THE ROUTLEDGE WORLDS

THE SUMERIAN WORLD

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Edited by

Harriet Crawford

CHAPTER SEVEN

PATTERNS OF SETTLEMENT IN SUMER AND AKKAD

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Jason Ur

The settlement landscape of early Mesopotamia was characterized by great cities that housed great masses of people, kings and priests, and the gods themselves. From the Late Uruk period to the end of the Old Babylonian period (*c.*3500 to 1500 BC), Mesopotamian cities contained all of the material manifestations of civilization that have fascinated archaeologists and epigraphers: palaces and temples with traditions of high art, administrative organization, and monumental architecture. These material remains gave clues to social and political institutions and their roles in maintaining urban society. The spatial scale of the settlement, on the other hand, reveals the extent to which these institutions successfully maintained social cohesion among the diverse kin and ethnic groups within the cities. In their absence, settlements inevitably split apart as disputes emerged that could not be resolved except via spatial distance between feuding parties. Such cycles of growth and fission in individual settlements had been ongoing since the start of sedentism in the Neolithic, until the fourth millennium BC.

The Mesopotamian plain witnessed shifting patterns of urban settlement at a time when almost all other human societies worldwide continued to live a village scale existence characterized by frequent settlement fission. The evolution of the urban settlement landscape was not a random process; the shifting constellation of settlements has much to reveal about the underlying social, political, economic, and environmental dynamics. These patterns were not merely reflective of, but became constitutive of, Mesopotamian society. As cities grew, they became meaningful places in the landscape, through association with kings, gods, and events. These enduring symbolic aspects explain why many of the great cities of the fourth and third millennia BC were still densely inhabited and maintained, sometimes at great expense, for several millennia thereafter.

These significant questions of geography and demography require a methodological approach that expands beyond excavation and epigraphy. Excavation opens windows into cities, but these windows have shrunk as archaeologists have appreciated how destructive their methods are, as they have expanded the range of data considered worthy of recording, and as their budgets have shrunk. Even if it were possible to excavate an entire city, these questions would still be out of reach, since urbanism cannot be studied at a single place: it is necessary to understand how the entire settlement landscape evolved, as populations coalesced at some places and abandoned others. For these reasons, Mesopotamian archaeologists were at the forefront of the

development of survey and remote-sensing methods. When combined with excavation and textual analysis, these extensive methods are powerful tools for reconstructing the evolution of the Mesopotamian settlement landscape.

This chapter reviews settlement patterns in Sumer and Akkad from the end of the fourth to the middle of the second millennium BC. Before doing so, it is necessary to consider some definitions, and to review the strengths and weaknesses of the surveys thus far undertaken on the plain.

LANDSCAPE AND ENVIRONMENT

The history of settlement on the Mesopotamian plain (Figure 7.1) is inextricably bound to its physical environment (Sanlaville 1989; Verhoeven 1998, Wilkinson 2003: 74–97; Pournelle this volume). The region's climatic aridity demands that human occupation be tethered closely to surface water sources: the two rivers throughout much of the plain, and marshes in the basins between them and especially at the rivers' tail ends near the head of the Gulf (Adams 1981: 244). The plain might appear to be a flat and homogenous isotropic plain, but in fact it is a complex and diverse array of elevated river levees, isolated turtleback islands, dune fields, abandoned irrigation channels, and seasonal marshes that is constantly evolving. This landscape variability has implications not only for how its inhabitants adapted to it in the past but also for the elements that have survived for archaeologists to recover.

In the northwestern part of the plain (ancient Akkad), the rivers ran in meandering channels that were prone to shift during floods (Verhoeven 1998). When mapped regionally, settlements often occurred in linear arrays, on account of their close adherence to levees of the rivers and major canals. The Tigris and Euphrates dropped most of their suspended sediments in this upper part of the plain, resulting in substantial aggradation of silts that have buried the earliest sites. Further southeast, in the region between Nippur and the head of the Gulf (ancient Sumer), the rivers adopt more anastomosing or branching patterns. Sedimentation in this region has been less severe, with the result that prehistoric (Ubaid and Uruk) sites are more likely to be visible at the surface than in Akkad. Settlements clustered atop levees here, but the increased presence of marshes resulted in distinct "bird's foot" deltas (Pournelle 2007: 43–44).

These landscapes were highly dynamic. The rivers themselves were prone to redirect themselves at times of great floods. River diversions could be intentional acts of war that could leave cities or entire regions suddenly without reliable water for irrigation, at which time they would have to be abandoned, or the watercourses restored with herculean effort. Closely related to shifts in the rivers were formation of marshes and steppe regions. In the fifth and fourth millennia, the Gulf extended to the hinterlands of Ur and Uruk, which were surrounded by marshes; gradually this marsh environment was pushed to the southeast. This environmental dynamism must be taken into consideration when evaluating the surviving settlement patterns and their interpretation.

ISSUES AND METHODS IN SETTLEMENT SURVEY

The basic raw data for the history of settlement are site numbers and their sizes, which are best acquired through the techniques of archaeological survey. Survey methods are
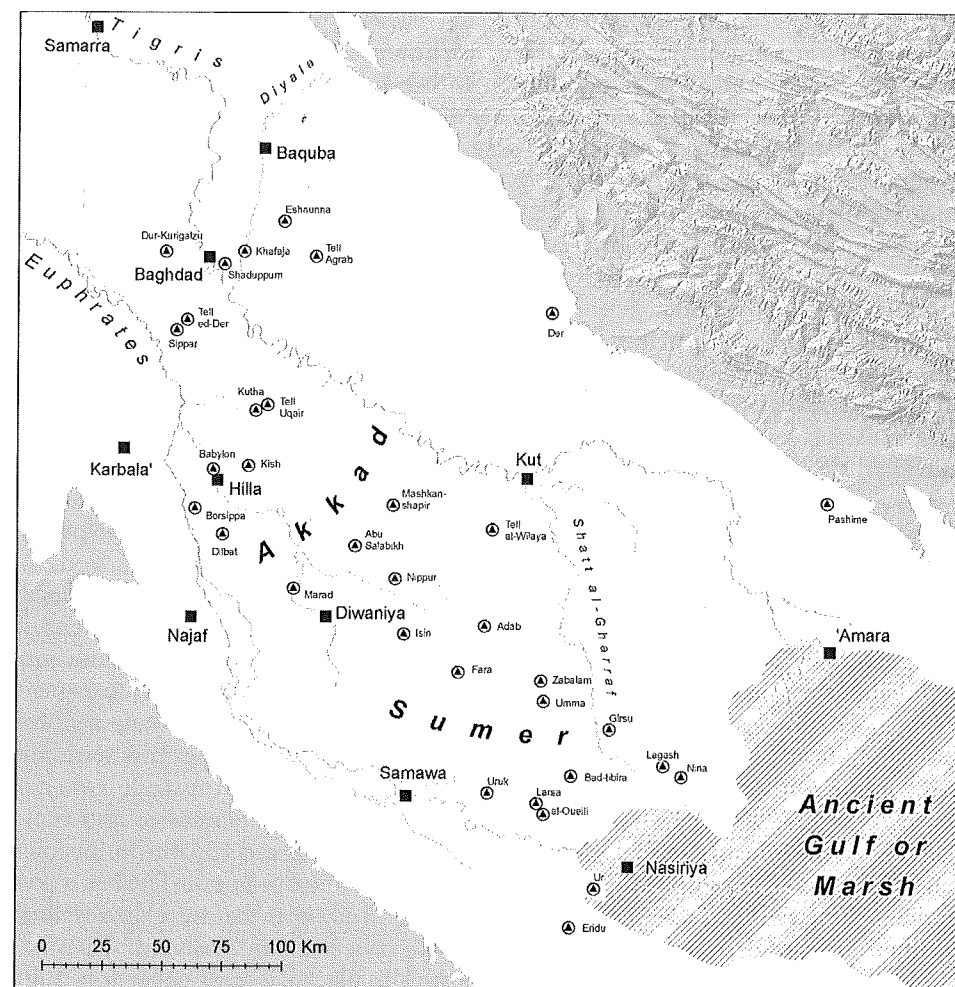
Figure 7.1 Southern Mesopotamia and adjacent regions. Land over 100 m is hillshaded.

based on two underlying assumptions. Most importantly, past human activities left traces that can be identified via surface observation. If various natural and cultural taphonomic processes can be ruled out, the surface distribution of artifacts and features is assumed to be related closely to the spatial location of ancient activities, most notably sedentary inhabitation. Furthermore, the extent of the surface distribution of artifacts is related to the scale of the ancient settlement and, by extension, its ancient population.

Field survey methodologies evolved, but most Mesopotamian surveys share similar characteristics. The predominant approach is an extensive one designed to recover quickly as many sites as possible over a large area. Known sites (identified from aerial photographs, maps, or local informants) were visited by vehicle, and in places of good visibility, systematic vehicular transects were made on 500 m to 1 km intervals. Cultivated areas were generally avoided, but where they were surveyed, it was necessary

to follow the lines of canal levees. The surveyors recorded plans of the visible remains, and made opportunistic artifact collections with a particular focus on the edges of sites. Site locations were recorded by sighting on known points by optical compass. Most fieldwork was done rapidly by teams of only one or two archaeologists with an Iraqi government representative.

