed below).
• Markedly different processes of site formation are in operation (e.g. agro-pastoral communities; temporary nomadic settlements; cultic features in the desert margins versus long-term sedentary settlement in the sub-humid to semi-arid plains).

THE SIGNIFICANCE OF LANDSCAPE TRANSFORMATIONS

Statistics on site density demonstrate that the total number of sites in an area will vary according to how an archaeological site is defined. A fundamental issue here is that in the desert fringes the concept of ‘site’ becomes less useful and the often subtle traces of individual structures or activity areas can hardly be accorded the same weight (in terms of population or archaeological significance) as the much larger and frequently multi-period sites found in more humid areas of the Near East.

In addition, processes of landscape transformation, both physical and cultural, are crucial to interpreting site recovery statistics (Schiffer 1987). Even during the earlier stages of landscape archaeology there was an awareness that the cultural landscape had suffered progressive attrition of features through time, and Bradford (1957) showed how, for example, systems of Roman centuriation experienced the progressive attrition of field boundaries through time. In 1972 Christopher Taylor provided a significant stepping-stone in the debate, and his conceptual framework of ‘landscapes of destruction’ and ‘landscape of survival’ enabled British archaeologists to take account of the likelihood of feature survival when assessing the landscape record (Taylor 1972). This simple concept

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**Figure 14.1** Number of sites recovered in relation to area surveyed, comparing selected recent Near Eastern surveys with those conducted in Greece and Italy before and since the 1970s (after Cherry 1983: fig. 1). Note that 4a, 5a and 8a refer to occupation periods per survey area, not sites (see text).
received less attention than it deserved, but for the British Isles it has now been revised by Tom Williamson, who refers to a complex kaleidoscope of patterned creation and destruction (Williamson 1998: 6 and fig. 3).

The Taylor-Williamson model clearly puts landscape transformations at center stage in the interpretation of landscape and settlement data. Although these processes have been recognized by landscape archaeologists in the Mediterranean for a number of years they have not been applied formally. Suitably amended, the Taylor model can now be effectively applied to the ancient Near Eastern landscape as follows. Landscapes with the greatest probability of feature survival occur in deserts and high mountains, whereas progressive loss of features is at its maximum in areas of long-term cultivation and is rather less so in marginal zones of settlement. Finally, the coastal zone experiences a patterned loss and survival depending upon coastal sedimentation and currents.

CONTRASTS BETWEEN DESERT FRINGE AND SUB-HUMID AREAS OF THE NEAR EAST

Viewed at a very schematic level, if we chart the number of ‘sites’ per sq. km according to environmental zone from arid to sub-humid, there appears to be a rough trend from a low density of archaeological sites per sq. km in the true desert, high densities in some desert margins, and rather lower densities in the semi-arid to sub-humid zones where nucleated tell-based settlements predominated during certain periods. Table 14.1 summarizes some of these trends by sketching some temporal and geographical patterns of nucleation and dispersal in settlement type in the Fertile Crescent.

Overall, we suggest that in the extensive sub-humid or semi-arid plains of the Fertile Crescent settlement nucleation operates during certain periods and that, in such cases, sites are also re-occupied more frequently. As a result, there is apparently increased locational ‘stability’ during these periods. In contrast, after the Bronze Age as well as within the desert margins and some upland areas, dispersed settlement can be more common.

TEMPORAL PATTERNS OF NUCLEATION AND DISPERSAL

In addition to the above-mentioned geographical patterning of settlement types, there is a temporal component in the form of cycles of nucleation and dispersal. For example, in the semi-arid plains of Upper Mesopotamia, settlement nucleation into tells is more characteristic of the Bronze Age, whereas dispersal of settlement occurred in the post-Bronze Age (i.e. the first millennium BC and later; Wilkinson 2000a). In Upper Mesopotamia, Bronze Age nucleation takes the form of prominent mounds that range from less than 1 ha in area to somewhat over 100 ha in area (Weiss 1986), whereas post-Bronze Age dispersed settlement appears as low, often straggling, mounds of farmsteads and villages. Towns and cities of course occur in the post-Bronze Age periods, but these are usually extensive mounds that are more widely distributed. These include, for example, regional Neo-Assyrian centers such as

<table>
<thead>
<tr>
<th>Class</th>
<th>Sub-humid zone. Bronze Age</th>
<th>Sub-humid zone. Post-Bronze Age</th>
<th>Semi-arid zone. Post-Bronze Age</th>
<th>Arid margin zone. Bronze Age</th>
<th>Arid margin zone. Post-Bronze Age</th>
<th>Arid zone. Bronze Age</th>
<th>Arid zone. Post-Bronze Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nucleated 1a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Nucleated 1b</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dispersed 2a</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dispersed 2b</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Disp. Agro-pastoral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Min.-mobile</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Notes:
Major settlement landscape classes:
1a. Nucleation in mounded sites without field scatter
1b. Nucleation in mounded sites with field scatter
2a. Dispersal of small, low sites without field scatter
2b. Dispersal of small, low sites with field scatter
3. Dispersal with traces of temporary agro-pastoral settlement
4. Min-mobile: mobile groups with relatively brief residence time.