This methodology, which was employed by almost all surveys of the late twentieth century (Adams 1965; 1981; Adams and Nissen 1972; Gibson 1972; Wright 1981), has strengths and weaknesses. The primary advantage was above all the tremendous geographical extent of coverage, which has placed the Mesopotamian settlement dataset among the largest in world archaeology. Furthermore, it was a necessary concession to the uncertainty of future permits and fieldwork (Adams 1981: 38). For these reasons, most surveys attempted to cover a great area as quickly as possible.

This extensive approach came with some disadvantages, however. Vehicular survey finds the largest sites, but smaller sites can go unseen without a more intensive approach. Individual sites' sizes were by necessity estimated by impressionistic visual inspection of the surface assemblage and aerial photographs, with the result that shifting patterns of occupation could be overlooked, and small and early occupations might be passed over.

All surveys are by necessity a compromise between spatial extent and intensity of investigation, and Adams and his colleagues were well aware of the ramifications of their methodological decisions. For example, the survey of Uruk's hinterland was intended as an initial reconnaissance, to be confirmed or corrected by subsequent systematic intensive surveys (Adams and Nissen 1972: ix–x). Unfortunately, no regional projects followed up on the initial surveys, largely because survey permits were not forthcoming (although see Wilkinson 1990 for Abu Salabikh; Armstrong 1992 for Dilbat). Several individual sites, however, have been subjected to intensive systematic surface analysis, most notably Uruk, Mashkan-shapir, Kish, and Lagash (Finkbeiner 1991; Stone and Zimansky 2004; Gibson 1972; Carter 1989–1990). These surveys subdivided the site surfaces into squares or topographical units that were then walked systematically; features and artifacts were mapped, collected, and analyzed by period. Other sites have been analyzed by opportunistically placed sample collection units (e.g., Nippur and Fara – Gibson 1992; Martin 1983). The Mashkan-shapir and Lagash surveys analyzed site functions, based on the distribution of kilns, walls, canals, and manufacturing debris; for most others, the emphasis has been on shifting patterns of growth and contraction as evidenced by the distribution of chronologically sensitive artifacts.

From its inception, the practitioners of survey in Mesopotamia have been concerned not only with sites but also with the landscape between them, especially the rivers, canals, and levees that make agricultural settlement possible. In Sumer, Adams used aerial photographs and site alignments to suggest river and canal alignments and their evolution. The most ambitious project was the multi-disciplinary Belgian and American research around the hinterland of Sippar and Tell ed-Der in Akkad, which involved the synthesis of topography, geoarchaeology, and cuneiform texts (Gasche and Tanret 1998; Heyvaert and Baeteman 2008). A study of channel development around Abu Salabikh also relied on geoarchaeological coring (Wilkinson 1990). Off-site sherd scatters, which are now recognized throughout the Near East and beyond (Wilkinson 2003: 117–118), have only been investigated in the hinterland of Mashkan-shapir (Wilkinson 2004).

Survey and landscape studies benefit from a remote perspective, and most Mesopotamian research has attempted to include aerial photographs and remote sensing. The surveys of the 1960s and 1970s were allowed limited access to aerial photographs by the Iraqi government, but these were sufficient to identify sites and the traces of relict watercourses (Adams 1981: 28–32). The earliest Landsat imagery was too coarse for site identification but did prove useful for the recognition of abandoned levees (Adams 1981: 33, fig. 6). More recently, SPOT imagery (Verhoeven 1998; Stone 2003) and declassified photographs from the American CORONA intelligence satellite (Hritz 2004, 2010; Pournelle 2003, 2007) has been used to great effect. High-resolution commercial imagery from the Ikonos, DigitalGlobe QuickBird, and other platforms shows great promise (Stone 2007, 2008), as does topographic modeling using data from the Shuttle Radar Topography Mission (SRTM; Hritz and Wilkinson 2006).

The great variety of textual sources allow historical geographies to be constructed, and indeed this was the primary aim of the earliest reconnaissances (e.g. Jacobsen 1954). The combination of survey data and textual analysis has been effective in reconstructing patterns of movement and the rural landscape of the third Dynasty of Ur (Steinkeller 2001, 2007). When examined closely, texts can add a human dimension to the shifting patterns of sites; for example, the movement of temple households from Uruk and Eridu to Kish and Ur, respectively, in the Old Babylonian period (Charpin 1986: 343–418), or the resettlement of Akkadian and Hurrian populations, some prisoners of war, in the Sumerian south under the kings of Ur (Steinkeller in press). Texts can also demonstrate abandonments that occur within a single ceramic phase, and are therefore invisible to survey; for example, the progressive abandonment of southern and central Sumer at the end of the Old Babylonian period (Stone 1977; Gasche 1989).

For survey data, chronological analysis is based on surface ceramics. For example, a site with many Uruk ceramics spread over an extensive area is assumed to have been a large settlement in the fourth millennium BC. The great benefit of this method is the incredible abundance of pottery on the surfaces of Mesopotamian sites, but reliance on ceramic chronology poses several challenges. Our ability to subdivide time is linked to the rate of technological and stylistic change in pottery production, but many ceramic types remain in use for centuries. Furthermore, surveyors are dependent on well-excavated stratigraphic sequences of pottery to which they reference their surface finds. For many periods, such sequences simply do not exist. This problem is compounded in the later historical periods, when epigraphers and art historians prefer chronologies based on political dynasties that are wholly disconnected to patterns of ceramic production.

Evaluation of settlement patterns must include consideration of landscape taphonomy, the processes by which various landscape elements survive, are transformed, or are removed (Wilkinson 2003: 7–8, 41–43). These processes can be natural ones, such as river movements, alluviation, salinization, and wind deflation, or cultural, such as the expansion of irrigation canals and the resulting alluviation. The southern Mesopotamian plain is a palimpsest of many superimposed landscapes which are preserved in an increasingly fragmentary state as one looks further back in time (Hritz 2010; Pournelle this volume).

HISTORY OF RESEARCH

Near Eastern settlement pattern studies originated with the Sumerologist Thorkild Jacobsen, who developed and applied survey methods on the Diyala plain (1936–1939) in the context of the Oriental Institute's excavations (see Adams 1965 : viii, 119), and later in Sumer (Jacobsen 1954, 1969). Jacobsen's work was especially innovative in his concern with spatial patterns of settlements and watercourses, unlike other reconnaissances of the time, which identified sites for excavation (e.g., Roux 1960).

Systematic surveys began in earnest with the work of Robert McCormick Adams in the late 1950s and 1960s. He expanded and systematized the observations of Jacobsen in the Akkad region in 1956–1957 (Adams 1972b) and on the Diyala plain in 1957–1958 (Adams 1965). Surveys in 1966 by McGuire Gibson around Kish and Henry Wright in the Ur-Eridu region (Gibson 1972; Wright 1981) adhered to the methods of Jacobsen and Adams. In the following year, Adams and Hans Nissen surveyed the region of Uruk (Adams and Nissen 1972), after which Adams began a series of survey seasons around Nippur (Adams 1981). After 1969, the Iraqi government ceased issuing large-scale survey permits, and with the exception of Adams' short season around Nippur in 1975, no further extensive reconnaissances have been carried out by foreign archaeologists.

In the 1970s and 1980s, surface surveys focused on individual sites, providing a valuable check on the earlier reconnaissances. Low intensity sampling surveys targeted Fara and Nippur (Gibson 1992; Martin 1983). Intensive full coverage methods were used in the 1980s at Uruk, Lagash, and Mashkan-shapir (Finkbeiner 1991; Carter 1989–1990; Stone and Zimansky 2004). Only in 1990 did regional studies resume (Wilkinson 1990). The first Gulf War put an end to all foreign research up to the present, but Iraqi research led by Abdulamir al-Hamdani between 2003 and 2010 has identified about 1,000 sites in southern and eastern Sumer, particularly in the zones east of the Nippur, Uruk, and Eridu surveys (see al Hamdani 2008).

The efforts of Adams, Nissen, Gibson, and Wright have covered approximately 25,000 square kilometers of Sumer, Akkad, and adjacent regions of southern Mesopotamia, including well over 3,000 recorded sites (Figure 7.2). As a result, the Mesopotamian plains represent one of the benchmarks of global archaeological survey (Ammerman 1981).