Additional classes of settlement landscape not considered here include: elongate sprawling sites in irrigated areas (especially post-Bronze Age settlements); hilltop locations in rocky uplands, dispersed rural settlement in many uplands. Note that settlement locational stability (i.e. continuity) is greater in the moister areas, less in drier arid margins, minimal in the desert. In addition taphonomic disturbance should be higher in the moister areas, least in the desert.

Table 14.1 Class of settlement plotted according to environmental zone. Shading implies significant presence of the stated settlement landscape within the zone in question. Blanks do not indicate absence of these landscapes, but rather that there is a less significant presence.
as Til Barsip (57 ha) and Dur Katlimmu (105 ha), or major imperial capitals on the scale of Nineveh, Nimrud and Khorsabad, at 750, 360–430 and 300 ha, respectively.

In the sub-humid plains of western Syria and southern Turkey, although the same pattern is evident, it is less clear and instead there is a tendency for Iron Age settlements to exhibit a mixed tell-based (nucleated) and dispersed pattern of settlement. In this region, the dispersed pattern of rural settlement only becomes clearly evident well into Seleucid or Roman times. The following examples from recent surveys conducted along an east-to-west line from northwestern Iraq to southern Turkey illustrates these broad temporal trends in settlement (Figure 14.2).

**Northern (Upper) Mesopotamia**

The dramatic shift from nucleated tell-based settlement to a dispersed pattern of small villages has been recently documented by several intensive full-coverage surveys in semi-arid regions of Northern Mesopotamia (Wilkinson 2000a). These include the North Jazira Survey of northern Iraq (NJS: Wilkinson and Tucker 1995), the Tell Beyda Survey in the eastern Upper Khabur Basin (TBS: Wilkinson 2001), and the Tell Hamoukar Survey in the western Upper Khabur basin (THS: Ur 2002a; 2002b) (Figure 14.3). These surveys covered lowlands which have supported dry-farming settlements since the late Neolithic (i.e. since at least 6,000 BC). Because of their fertility, these plains have attracted near-continuous habitation since their initial settlement. The effects of such long-term settlement and cultivation have impacted the patterns recoverable by archaeological survey; thus these areas of Northern Mesopotamia can be classed as ‘landscapes of destruction.’

All three surveys used a similar methodology. A full-coverage approach was employed, with each unit of the survey universe being examined with an equal intensity. Sites were initially identified via remote sensing: aerial photography, and detailed topographic maps (NJS), SPOT imagery (TBS), and CORONA satellite photography (THS; see Ur 2003); these sites were then visited by vehicle and collected by dividing up the surface into topographically discrete units from which a large sample of diagnostic sherd was collected. The North Jazira and Hamoukar surveys both included a program of off-site survey, which entailed walking systematic transects between sites or according to a grid-pattern of sample points. By collecting field-scatters and pinpointing (remarkably rare) minor artifact-scatters, this program allowed us roughly to compare these north Mesopotamian surveys with the more intensive surveys conducted around the Mediterranean.

The definition of a ‘site’ is of particular relevance to this comparison. In the three surveys discussed here, a site was regarded as a locus of concentrated human activity, assumed to entail residence for all or part of a year. This definition distinguishes traditional ‘sites’ from field-scatters, which also represent human activity but at a much lower intensity. A combination of three criteria was used to identify and delimit sites archaeologically: sherd density, topography, and soils. On-site sherd density tended to be at least 150–200 sherds per 100 sq. m under most site surface conditions; field scatter density averaged between 10–60 sherds per 100 sq. m on fallow fields, although proximity to third-millennium sites and local field conditions affected these averages. Field-scatters are nearly invisible in plowed fields, and are frequently in the range of 70–100 sherds per 100 sq. m within 1500 m of urban third-millennium sites. On the Upper Mesopotamian plains, mudbrick was the primary building material, and thus ancient sites tend to be mounded. On the one hand, concentrated on-site human activity inhibited soil formation, whereas the contribution of human and animal waste-products and middens resulted in a lighter and finer-grained anthropogenic soil, which stands out from the darker and red-hued calcareous soils (calcic xerosols) of the plains.

All three surveys revealed a highly nucleated Early Bronze Age (EBA) pattern. In the NJS (Figure 14.4), 20 late EBA sites (referred to as ‘later third millennium’) were recovered; the 66 ha settlement of Tell al-Hawa stood at the apex of a three-level hierarchy of towns and villages, all located on multi-period tell sites. The TBS produced a linear pattern of 17 large villages, evenly spread out along what are today seasonal watercourses, centered on the 23-ha town of Tell Beyda (Figure 14.6). The THS was focused on the immediate hinterland of the 105-ha EBA city of Hamoukar; although eight other contemporary sites were identified, Hamoukar represented 92% of the settled area within the survey territory at the time (Figure 14.8).

Associated with these nucleated tell sites were two types of off-site landscape phenomena which highlight the degree of population concentration and the intensity of agricultural and pastoral land use in the EBA. Traces of ancient road systems are preserved in the form of hollowways – that is, broad linear depressions which radiate out from EBA sites, connecting them with their satellites, as
well as their associated agricultural land and pasture land beyond (Van Liere and Lauffray 1954–55; Wilkinson 1993; Ur 2003). Early Bronze Age sites are also surrounded by a low-density carpet of abraded artifacts (fields). These are interpreted as the result of agricultural intensification in which settlement-derived debris was spread on fields around the settlement as manure in an attempt to increase crop yield; the non-organic component survived and can be archaeologically detected (Wilkinson 1982; Ur 2002b).

This nucleated pattern broke down during the second millennium BC. The western Upper Khabur basin experienced settlement abandonments in the early second millennium BC: 16 of the 17 EBA sites in the TBS area were abandoned. In all three survey areas, the Late Bronze Age (LBA) pattern was one of towns or villages clinging to the sides of the abandoned EBA tells or occasional minor outlying settlements. The transformation was completed by the Iron Age or Neo-Assyrian period (early first millennium BC). The NJS area supported 78 Iron Age villages in the range of 1–5 ha, which were evenly spaced across the plain (Figure 14.5). In the Tell Beydar area, following the early second-millennium abandonment and LBA resettlement, a scatter of some 35 sites of Iron Age date was established in valley floors, on low upland watersheds and even on the otherwise unoccupied basalt plateau (updated from Wilkinson and Barbanes 2000: 413–14) (Figure 14.7). Of these, most were single-period ‘new foundations’, although some also yielded pottery of the LBA and even Mittanian periods. In the THS area, four of

<table>
<thead>
<tr>
<th>Survey</th>
<th>Area (sq. km)</th>
<th>Total Sites</th>
<th>Sites/sq. km</th>
<th>Periods/sq. km</th>
<th>EBA*</th>
<th>IA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Jazira Survey (NJS)</td>
<td>475</td>
<td>184</td>
<td>0.39</td>
<td>1.51</td>
<td>20 sites</td>
<td>78 sites</td>
</tr>
<tr>
<td>Tell Beydar Survey (TBS)</td>
<td>450</td>
<td>82</td>
<td>0.18</td>
<td>0.77</td>
<td>17 sites</td>
<td>35 sites</td>
</tr>
<tr>
<td>Tell Hamoukar Survey (THS)</td>
<td>125</td>
<td>67</td>
<td>0.54</td>
<td>1.36</td>
<td>9 sites</td>
<td>20 sites</td>
</tr>
</tbody>
</table>

Table 14.2: Comparison of intensive Northern Mesopotamian surveys and their results for the EBA and Iron Age periods (* = number of sites and aggregate area).
the five largest EBA tells had Iron Age ‘lower town’ settlements; the other 16 Iron Age sites were either new foundations on the plain or were reoccupations of low mounds which had been abandoned since the fourth millennium or earlier (Figure 14.9).

The landscape features associated with the nucleated EBA pattern appear to be absent or much less commonly seen with the dispersed Iron Age settlements. In the THS area, only where Iron Age settlements are found on the slopes of EBA tells are they associated with denser field-scatters (Figure 14.9), and in those situations the field scatters appear to contain predominantly EBA ceramic types. In areas adjacent to single-period Iron Age settlements or those on small prehistoric mounds, field-scatters are normally in the background range of 10–25 sherds per 100 sq. m. In the NJS area, Iron Age ceramics were found in field-scatters, but only half as frequently as EBA types (Wilkinson and Tucker 1995: 62). Very rarely are Iron
Age sites associated with hollow-ways; only those Iron Age settlements on older EBA sites have associated hollow-ways, but in many cases these can be directly associated with features of the EBA site such as walls and gates, rather than with any features dating to the Iron Age.

SURVEY RATES OF RECOVERY AND INTERREGIONAL COMPARABILITY

Even in the THS, where the small survey area allowed for the greatest survey intensity, settlement density is still substantially lower than in the more recent Mediterranean
surveys. Are these surveys overlooking smaller sites? Most Middle Eastern surveys cannot be compared with Mediterranean surveys for methodological reasons: they tend to rely heavily on non-systematic vehicular reconnaissance supplemented by remote-sensing sources, as opposed to the systematic field-walking transect methods favored in the Mediterranean.