THE EVOLUTION OF SETTLEMENT IN SUMER AND AKKAD,
*c.*3100–1500 BC

Archaeologically recognizable settlement appeared first on the Mesopotamain plain in the Ubaid period. Sites of that time are mostly small (less than 4 ha), although Ur and Eridu had grown to 10–12 hectares (Wright 1981: 324–325). Patterns of settlement in Akkad are unreliable because of heavy alluviation, but sites appear evenly dispersed in the region of Uruk, perhaps due to a reliance on pastoralism rather than agriculture (Adams 1981: 59). Recent remote-sensing studies have emphasized the marshland context of these earliest southern settlements, which sat amidst marshes on "turtleback" hills of possible Pleistocene date; this model proposes that marsh resources such as fish and reeds sustained the economies of Ubaid villages and also the earliest urban centers of the Uruk period (Pournelle 2003, 2007).
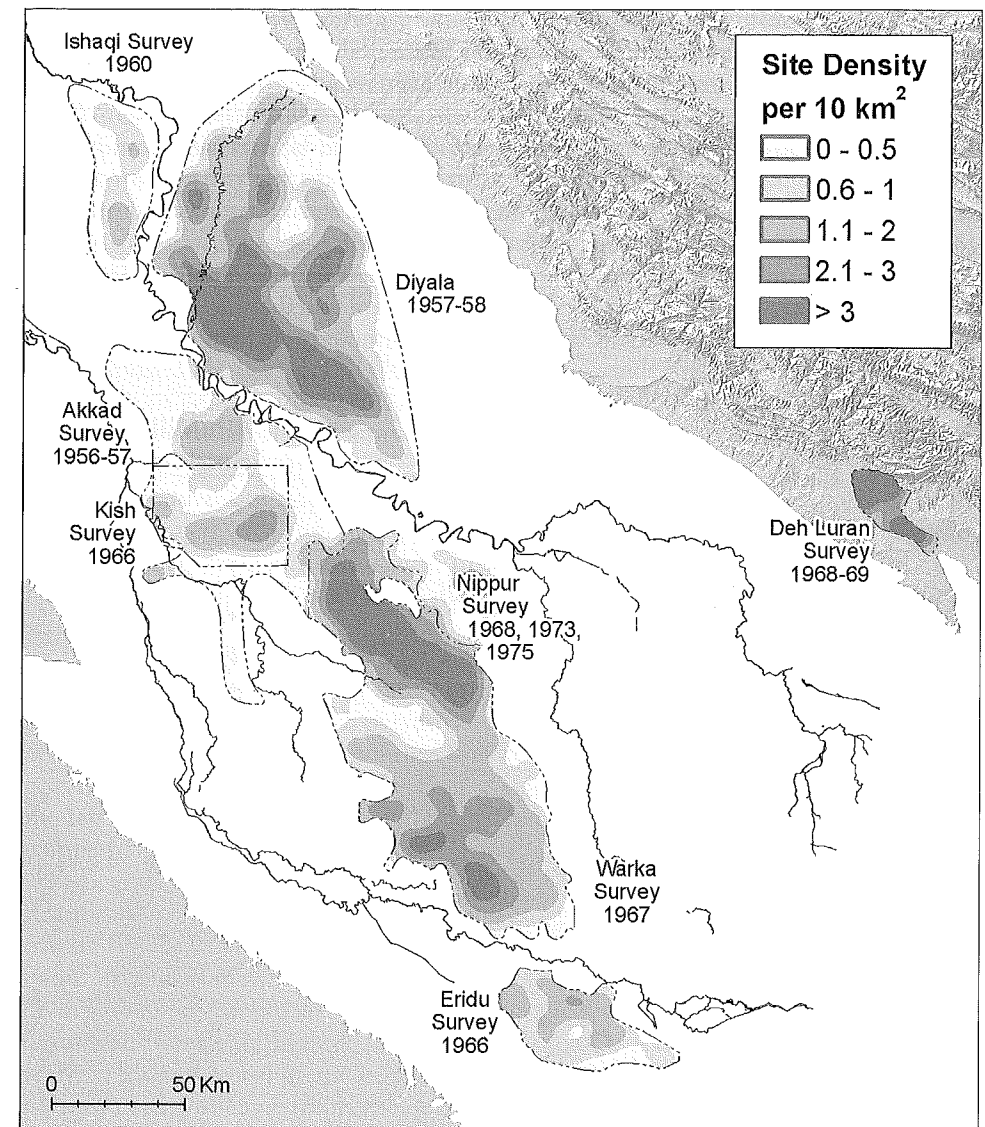

Figure 7.2 Surveys and site density in Sumer, Akkad, and adjacent regions.
Land over 100 m is hillshaded.

Urban origins *c.*4000–3100 BC

During the fourth millennium, the settlement landscape evolved. The most startling transformation took place at Uruk, where a pair of adjacent Ubaid villages grew into a 250 ha urban concentration by 3100 BC (Finkbeiner 1991: 193–194). The nascent city included new monumental forms of architecture and the first instances of proto-cuneiform record keeping. No other site even approximated Uruk's growth, but several cities grew to between 10 and 50 ha. The precise extents of many of these places are

uncertain, because fourth millennium occupations are deeply buried beneath later settlement. Nippur, for example, is arbitrarily estimated at 25 ha, but its Ubaid and Uruk surface assemblages are largely the result of massive earthmoving in Parthian times (Gibson 1992: 36–39). In addition to these centers, the central plain saw a dramatic expansion of settlement well beyond what could be expected from natural population growth (Figure 7.3), leading Adams to conclude that the region had seen immigration from surrounding regions, the sedentarization of local pastoral nomadic groups, or most likely both (Adams 1981: 69–70).

The precise timing of the first urban growth remains a matter of debate. The Uruk period, defined archaeologically, covers almost the entire fourth millennium BC, a vast span of time. Attempts to subdivide it via ceramic chronology are hampered by the fact
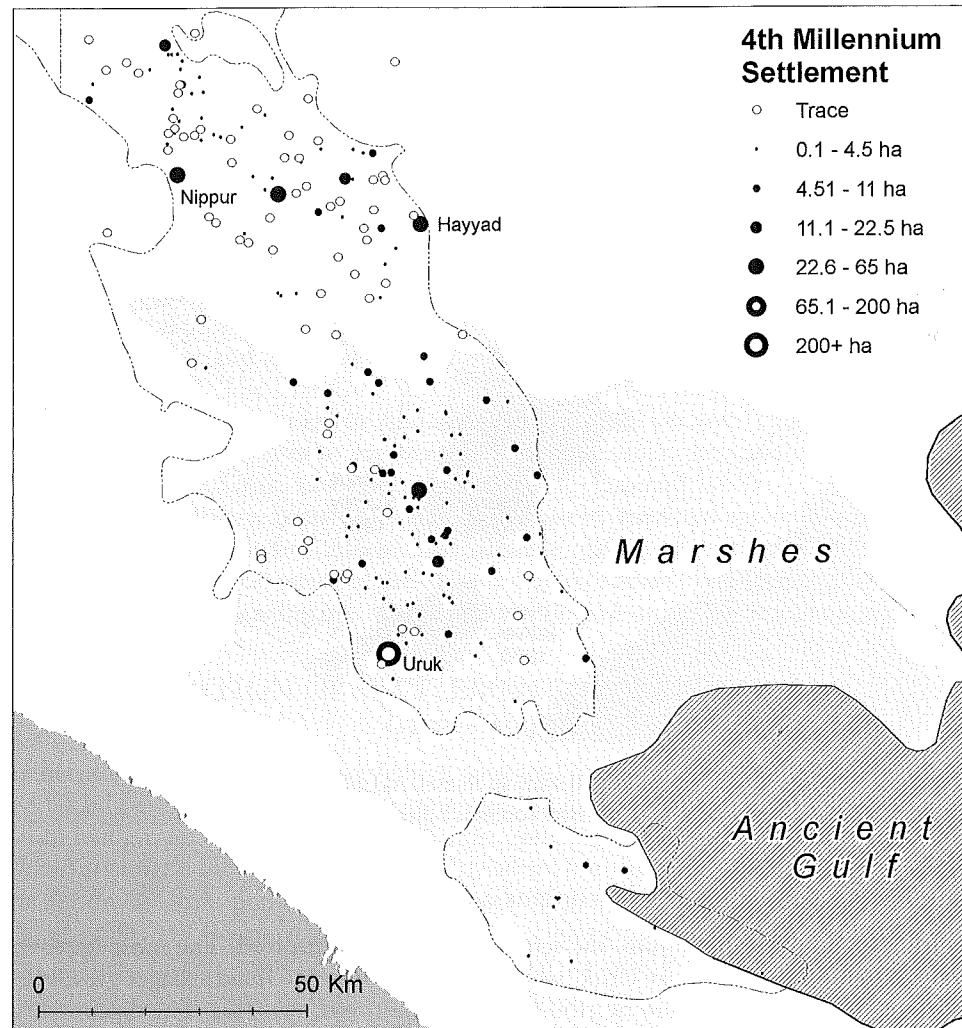

4th Millennium Settlement

o Trace
· 0.1 - 4.5 ha
• 4.51 - 11 ha
● 11.1 - 22.5 ha
● 22.6 - 65 ha
◉ 65.1 - 200 ha
◎ 200+ ha

Figure 7.3 Late fourth millennium (Late Uruk period) settlement in Sumer (based on Adams 1981: table 7; Algaze 2008: appendices 1–2; Wright 1981; Pournelle 2007)

that few stratigraphic excavations through the fourth millennium exist, and none were undertaken using modern methods of ceramic seriation or employing absolute dating methods (Nissen 2002: 3–6).

The spatial distribution of Uruk sites is far less linear than in subsequent periods, when linearity is directly related to river and canal alignments (Figure 7.3). For the southeastern part of the plain in particular, this dispersed arrangement may be related to an emphasis on marsh resources in the economy of the time, which beside agriculture and pastoralism represented a "third economic pillar" (Pournelle 2007: 46). Rather than the "pearls-on-a-string" model for later agricultural settlement, this dispersed pattern might result from settlement on elevated turtlebacks and bird's-foot deltas. Such landforms are common at the ends of river systems that terminate in marshlands. This is at odds with the traditional understanding of Mesopotamian origins in an agro-pastoral economic niche, particularly with the centralization and redistribution of cereals and animal products by nascent temple households (see, e.g., Pollock 1999: 78–80).

An alternative, but not mutually exclusive, possibility is that the dynamism of the rivers, combined with the inability of human communities to counteract it, forced villages to make frequent relocations. In such a case, the great numbers of sites might result from counting the same populations twice or more in their sequentially occupied settlements.

The settlement landscape of the fourth millennium featured urban agglomerations that had been seen before only rarely (e.g., Tell Brak in northern Mesopotamia; Ur et al. 2007), and never with such pervasiveness. Several competing models of society have attempted to explain it. New political forms had emerged, especially bureaucratic state governments that centralized decision-making (Wright and Johnson 1975). Other models also emphasize economy, but instead see cities as the emergent products of competitive and self-amplifying trade practices that attracted people from neighboring villages and distant regions (Algaze 2008). Other models see the development of social stratification and hierarchy as forces behind growth, particularly with new demands for tribute (Pollock 1999: 80) or the decline of kinship (Adams 1972a, 1981). On the other hand, urbanism may have been the unintended result of a subtle shift in the social definition of the household from a small domestic group to a new flexible metaphorical definition that could include neighborhoods, cities, and entire kingdoms (Schloen 2001). This social change might have resulted in the demographic explosion of some places as rural villagers moved to cast their lots with emergent urban households, particularly new temple institutions formulated as the houses of the gods (Ur 2012).

The expansion of urbanism and the abandonment of the countryside (*c.*3000–2600 BC)

At the turn of the fourth millennium, archaeologists recognize a short phase labeled Jemdet Nasr, about which survey can say little (Adams 1981: 81). In the first half of the third millennium BC (the Early Dynastic I period), the initial urban experiment at Uruk expanded and was now replicated elsewhere across the plain. Villagers increasingly abandoned their rural settlements in favor of life in cities. In all likelihood, they were joined by pastoral nomadic groups who gave up their migratory ways. Whether these migrations were voluntary or coerced remains unknown. More than any other

time in Mesopotamian history, the early third millennium demonstrates the value of archaeological survey; at this critical moment for the history of urbanism, almost nothing is known from excavation, and all of our knowledge comes from field survey.

Once again, the urban explosion was most pronounced at Uruk. The scatter of ceramic diagnostics covered some 400 ha within and outside of the city wall (Finkbeiner 1991), which appears to have been constructed at this time (Nissen 1972). Adams estimates large settlements at Nippur, Adab, Umma, and Zabalam (1981: 88–89). Shurrupak may have reached 70 ha (Martin 1983: 26) and Kish was almost 60 ha (Gibson 1972: fig. 25; Adams 1981: 88). In most of these areas, urban growth was accompanied by the abandonment of the countryside, especially around Uruk, Nippur, and Abu Salabikh (Figure 7.4). Around Uruk, for example, 81 percent of identified settlement occurred in sites larger than 10 ha (Adams 1981: 90). The exception appears to be the hinterland of Adab, where villages and even a subsidiary town were to be

found. This pattern of extreme nucleation suggests that the age of competitive small polities ("city-states," see below) had begun. Under centralized and stable political regimes, there is a tendency for settlement to extend beyond urban centers, as farmers and shepherds move closer to their fields and pasture, in the absence of the threat of inter-urban violence (Adams 1981: 88; Wilkinson et al. 2004).

At this time, settlement first took on the linear patterning that would predominate in all subsequent phases of Mesopotamian history. Linearity had been weak in the fourth millennium in the region between Umma and Uruk due to unstable watercourses, a variegated and marshy environment, or both circumstances. In southern Sumer, three primary river channels can be recognized: an eastern channel through Adab, a western channel through Shuruppak and Uruk that might have come from Nippur, and a central channel that ran between them in the Shurrupak region (Adams 1981: fig. 21).

The age of "city-states" and initial political unification (c.2600–2100 BC)

By the mid-third millennium, the use of cuneiform writing had expanded beyond administration to include propagandistic statements by rulers, occasionally in the form of monuments that also feature royal and divine iconography. Each city was envisioned as the home of a god to which the fortunes of the city and its ruler were tied, and in whose name temples were built and wars were fought. The inter-city warfare described in these monuments has given rise to the notion of a landscape of "city-states," small autonomous polities based around a single major city. Many of these small urban polities are also known from the Sumerian Kinglist, a historiographic text listing sequentially the political capitals of the plain. Indigenous subdivisions of the plain had emerged: Akkad, a predominantly Semitic-speaking area to the northwest, and Sumer, a predominantly Sumerian-speaking region to the southeast (Steinkeller 1993).

The major cities of the late Early Dynastic period were large and densely inhabited (Postgate 1994). Perhaps the largest was Lagash, the settled area of which covered some 500 ha (Carter 1989–1990). Its great rival Umma has been estimated at 175–200 ha. Most centers were considerably smaller, however. Shurrupak was about 100 ha (Martin 1983: 26). Despite the famous wealth of its royal family, the city of Ur probably did not exceed 50 ha (Wright 1981: 327).

If nucleation and endemic conflict were closely related, the historically known "city-states" phase may have been an unsettled time, since so few communities felt secure enough to settle permanently in the countryside beyond city walls. The mid-third millennium represents the apex of urban nucleation; almost 80 percent of the population of central Sumer clustered into settlements of 40 ha or more (Adams 1981: 138). Simultaneous warfare and nucleation characterized northern Mesopotamia at this time as well (Ur 2010: 404–412).

The frequently used "city-state" terminology evokes a political landscape composed of a central city, its immediate agricultural hinterland of fields and pastures, and perhaps a few dependent villages, often implicitly on the model of the Greek city-states. The settlement pattern data, and the historical record, however, reveal it to be one of many possible political forms. The Lagash state, for example, also included Girsu and Nina, each a large city in its own right (at least 370 and 67 ha, respectively, based on satellite imagery). This "classic" city-state was really a polity of three cities and
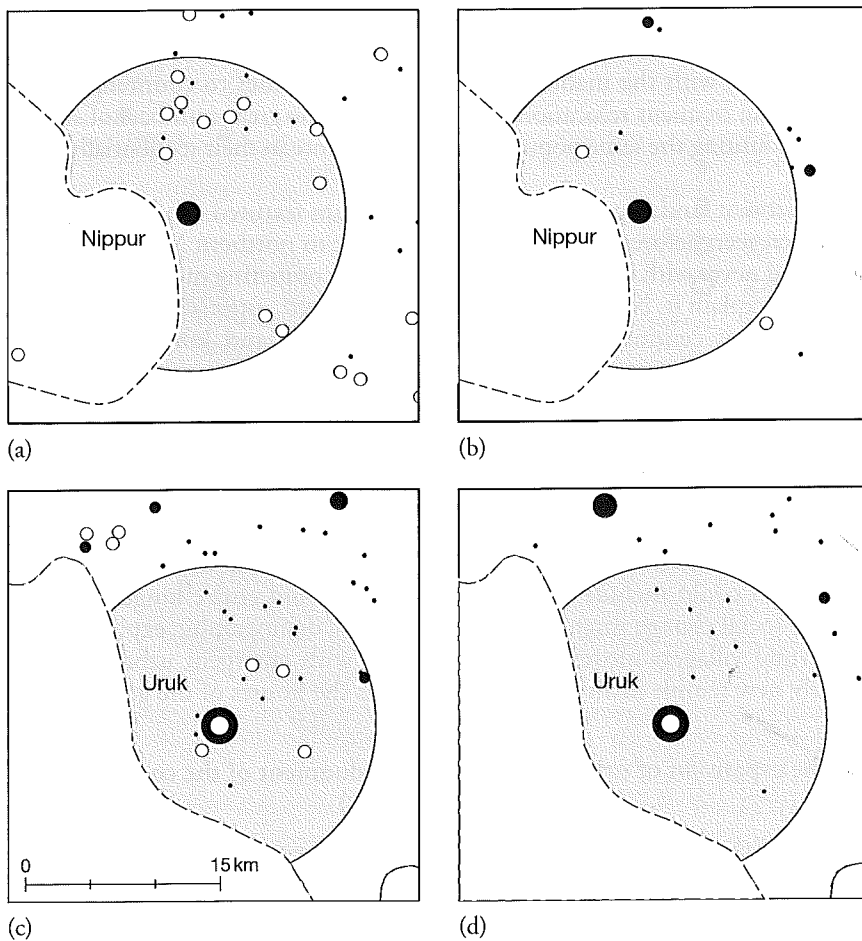

Figure 7.4 Urbanization and rural abandonment in the early third millennium:
(a) the Nippur region, late fourth millennium; (b) the Nippur region, early third millennium;
(c) the Uruk region, late fourth millennium; (d) the Uruk region, early third millennium.
For settlement classes, see Figure 7.3.

other associated settlements. The polity centered on Kish in northern Akkad had, at one point, enough political control over Sumer to set boundaries between the kingdoms of Umma and Lagash (Cooper 1983). Given the opportunity, "city-state" rulers would consolidate rule over formerly independent cities, and by the end of the millennium, at least two such regional polities, administered from Agade and Ur, lasted for multiple generations. City-based units were durable, and many survived as provinces in the Akkadian and Ur kingdoms, but the often implicit city-state model used by archaeologists obscures the political dynamism of the time.