While non-systematic field-walking (i.e. following wadi courses) has been included as a part of several recent intensive Middle Eastern surveys, few have included a program of systematic ‘off-site’ transect-walking at set intervals. However, the NJS and the THS included systematic ‘off-site’ landscape observation as part of the study of field-scatters. In the NJS, radial transects were walked around and between the major EBA sites and many kilometers of sections of a 500 m irrigation canal grid were systematically investigated for traces of buried sites (Wilkinson and Tucker 1995: 17). In the THS, a three-person team made 100 sq. m field-scatter unit collections in a 200 m UTM-based grid; this involved walking transects at 200 m intervals (Figure 14.10). Admittedly, this resolution is coarse when compared to Mediterranean surveys, but the Jaziran sample methods do serve as a rough check on the remote-sensing sources. In the fall of 2000, when the THS transects were made, most fields were fallow or harvested and grazed. Visibility was very high; we estimate that each field-walker could cover a range of 3–4 m on either side, and possibly further under certain light conditions. In the NJS area, only a few buried sites were found where modern canals cut through the alluvial belt of minor wadis. This evidence, together with records of soil sections along the canals, led to the observation that alluviation was not obscuring sites. After walking over some 56,000 m of transects and collecting almost 500 units, the THS found no sites that had not already been recognized on CORONA photographs (for other archaeological applications of CORONA satellite photographs, see Kennedy 1998; Philip et al. 2002).

To what extent, then, are the low-relief plains of Northern Mesopotamia a landscape of destruction? Within the Taylor-Williamson model, these areas where progressive loss of features should be at its maximum, and where we should expect to find ‘ghosts’ of sites remaining. Yet when field-walking has been included in the survey methods (NJS and THS), very few additional sites have been recovered. We would argue that the choice of mudbrick as the primary building materials and the floodplain geomorphology in these regions have acted to make sites much more visible than in the Mediterranean area. Scarcity of timber resources in these and other areas of the Middle East has meant that mudbrick has been the most common building material almost since the beginnings of sedentary settlement. Since it is more efficient to make new mudbricks than to reuse old ones, there has been little, if any, deconstruction or robbing of abandoned settlements for building materials. Mudbrick sites pose few difficulties for agriculture: whereas a stone settlement leaves material which will impede a plow and must be cleared out of fields, a mudbrick site can be plowed over directly. This process results in the slight dispersal of archaeological materials across the landscape, but even on late Neolithic sites, mounding is still preserved after millennia of subsequent agriculture and a half-century of mechanized plowing. In other words, although long-term taphonomic processes have resulted in the attrition of many (but not all) landscape features, a large number of the original settlements appear to remain.

We conclude that in the Jazira of upper Mesopotamia, if high-resolution remote-sensing sources are combined with intensive field-survey, a reasonable approximation of full recovery is theoretically possible. Moreover, a degree of site recovery comparable to that of the intensive Mediterranean surveys is possible using much less intensive methods. This statement applies only to the plains of northern Syria and northern Iraq; few highland areas of Northern Mesopotamia have been subjected to intensive survey. These near-ideal survey conditions may not pertain for much longer, however; within the last several decades, mechanized plowing, bulldozing of sites, the extension of irrigated cotton agriculture, the expansion of towns and villages, and state-sponsored dam and irrigation projects have begun to take a serious toll on site preservation. Moreover, probably the greatest cause of loss of archaeological sites is where they are obscured below modern villages. Even where pottery can be recognized between the modern houses the individual sherds are frequently abraded down to small sizes so that they are difficult to place typologically.

If Near Eastern intensive field-survey methods are not capable of finding additional small sites, how can the discrepancy in site density between the Near East and the Mediterranean be explained? It is possible that real differences in long-term cultural practices existed between these regions, particularly a ‘settlement inertia’ on the plains of North Mesopotamia, whereby a positive feedback-loop caused people both to remain within their communities and to return to previously settled places (see below).

The Amuq Plain of Southern Turkey

The northern Levant is an ideal region for comparing trends in archaeological settlement between northern Mesopotamia on the one hand, and Greece and the Aegean on the other. The region is not only roughly equidistant between these areas, but it also has a long historical and cultural pedigree as a part of both the Syro-Mesopotamian and Greco-Roman worlds. Surveys in the northern Levant have often reflected the academic divide between Classical and Near Eastern archaeological traditions – not only in terms of the sites they have recorded, but also in the regions they have chosen to survey. For instance, in northwest Syria surveys by Near Eastern archaeologists have tended to focus on lowland plains, such as the Orontes River Valley, and were primarily interested in recording large
Bronze and Iron Age tell sites (e.g. Courtois 1973). Classical archaeologists, on the other hand, have predominantly worked in upland areas, such as the massif calcaire or Hauran of Syria, and have recorded Roman and Late Antique remains almost exclusively (Tchalenko 1953–58; Tate 1992). The disjuncture is perhaps understandable, given that early tell sites are relatively common in lowland plains, while few contemporary settlements are known in the uplands. Meanwhile, the limestone hills of northwest Syria (the massif calcaire) form a textbook ‘landscape of preservation’, and are home to hundreds of spectacularly preserved Late Antique villages, the so-called ‘Dead Cities’. However, the gulf in the academic interests of such survey projects and their focus on entirely different types of landscape has resulted in records of settlement that are difficult to compare both spatially and temporally. Moreover, the geographical and chronological separation in the interests of most surveys in the northern Levant has drawn attention away from the major transformation in settlement that occurs across this academic watershed.

As in northern Mesopotamia, in the first millennium
BC the northern Levant witnessed a pronounced dispersal of settlement away from nucleated tell sites, and towards much smaller sites that are spread across the plains and into surrounding highlands. However, this transformation has not been explicitly investigated nor well documented until recently. The original archaeological survey of the Amuq Plain by Robert Braidwood (1937) mapped the basic framework of tell-based settlement in the region, recording some 178 sites. The survey was remarkably innovative for the 1930s, and succeeded in discovering many small sites in addition to larger tells, including those of Roman to Late Roman date. Nevertheless, without the advantage of more recently developed intensive survey methodologies, most of the small, flat sites that typify the Hellenistic to Late Roman periods were not recovered by the project, the result being that those phases of settlement were severely under-represented. Additionally, the project did not seek to investigate the uplands where later settlement has been found to be particularly dense.

Recent archaeological survey by the Oriental Institute’s Amuq Valley Regional Project (AVRP) has begun to reveal the profundity of the structural transformation in settlement that occurred in the late first millennium BC (Figure 14.11). The vast majority of Chalcolithic through Late Bronze Age (6000–1150 BC) occupation was concentrated at a relatively small number of tell sites, almost all of which were located in the lowland plain. For example, in the mid-third millennium BC, 42 sites have been found to have evidence of occupation, most of which are at large tells. Only one of these sites is located in the uplands, and is not a typical occupational site, but rather a stone building-complex, possibly of ritual or military function (Verstraete and Wilkinson 2000: AS 208). By way of contrast, more than 150 sites have been recorded in the plain that have some evidence of Roman-Late Roman occupation. Many of these sites are very small, often less than 1 ha, and frequently have little or no topographic relief.

Surveys employed a vehicle to undertake a broad full-coverage survey for the entire area of some 1200 sq. km, while pedestrian transects run at 100 m intervals were used for local checking of areas between sites. Although this only provided a sample of off-site areas, it gave a good idea concerning the location and appearance of minor occupations. As in northern Mesopotamia, CORONA satellite imagery has proven to be a tremendously valuable tool for the Amuq Valley survey, because many previously undocumented sites appear with great clarity. For instance, in the area around Tell Tayinat and Tell Atchana located in the southern plain, the original survey, as well as the more recent AVRP surveys, failed to locate a large number of very small, flat sites that are visible in the vicinity (Figure 14.12). The image clearly illustrates the dispersal of settlement, because while virtually all Early Bronze through Iron Age occupation in the area was concentrated at the two large tells, Hellenistic through Early Islamic settlement is located at the many small sites that surround them. Overall, CORONA imagery has revealed the location of nearly 100 additional small possible sites throughout the plain. While only a sample of these sites has been visited, nearly all that have been recorded are Hellenistic to Early Islamic in date, suggesting that these periods may still be significantly under-represented in the survey data. Similarly, the off-site transects conducted by Jan Verstraete mainly recovered the remains of flat artifact-scatters of Roman and Byzantine date. Additionally, there is evidence to suggest that many of the tell sites in the Amuq had minor Roman-Byzantine occupation on them. Excavations at Chatal Höyük found that the large Iron Age city at the site was replaced by a minor Late Antique village, and work at Tell Judaidah shows a similar pattern (Haines 1971). Many other tell sites in the valley are predominantly Bronze and Iron Age, but a small amount of Roman-Byzantine material is frequently found on them, suggesting a situation similar to that at Chatal Höyük and Tell Judaidah, in which small villages or farmsteads were located on top of older mounds. These later occupations at tell sites are sometimes nearly invisible to archaeological survey because they are lost against an overwhelming percentage of earlier materials. For instance, at Tell Atchana a systematic surface collection of over 3,000 diagnostic sherds recorded only 12 Late Antique sherds and 4 roof-tile fragments. The presence of the tiles, as well as a Late Antique field-scatter to the north of the mound, suggests that there was probably some Roman-Byzantine occupation at the site, not merely stray sherds (Casana, forthcoming).