By the end of the third millennium, many small villages around major cities disappeared, and even some major urban centers were abandoned. At the same time, a striking linearity of settlement emerged on the watercourse between Adab and Umma (Figure 7.5), possibly related to a decline in the size and number of settlements on the river between Nippur, Shuruppak, and Uruk. A watercourse, possibly originating as a canal, now ran from the Umma area to the region of Uruk. This watercourse, later
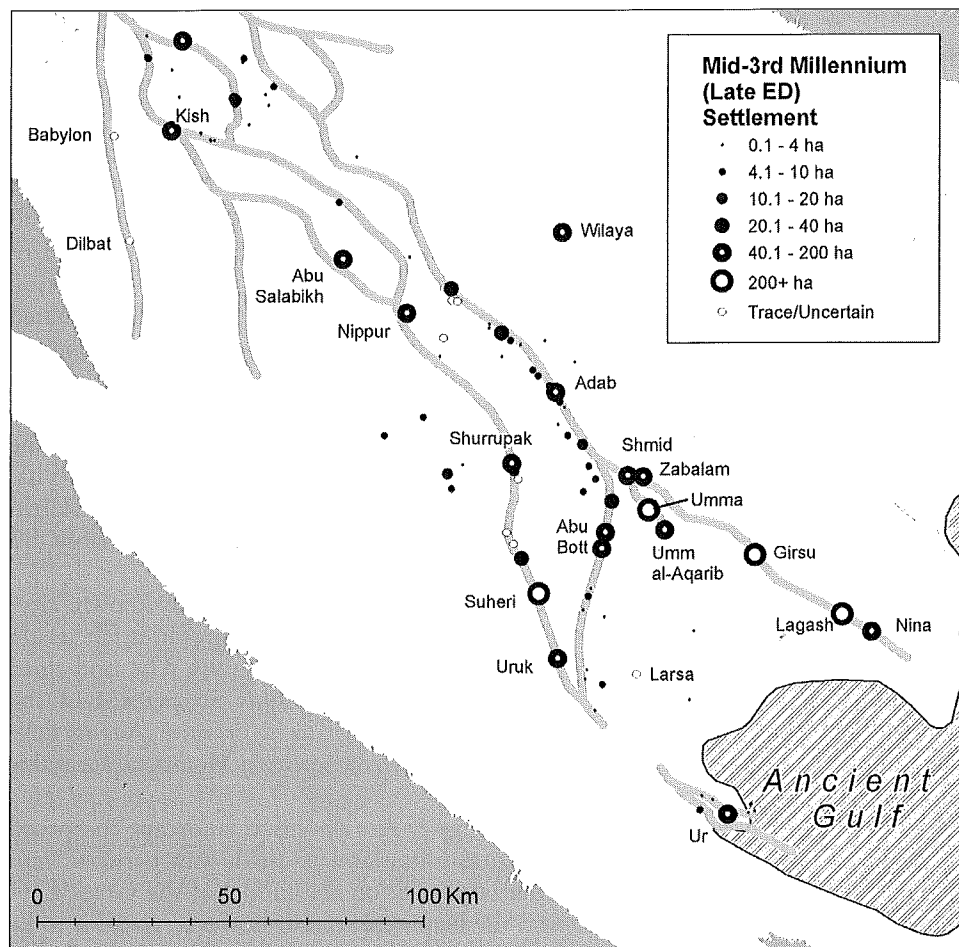

Figure 7.5 Mid-third millennium (Late Early Dynastic period) settlement in Sumer and Akkad (based on Adams 1981: table 14; Gibson 1972)

known as the Iturungal, would be particularly important later in the third millennium (Steinkeller 2001).

The phase of small independent polities appears to have been brought to an end by Sargon, a ruler based at Agade, a town of unknown location in Akkad. Defining the settlement pattern for the duration of Akkadian dynastic rule is exceedingly difficult (Nissen 1993). Nonetheless, the nucleation trends of the late Early Dynastic period appear to have continued, particularly on the Tigris around Adab, a well-known Akkadian center. The question remains to what extent were the settlement pattern changes, subtle though they are, a result of royal decision-making or the cumulative results of trends within individual settlements. The divergence of historical and ceramic chronologies does not allow this question to be answered with any certainty.

By the late Early Dynastic to Akkadian period, two dominant parallel channels had emerged within the surveyed regions of the plain. The western channel (the Euphrates) ran through Abu Salabikh and Nippur, and on to Shuruppak and Uruk. The eastern channel ran from Adab to the area of Umma and Zabalam. This eastern channel is likely to have been a branch of the Tigris, a conclusion that can be drawn from both cuneiform texts and satellite imagery (Steinkeller 2001; Stone 2003; Hritz 2010). The southeastern extensions of these channels have become obscured by wind deflation and subsequent watercourses. The extension of the eastern channel to Girsu, Lagash, and Nina is now covered by right-bank irrigation systems from the relatively recent Shatt al-Gharraf branch of the Tigris. The likely extension of the western channel to Ur and Eridu is now severed by the modern Euphrates.

The Third dynasty of Ur and its aftermath (c.2100–1850 BC)

From the viewpoint of textual records, the Third dynasty of Ur and the politically decentralized time that followed it (the Isin-Larsa period) have great political and social differences. The kings of Ur created centralized temple and above all royal administrative systems, and attempted to resuscitate a Sumerian identity. The succeeding phase, on the other hand, was characterized by competing polities in which economic activities often were carried out independently of royal and temple households, and by new ethnic identities, above all Amorites who recognized an ancestry as pastoral nomads.

Nonetheless, these social and political changes appear to have had little or no immediate effects on the lives of craftspersons like potters, who continued to use the same or similar ceramic styles and technologies across this chrono-political boundary. For this reason, the historical Ur III and early Isin-Larsa periods must be presented as a unit in settlement pattern analysis (Figure 7.6). The incredible richness of the cuneiform record offers great potential insight into aspects of settlement, boundaries, and movement, which cannot be determined from the surface record (Steinkeller 2007; Adams 2008).

The political center moved to the already ancient city of Ur, which remained a modest 50 ha. The nearby city of Eridu was rebuilt, and several smaller towns emerged on the channel through Ur. The total settled area of the region doubled from the previous period (Wright 1981: 329–330). The central Sumerian plain also experienced an expansion of settlement at all scales, but especially among small villages, which more than tripled in number over their Akkadian period numbers (Adams 1981: fig. 25). It
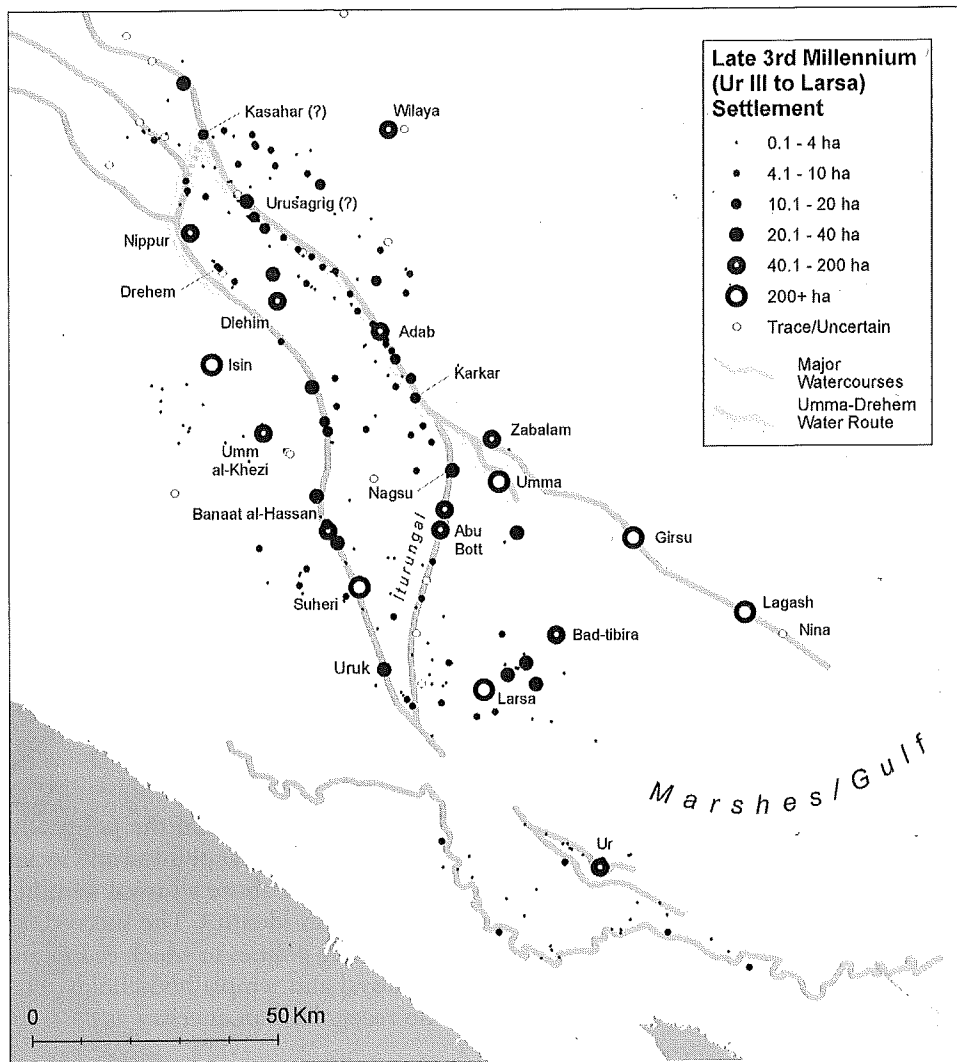
Figure 7.6 The late third/early second millennium settlement in Sumer (based on Adams 1981: table 14; Wright 1981; Steinkeller 2001)

is tempting to connect the increasingly full rural landscape to relative political stability under the kings of Ur, and perhaps the deliberate resettlement of conquered populations. Furthermore, it is quite likely that survey has underestimated the rural landscape, when compared with the geographical names in the cuneiform record (see below).