Unlike northern Mesopotamia, where large areas of the plains appear relatively stable geomorphologically, resulting in very good preservation of many landscape features such as hollow-ways, the plains of the northern Levant have experienced significant aggradation over the past several millennia. In addition, this area has probably experienced the degradation of earlier landscape features and minor sites as a result of long-term agricultural practices. Because alluvial and colluvial activity can bury much of the ancient landscape, archaeological surveys in the region must be closely tied to geomorphological investigations in order to interpret settlement data critically. Such work in the Amuq Valley has demonstrated that while the plain is deceptively flat, it is actually a complex patchwork of high and low sedimentation zones (Wilkinson 2000b). Archaeological survey on the western side of the plain, where alluvial fans have built up some 3 m of gravel fill since the Hellenistic/Roman period, has recorded few early sites. Similarly, examination of sections through sediments on the Orontes River floodplain in the southern Amuq Valley has shown that the area witnessed extreme flooding and aggradation of several meters of sediment since the Late Antique period. The rapid aggradation of the plain buried the earliest layers of Tell Atchana/Alalakh as well as much of the Roman city of Antioch, and may have obscured many archaeological sites as well. Conversely, some areas in the central Amuq Plain have experienced little or no sedimentation since the early...
Figure 14.11 The Amuq plain and neighboring uplands, showing sites and subsidiary survey areas.
Holocene. These areas provide us with ‘sedimentary windows’ in which there has been little loss of sites and other features to alluvial processes, and which therefore can be used to suggest the extent to which the archaeological landscape has been obscured on other parts of the plain. For instance, in one sedimentary window around the large site of Chakal Tepe, archaeological survey documented an unusually large number of early Neolithic and Chalcolithic sites, and off-site transects found a relatively dense artifactual field-scatter. Examination of CORONA satellite imagery of the area suggests that there are many other still unrecorded archaeological sites in the area. The high density of settlement and the unusual concentration of early sites in the sedimentary window may imply that similar landscapes have been obscured on other parts of the plain.

Records of settlement from lowland plains and river valleys are notoriously difficult to compare with highland areas, owing to problems of site visibility and preservation, as well as the constraints on sampling techniques imposed by steep and unforgiving terrain (Banning 1996). In the Amuq Valley, the Amanus Mountains to the west, the Jebel al-Aqra to the south and the Kurt Dagh to the east provide a different challenge for archaeological survey than does the plain. While CORONA imagery has proven an indispensable tool for locating archaeological sites in the plain, virtually no sites are evident on the imagery in upland areas. Furthermore, from the ground, sites are often far less obvious than on the plain because mounding is rare, and when present is often difficult to differentiate against the natural topography. However, recent semi-intensive survey employing walking transects at roughly 100-m intervals in a valley in the Jebel al-Aqra has documented a rich archaeological landscape in which settlement is widely dispersed throughout all topographical zones. All evidence of Chalcolithic through Iron Age settlement is concentrated at two tell sites, both located on the narrow valley floor. However, beginning in the Hellenistic period small sites are found on hillsides throughout the valley, and by the Late Roman period, small settlements are found on many hill-slopes and summits visited by the survey (Figure 14.13). The dramatic increase in upland settlement in the Hellenistic to Late Roman periods contributed to a local increase in soil erosion, well illustrated near the mouth of the valley where
a Roman building has been buried by over 4 m of sediment. Surveys to the west of the Amuq Plain in the Amanus foothills suggest that there was a similar extension of upland settlement there and a parallel increase in erosion that deposited large alluvial fans on the valley floor.

The fact that highland areas in the northern Levant seem to have been sparsely occupied in early periods suggests that survey projects which do not investigate lowlands may fail to record the early component of settlement (e.g. Blanton 2000). Furthermore, in areas that are susceptible to erosion, dense occupation of uplands may contribute to significant increases in erosion from slopes and the consequent burial of earlier sites on valley floors.

The combined and critical use of imagery-based and more traditional intensive survey methodologies has enabled us to document a widespread and fundamental transformation in the history of human occupation in the Amuq Valley. Unlike northern Mesopotamia where the dispersal of settlement away from tell sites appears to begin in the Late Bronze Age, or even slightly earlier, the structurally parallel change in the Amuq Valley does not begin until the Hellenistic period, and reaches a peak in the Late Roman period (Casana, forthcoming). The enormous chronological range between these two cases, and indeed among the many geographically disparate cases throughout the Near East, suggests that the causes of the transformation are probably not any single, local, historical event. More likely, the dispersal of settlement in the Amuq Valley, northern Mesopotamia and elsewhere in the Near East is related to very basic and sweeping changes in the structure of the ancient economy, in systems of land-tenure and agricultural production, and in the integration of the regions into territorial empires.
DISCUSSION

Overall, in northern Iraq, northern Syria and southern Turkey traditional surveys appear to have been reasonably effective at recognizing the basic pattern of Bronze Age settlement, but they have proved to be woefully inadequate for accurately recovering the pattern of settlement of the Iron Age, Hellenistic and later periods. In many areas, settlement dispersal commenced during the second half of the second millennium BC, and by the Iron Age there had been a pronounced extension of settlement into the steppe or uplands. This dispersal has been recorded in much of the Jazira (Morandi 2000; Wilkinson and Barbanes 2000), the Jabbul plain (Schwartz et al. 2000), and the Levant (Finkelstein 1998). Furthermore, during the Hellenistic, Roman and Late Antique periods the development of a rural landscape dominated by a dispersed pattern of rural settlement became even more pronounced in the southern Levant, as well as the Euphrates region of southern Turkey and parts of northern Syria (Wilkinson 1990; Algaze et al. 1994). The recent surveys support and locally amplify Alcock’s statement (1994: 181) that for the Hellenistic period:

Assembling all available hints from Syrian surveys, however, it can tentatively be stated that an increase in settlement numbers and population, with more territory placed under cultivation than before, did indeed occur.

Recent surveys undertaken at a greater level of intensity and with more regard for smaller sites, support the above statement, but in the Jazira of Northern Syria and Iraq, this statement is more appropriate for the Iron Age, as well as for the later periods in some parts of the region. For much of the Levant, northwestern Syria, and southern Turkey recent surveys describe a particularly densely settled countryside during the late first millennium BC and early first millennium AD. In many areas this resembles the ‘busy countryside’ described for Italy by Lloyd (1991; see also Barker 1996). Although such a growth of rural settlement and rural agricultural production may, in some areas, have been associated with the implantation of new Seleucid cities (Grainger 1990: 110–19; also Alcock 1994: 181), in other places this pattern of dispersed settlement appears to have been built upon foundations that were laid during the Iron Age (e.g. northern Iraq: Wilkinson and Tucker 1995). Overall, the massive expansion of rural settlement over the Levantine uplands and into parts of Anatolia must be partly a result of increased commercialization of agricultural production, particularly of olive-oil and wine (Ward-Perkins 2000), in association also with the massive growth in demand provided by cities such as Antioch and Apamea.

The striking change in settlement structure that took place between the mid-third and the first millennium BC appears to represent a major shift from complex ‘city-state’-type settlement systems during the Bronze Age toward the territorial empires of the first millennium BC and later. Such a transformation, which was probably associated with the collapse of the Late Bronze Age political economy, may be linked to wide-ranging changes in land-tenure, as well as to shifts in the exercising of power and population redistributions. However, before such links between settlement structure and the political economy can be established it is crucial for settlement surveys to be conducted, in both lowlands and nearby uplands, to a rigorous and standardized methodology. Moreover, it is also important to take into account differences in landscape taphonomy (both physical and cultural transformations), as well as local mechanisms of site development that reinforce earlier patterns of settlement.

In the context of tell formation, an abandoned mound is a good place for settlement because its elevation provides improved drainage and a favorable micro-climate. By settling on mounds, incoming inhabitants would not reduce the available agricultural land surrounding the site. Furthermore, sites with mudbrick buildings usually have associated borrow-pits, from which building materials were extracted; these depressions continue to collect moisture and thus remain an attractive water supply, as well as a resource for building materials for subsequent settlers. The troughs of hollow-ways also capture moisture; in the THS it can be demonstrated in several places that subsequent (post-EBA) settlements took advantage of the borrow-pit potential of disused hollow-way troughs (Ur 2002b).

From a social and ideational perspective, tells and mounds probably retained a deeper significance that cannot be recovered archaeologically. Fundamental to the process of settlement nucleation is that, for the communities in question, there may have been more of an incentive to live as an aggregated community, rather than dispersing out to their fields. Thus Roberts (1996: 35–37) defines three basic conditions of ‘communality’ that may contribute to settlement nucleation:

- Communality of assent is the tendency for family ties to hold groups together in the same settlement.
- Communality to economize operates because community action can be more productive than action by small groups, especially for the mobilization of group labor.
- Communality of enforcement is evident in the case of settlements growing up around fortified places or centers of power or religion.

Additional social factors contribute to nucleation. If deceased family members were interred beneath the floors of their houses, settlements or abandoned sites would probably be closely associated with ancestors, real or imagined; even in the last millennium, when sedentary settlement was at a nadir in the Upper Khabur basin, mobile pastoral groups used tells as the preferred place for burials. Moreover, continuity of religion, well exemplified by superimposed temples at Middle and Late Bronze Age Atchana (Alalakh) in the Amuq, must also contribute
to settlements remaining in one place and communities clustering together.

The nature of land-holding may also have militated against settlement dispersal. In a large part of the semi-arid Fertile Crescent, cultivated land has traditionally been held according to the musha 'a system, under which the agricultural land is held not by individuals but by the community (Granott 1952: 213–48). As a result, fields are redistributed periodically among the members of the community according to a generally accepted scheme, often simply by drawing lots. A by-product of this system is that because no individual holds exclusive right to any field parcel, it is difficult for any person to move out of the village (e.g. for reasons of a dispute with another member of the community) and establish a new dwelling within the cultivated territory of the village. In such cases, the only recourse would be to establish a new residence in another community (itself presumably a nucleated settlement with a musha 'a land-holding system), or as a satellite community on waste ground beyond the village fields. In a similar manner, if a family should own parcels of land that are dispersed throughout the agricultural territory, this again makes a location within a central settlement the most obvious choice of residence. Such corporate land-holding systems, although not practiced over the entire Fertile Crescent, were widespread until recent land reforms and they appear to be remarkably ancient, being traceable back to the Late Bronze Age and almost certainly earlier (Renger 1995).