The end of the third millennium saw the development of the first zonal irrigation systems. Earlier settlements clustered along the major river channels, but late third millennium settlements sat on branch canals that could extend up to 15 km away from the main river (Adams 1981: 164–165). The regions north and east of Nippur and north of Adab appear to have such systems, which must have required substantial royal investment. The rather late development of large systems suggests that "if anything,

large-scale, complex irrigation practices were a derivative of the prior development of urban and state organization, rather than vice versa" (Adams 1981: 245; see also Adams 2005).

The Ur kingdom had a centralized and integrated political economy that involved the movement of bulk goods within the core provinces (Steinkeller 1987), often involving river transport to Nippur and Drehem (ancient Puzrish-Dagan). The low gradient of the Mesopotamian plain and the ease of low friction waterborne transport was a critical element of the "Mesopotamian advantage" in urban development since at least the fourth millennium (Algaze 2008). With a careful reading of cuneiform texts and reference to the surveyed settlements, it is possible to reconstruct inter-city movement via rivers and canals at this time; for example, the movement of bulk cereals up the Tigris from Umma upstream to Kasahar, and then across a canal to the Euphrates near Nippur and Puzrish-Dagan (Figure 7.6; Steinkeller 2001: 57–59).

In addition to historical geography, the Umma texts demonstrate the extent and variety of rural settlement (Steinkeller 2007, in press). Nineteen sites were recognized by survey in the Umma region, but the texts mention at least five times as many settlements in the Umma province. Some might have been composed of reed structures, and therefore unlikely to form mounded sites; others may have been removed by the rivers or wind deflation, or were too small to be detected by low intensity survey methodologies. Some places were little more than a threshing floor or a grain storage area, but others contained rural temples and shrines. It is likely that a similarly diverse range of small rural settlements existed in other time periods for which we lack such a rich textual record. Some of these settlements were deliberate foundations of the ruling dynasty; if the presence of non-Sumerian names is any indication, many of their inhabitants may have been resettled prisoners of war; for example, Shu-Sin's settlement of captives from Shimanum near Nippur (Gelb 1973: 76; Steinkeller in press). Deliberate resettlement of conquered populations, with an unambiguous signature in settlement patterns, reached a high point under the Neo-Assyrian kings, but the demographic impact on the Sumerian landscape remains to be determined.

Competing polities and the triumph of Babylon (c.1850–1500)

The post-Ur time of inter-polity conflict on the plain ended with political unification under Hammurabi of Babylon. For much of the plain, this unification was shortlived; under his successor Samsuiluna, the Sumerian plain experienced a series of crises, probably related to water, that resulted in its progressive abandonment. These major settlement changes are almost invisible archaeologically, but could be demonstrated through systematic analysis of cuneiform tablets. For surface survey purposes, archaeologists are able to distinguish a ceramic phase that includes the last century of political fragmentation (mostly under the dominance of the kings of Larsa) and the time of Babylonian dominance.

Our knowledge of the internal structure of Mesopotamian settlements is at an apex at this time (Stone 2007). Densely settled cities like Mashkan-shapir, Ur, Nippur, and Larsa were structured by streets, alleys, internal canals, and harbors (Stone and Zimansky 2004; Keith 2003; Huot et al. 1989). In addition to the great cities, a few small settlements have also been studied extensively, and reveal features surprisingly similar to their spatially large counterparts (Stone 2007: 229).

Southern Mesopotamia witnessed dramatic shifts in settlement, in some cases in divergent directions depending on the region (Figure 7.7). Overall, urban centers were smaller than their third millennium antecedents. We are, however, almost completely ignorant of the major political centers of the northwestern plain, including Babylon itself, because they fell outside of the major survey regions and have extensive later settlement.

Settlement collapsed in the central plain between Nippur and Uruk. Cities declined 40 percent in aggregate urban area (Adams 1981: 165); smaller settlements also suffered substantial declines. On the other hand, the region around Ur and Eridu flourished.
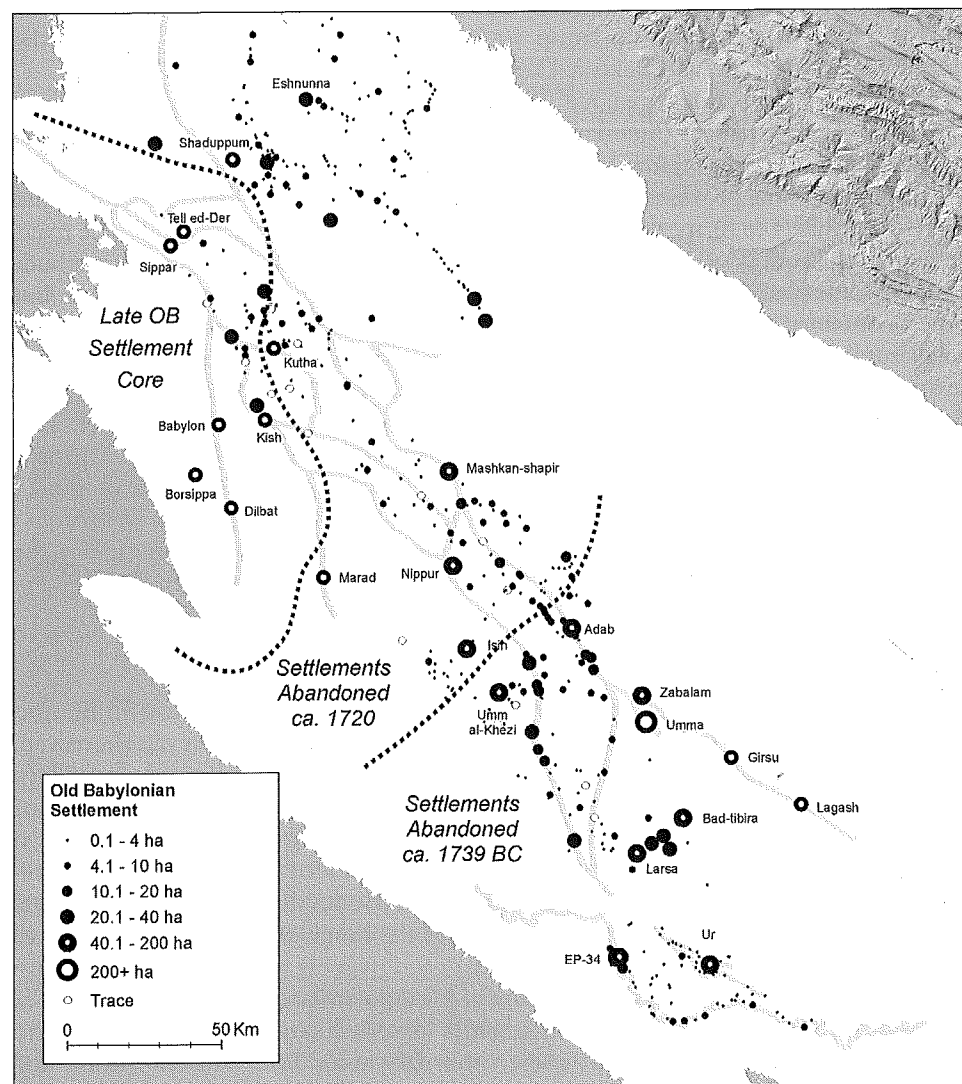

Figure 7.7 Settlement and regional abandonment in the Old Babylonian period
(based on Adams 1965, 1981; Gasche 1989; Gibson 1972; Wright 1981)

Ur grew slightly to 60 ha, and was paired with another 45 ha site at EP-34. The region contained fifty-eight total settlements, including six small centers of up to 10 ha. Despite the loss of political centrality, total settled hectares almost doubled from the time of the Third Dynasty of Ur (Wright 1981:330–331).

The Old Babylonian cuneiform record can lend some precision to these chronologically coarse settlement patterns. During the reign of Samsuiluna, the southern plains witnessed rebellions and economic crises that were probably related to the availability of water (Stone 1977). At the time of the initial crisis, cuneiform text production ceased at Ur, Larsa, Kutallu, Lagash, and Uruk, the major cities of the far southeastern plain. Two decades later, a second crisis resulted in the cessation of text production at Nippur and Isin. For the remainder of the First Dynasty of Babylon, texts are only known from the cities of Akkad, especially Sippar and Dilbat (Stone 1977; Gasche 1989: III–143). In this case, the cessation of text production can be used as a proxy indicator of regional depopulation. Cuneiform texts describe the movement of peoples and whole institutions; for example, the transfer of the house of Ur-Utu from Sippar to Tell ed-Der (Janssen 1996), or the movement of entire temple institutions between cities (Charpin 1986: 343–418). Because these events occurred within a single ceramic period, they were invisible to the surveyors, although subsequently, slight morphological changes in vessels between the early and late First Dynasty of Babylon have been recognized (Gasche et al. 1998).