Interestingly, maps of traditional Levantine villages with their fields show a distinct pattern of nucleated villages, within a matrix of surrounding strip-like fields, which are accessed by means of radial tracks, forked at appropriate points in order to optimize access to the outermost fields (Weulersse 1946: fig. 37). Such a pattern resembles that observed around Early Bronze Age tells in the Jazira, and it can be speculated that such Bronze Age settlements also employed a similar land-holding system. The corporate nature of these village communities therefore contributed to their long-term stability in the landscape, as well as to the overall continuity of settlement nucleation in the extensive plains of the Fertile Crescent.

Because the musha 'a system was a predominant form of land holding in the Ottoman period, one cannot simply equate corporate settlements and a communal land-holding system uniquely with the Bronze Age, and then some other form of land-holding in the post-Bronze Age. Rather, there appears to have been a complex alternation between nucleated corporate communities and dispersed settlement systems through time. Nevertheless, it is significant that the dispersal of settlement that took place after the Bronze Age was into areas that extended beyond the long-term settlement on the plains. The new lands which experienced such settlement may therefore have been either deliberate re-settlement schemes of land not previously cultivated (as in the case of Neo-Assyrian re-settlement), spontaneous settlement by nomadic groups (such as the Aramaeans), or perhaps piecemeal settlement of uplands by individuals who acquired or purchased land outside the traditional land-holding system. Overall, it can be argued that the various factors of communality discussed above must have contributed to the nucleation into the tell-based systems recognized in the Bronze Age, whereas the break-down of this system (which started in the second millennium and continued in the first) may have contributed to the well-attested dispersal recorded in the surveys discussed above.

The tendency toward settlement nucleation and continuity manifests itself archaeologically in the form of multi-period sites. For example, in the NJS only 13% of sites were occupied in a single period; in the TBS and NJI, over 50% of sites had four or more periods of occupation. In an attempt to compare with the Mediterranean settlement data, we have calculated periods per sq. km – that is, counting the total number of periods for each site and dividing this figure by the total survey area (Table 14.2). When this figure is plotted in the ‘Cherry Chart’ (Figure 14.1), although our rate of site recovery is improved, it still fails to match the record of ‘Greek surveys since the 1970s’. This implies that even when allowance is made for successive occupations occurring in the same place, the plains of Upper Mesopotamia still favor a markedly nucleated pattern of settlement.

Overall, the record of landscape and settlement in the Near East is now starting to suggest a more coherent narrative than hitherto. The marked regional zonation of environmental zones shows a number of signature landscape-types (although the degree of regional variation is considerable). Processes of landscape transformation are clearly important, because in the more verdant and long-settled areas a significant (albeit unknown) part of the landscape record is missing. This is well illustrated from the Amuq survey where off-site transects recorded flat artifact-scatters remaining as ‘ghosts’, and CORONA images record sites that appear to have minimal topographic expression and appear to have been degraded by long-term taphonomic processes. On the other hand, it does seem that the relatively low density of settlement remaining in the landscapes of the Jazira to the east may be real, and reflect a process of positive feedback that maintains sites in one general location. What is important in terms of survey is that when mound accumulation takes place, the resultant sites are easy to find, but the component occupations become progressively obscured; on the other hand, when settlements are dispersed and form single-period flat sites, their recognition is difficult, but each occupational phase can be more securely dated because of the lack of overlying deposits. There is therefore a trade-off between high visibility, multi-period mounds with progressively obscured earlier occupations, and low-visibility, flat sites in which the component occupations remain visible.

Although certain settlement landscapes may tentatively be related to the prevailing political economy, the tantalizing relationship between settlement pattern and large-
scale administrative structures, such as states or empires, will need considerably more research to determine whether it can be upheld. More important, we believe, are factors that lead to changes in settlement structure and morphology. In areas near the Mediterranean where there is clear evidence for Hellenistic-Byzantine settlement dispersal, surveys are in danger of identifying the dispersed phase of settlement in the uplands, but missing the long-term record of lowland settlement. This is because lowland settlement may have been obscured by deposition, especially by sediments eroded from the surrounding hills during the post-Hellenistic phase of settlement dispersal. The final result of such a survey – very little occupation on the plains and post-Hellenistic settlement on the hills – could therefore show little resemblance to the true picture of long-lived settlement (i.e. prehistoric to Iron Age) on the plain and post-Hellenistic settlement on the uplands. Overall, rather than becoming obsessed with the details of site recovery, it is necessary for surveyors to also become more sensitive to settlement structure, landscape taphonomy, processes of settlement formation, as well as interactions between settlement and geomorphology. Attention to these factors, together with site recovery and comparability of data-collections, should considerably improve our ability to compare neighboring survey records.

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