The reorganization of the central plains in the later second millennium

Settlement resumed in the former land of Sumer in the later second millennium under the political control of the Kassite dynasty, but in a dramatically transformed manner. The dominant north-northwest to south-southeast alignment of settlements and major watercourses of the third and early second millennia was largely replaced by new alignments from the west. This pattern is particularly striking between Isin and Uruk, where multiple channels flowed into the surveyed part of the plain from the west (Figure 7.8). It appears that the dynamic water situation at the end of the Old Babylonian period had resolved itself in a new arrangement, with a primary Euphrates channel much further west, flowing past Babylon (Cole and Gasche 1998). It is likely that the Tigris also shifted, since the old cities along its lower reaches, including Umma, Zabalam, Bad Tibira, and Kutallu, were vacant. Water still flowed in the old riverbeds – for example, the Euphrates through Nippur – but at a lesser volume compared to earlier times, if the smaller scale of settlement is any indication. The situation was dire enough that Kassite administrators attempted to bring Tigris water to Nippur via canals (Biggs 1965).

In terms of settlement patterns, this new arrangement might be said to mark the end of the "Sumerian world." Kassite resettlement was remarkably rural compared to previous eras. In the central plain, the total number of settlements increased, but they were overwhelmingly village-level, with only a few urban places; the total area of settlement was also sharply reduced. The surrounding regions were characterized by a similar retrenchment of settlement. The former kingdom of Eshnunna was sharply depopulated, as was the hinterland of Ur, despite the substantial reoccupation of the city itself under Kassite rule.
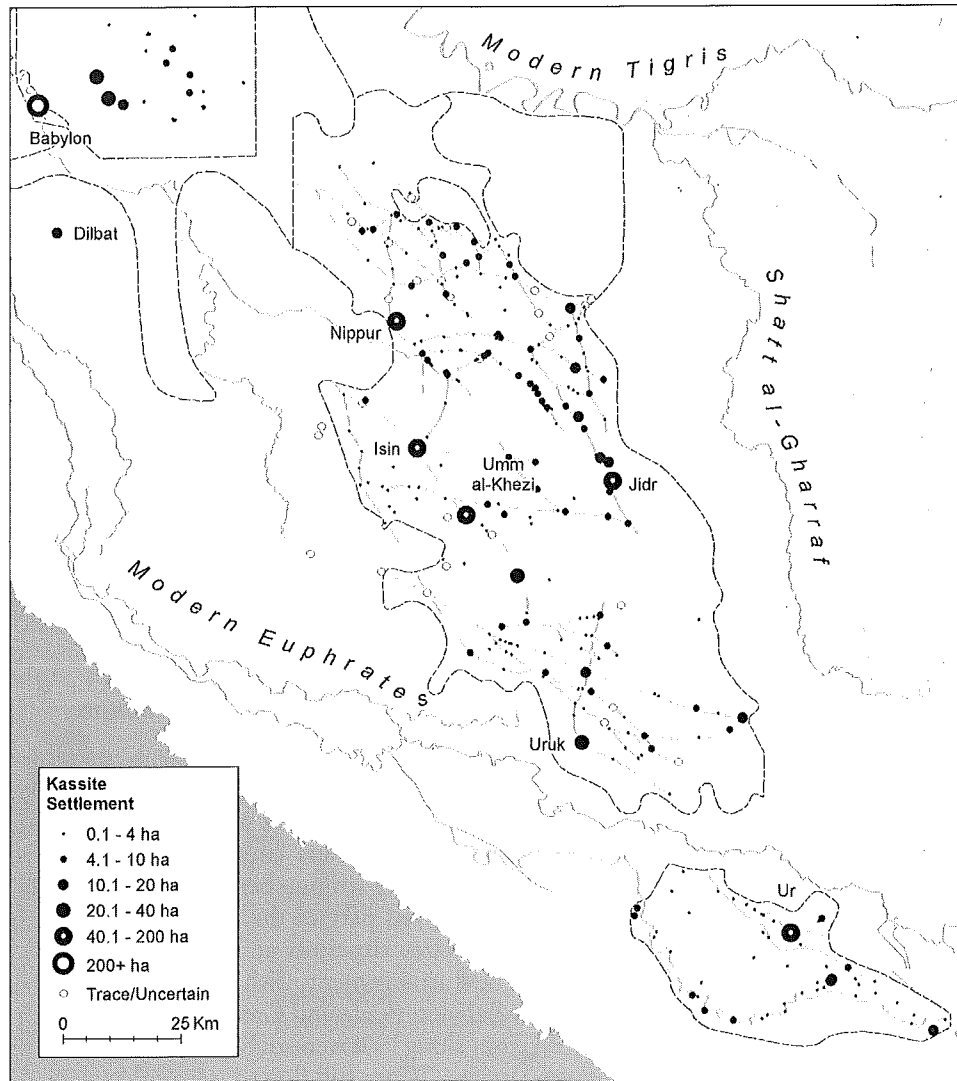
Figure 7.8 Later second millennium BC (Kassite) settlement, including Adams' proposed watercourses (based on Adams 1981; Wright 1981; Gibson 1972)

GENERAL TRENDS IN SETTLEMENT

Early Mesopotamia first experienced steady urban growth at the expense of the countryside, followed by a resurgence of rural life. This review has focused primarily on the Sumerian plain between Nippur and Uruk, which is the best surveyed and published region, and to a lesser extent on the Ur-Eridu region and the Diyala plain (Figure 7.9).

Initial settlement in the fifth millennium is difficult to evaluate because many sites are buried beneath alluvium or later settlements. When settlement patterning first
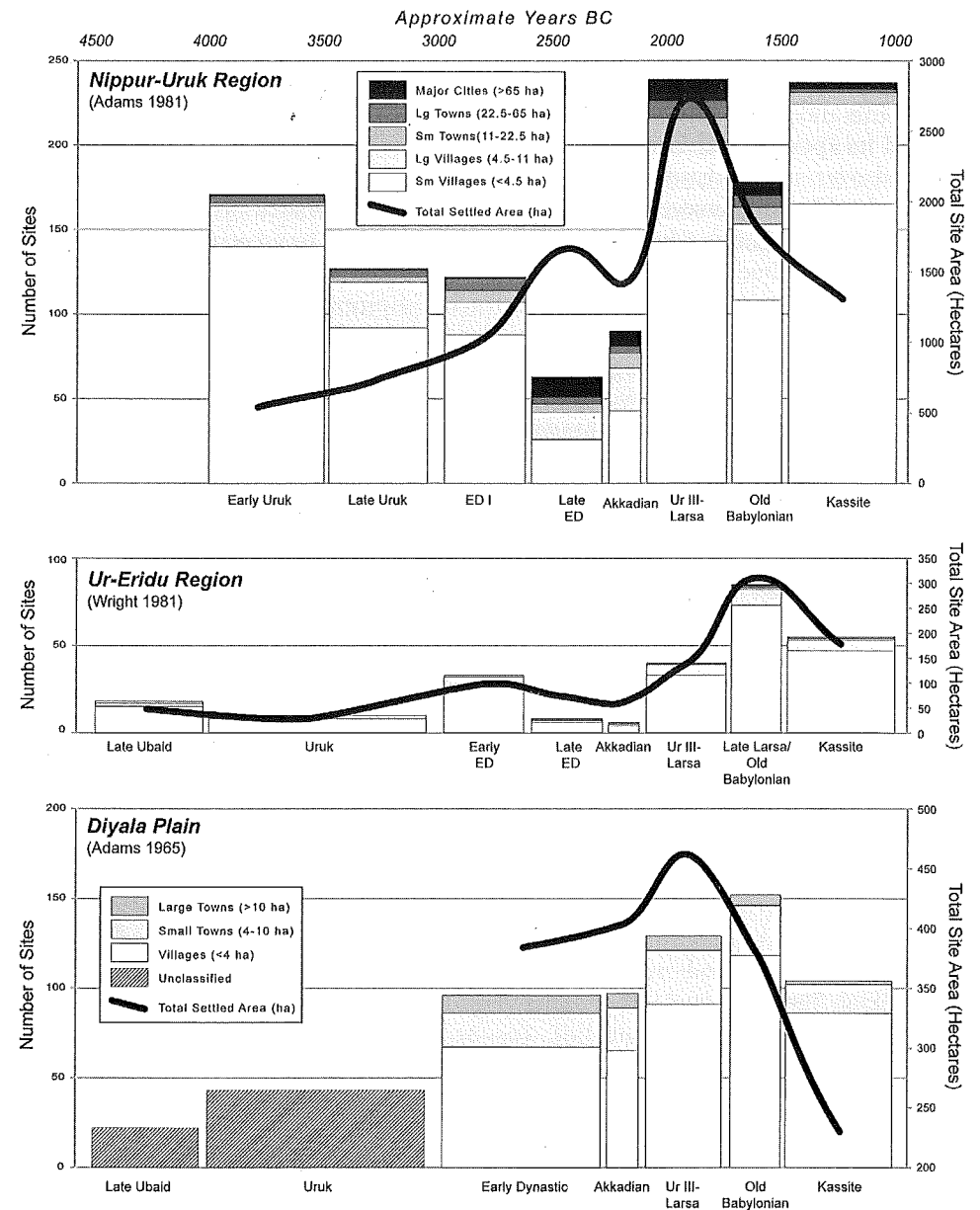

Figure 7.9 Number of sites (left y-axis) and settled area (right y-axis) in three surveyed regions (based on Adams 1981: table 13, 1965: tables 10–14; Algaze 2008: appendices 1–2; Wright 1981: 338–345)

becomes reliable in the early fourth millennium, it was characterized by extensive occupation with many small sites. By the end of the fourth millennium, however, site numbers declined continually until reaching their lowest point in the mid-third millennium BC phase of Early Dynastic city-states. While site numbers were dropping,

however, the total area of sites was expanding. Site area can be used as a proxy for population, although not without some caveats (Postgate 1994). Together, these trends describe the progressive urbanization of the plain, as populations abandoned small settlements and increasingly nucleated in towns and cities. At a local scale, urbanization reached its apex around Uruk in the early third millennium, when the 400 ha city presided over a hinterland almost completely devoid of sedentary occupation (see Figure 7.4). Overall, however, the apex was the late Early Dynastic period, when almost 80 percent of the plain's population lived in cities of 40 ha or greater (Figure 7.10).

Around the time of Akkadian political consolidation, this urbanization trend reversed itself. The sedentary population reached a pinnacle in the centuries around 2000 BC but increasingly it inhabited smaller towns and villages outside of the great cities. Because of the chronological imprecision of the survey ceramic typology, it is not possible to say if rural growth is to be attributed to peaceful conditions under the Third Dynasty of Ur or the sedentarization of Amorite nomads early in the second millennium BC; the settlement palimpsest may reflect both processes. Under the kings of Babylon, ruralization continued, now accompanied by a steep decline in total settled area. In the latter second millennium, site numbers rebounded, but urbanism reached a nadir. Less than a third of settlement was to be found in large cities, and more than half the population lived in villages of less than 10 ha.
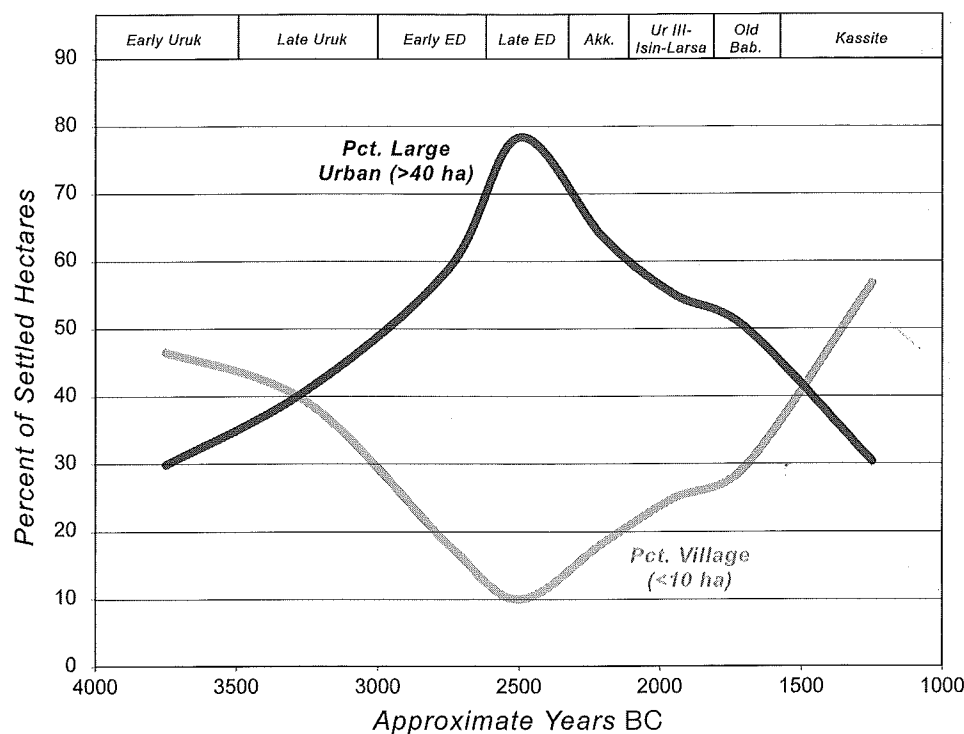

Figure 7.10 Urbanization and ruralization in Sumer in the fourth through second millennium BC. Percentages of settled area in large urban (>40 ha) and rural (<10 ha) sites (based on Adams 1981: tables 7 and 12; Algaze 2008: appendices 1–2)

The settlement trajectory in surrounding regions parallels that of central Sumer, but with some significant deviations. Neither the Diyala plain nor the Ur-Eridu region featured the explosion of site numbers in the fourth millennium that characterized the plain between Nippur and Uruk. Both areas showed a similar growth in settled area; the Diyala plain's population also reached a maximum at the time of the Third Dynasty of Ur and its successor at Eshnunna. On the other hand, site numbers and settled area in the Ur-Eridu region peak slightly later, probably at the time of Rim-Sin of Larsa and Hammurabi of Babylon. Both areas, however, experienced a collapse of settlement at the end of the Old Babylonian period and were characterized by fewer and smaller settlements in the late second millennium.

In considering these long-term trends, it is important to evaluate the representativeness of the settlement pattern data. The dramatic settlement reorganization after the Old Babylonian collapse suggests that, in this case, great political changes were accompanied by socio-economic transformations that affected the entire population, including the residents of the countryside. Some caution is necessary in interpreting the settlement patterns, however. In the first millennium, the major urban centers of Babylonia were mostly to the west of the surveyed part of the plain (Brinkman 1984, Hritz 2004). This trend may have already begun in the late second millennium as the main Euphrates and Tigris channels shifted away from the ancient urban heartland of the central plain. These western districts present substantial challenges to survey, on account of the presence of modern irrigation. Only comparable intensive survey in these areas will demonstrate whether the dissipation of urban life in the second millennium is characteristic of the plain as a whole, or only the central areas of Sumer and Akkad that have received the overwhelming majority of attention from excavators and surveyors. Furthermore, the easternmost part of Sumer, including Apishal, Lagash, Girsu, and Nina, might alter our current understanding of the urbanization processes of the fourth and third millennia, once high-resolution survey results from that region are available.

Nonetheless, the present picture of settlement development shows remarkable aspects of both dynamism and stability. The physical environment was highly dynamic, particularly the river courses, which were liable to leave their banks to create new courses. At present these processes are largely arrested, but have been well documented ethnohistorically (e.g., Gibson 1972: 26–30). Shifting watercourses could result in marsh formation in some places, and dessication in others, with accompanying wind erosion and dune formation. These natural dynamics were probably responsible for settlement mobility among villages and small towns in early Mesopotamian history, alongside general social processes of village fission and abandonment.

On the other hand, the great urban centers displayed remarkable continuity. Uruk, for example, remained occupied or was resettled at an urban scale for almost five thousand years (Finkbeiner 1991). Other cities like Ur, Larsa, and Nippur each flourished for millennia. In many cases, this continuous settlement or resettlement required great investment in the face of the shifting physical environment. Umma, for example, emerged along or near a major Tigris channel, but by the late third millennium, its former watercourse was maintained as a canal that allowed water traffic to move from the city to the current Tigris channel, and from that point upstream to other major urban centers (Steinkeller 2001). In the later second and first millennia BC, the ancient religious center at Nippur required substantial infusions of canal water from the

western Euphrates and even the Tigris; the former major Euphrates branch upon which it sat was now a minor channel that was artificially maintained and prone to run dry.

Clearly these and other urban settlements had become meaningful places in ways that go beyond simple economic geography. Cities certainly had functional importance throughout Mesopotamian history; various models stress their roles as centers for administrative decision-making (Wright and Johnson 1975) and economic productivity (Algaze 2008). These spatio-functional aspects cannot, however, fully explain the great efforts that Mesopotamians expended to keep these places and their landscapes inhabitable in the face of dramatically changing physical environments. Even more than what cities did, it was the people and institutional history of these places that made them meaningful: the individuals and their household lineages, including the ancestors buried under the floors of their houses. Perhaps most significantly, the gods themselves lived in Mesopotamian cities in a very literal sense. The physical structures of temples were remade century after century by the gods' earthly servants, the priests and kings, who went to great lengths to maintain the precise positioning of altars and cellae, and in some cases engaged in archaeology themselves to determine their positions. In some cases, cities retained their significance long after the reasons had been forgotten. In the nineteenth century AD, nomadic tribesmen in the steppes around Nippur and Uruk still knew these places as Nuffar and Warka, millennia after Enlil and Inanna had passed from human memory. To a considerable extent, the relevant issue is not why these great cities continued to be settled, but under what conditions they ceased to be meaningful enough to justify resettlement.

ACKNOWLEDGMENTS

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